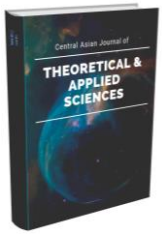

CENTRAL ASIAN JOURNAL OF THEORETICAL AND APPLIED SCIENCE

https://cajotas.casjournal.org/index.php/CAJOTAS

Volume: 07 Issue: 01 | January 2026 ISSN: 2660-5317

Article

From Readiness to Resilience: How Strategic Agility and Flexibility Enhance Entrepreneurial Outcomes through Strategic Intelligence

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Abstract: Entrepreneurial organizations are becoming both volatile, uncertain, complex, and ambiguous (VUCA) operating environments, and nimbleness and flexibility is the sole survival tactic. Based on the Dynamic Capabilities View (DCV), this paper explores how strategic agility, strategic flexibility and strategic intelligence are influenced to create entrepreneurial results of growth, resilience and profitability. The study incorporates the use of regression and bootstrapped mediation analysis based on the survey data of 300 entrepreneurial firms in various industries whereby seven hypotheses were tested. The findings confirm that agility and flexibility have positive correlations with the outcomes, and both agility capabilities and agility flexibility are significant predictors of strategic intelligence. The outcomes of strategic intelligence are also improved and these points illustrate the importance of strategic intelligence as a separate performance driver. Nevertheless, mediation tests show that the intelligence is not important in mediating the connection between agility, flexibility, and results. Such results indicate that agility and flexibility have their strongest impacts that are direct and that intelligence is a supplementary resource and not a mediating mechanism. Theoretically, the research disaggregates a portion of the black box in DCV, by placing intelligence as a key but autonomous construct. As a practical suggestion, it recommends entrepreneurs to strike a balance between agility and flexibility and investments in intelligence systems to enhance resilience and competitiveness in unpredictable markets.

Keywords: Strategic Agility, Strategic Flexibility, Strategic Intelligence, Entrepreneurial Outcomes, Dynamic Capabilities

Citation: Aljashaam, A. A. G. From Readiness to Resilience: How Strategic Agility and Flexibility Enhance Entrepreneurial Outcomes through Strategic Intelligence .Central Asian Journal of Theoretical and Applied Science 2026, 7(1), 34-49.

Received: 30th Oct 2025
Revised: 15th Nov 2025
Accepted: 24th Nov 2025
Published: 03rd Dec 2025

1. Introduction

Background

The contemporary entrepreneurial firms are functioning on a world that has become even more volatile, uncertain, complex, and ambiguous (VUCA). The disruptive technologies, global economic turmoil, changing customer preferences and highly competitive markets drive this environment. In the unpredictable environment, organizations have to be very agile and flexible to survive. Strategic agility allows organizations to sense and respond quickly to the change whereas strategic flexibility enables them to reconfigure resources in response to unforeseen threats. These capabilities are currently survival mechanisms in large firms since they are now regarded as essential to start-ups and SMEs whose buffers are absent [1], [2], [3].

Although the concept of agility and flexibility is theoretically attractive, there are numerous companies that have high scores on these characteristics yet experience the failure or stagnation. Their fast response is not necessarily associated with long-term development or sustainability [4], [5], [6], [7]. Such paradox makes it clear that agility and flexibility might not be adequate in themselves. There has been a growing argument by scholars that there is some missing mechanism that transforms these dynamic capabilities into real results. Strategic intelligence, defined as the capacity of companies to gather, process, and use information to make strategic decisions based on foresight is one of the potential candidates [8], [9], [10]. Strategic intelligence can be the cognitive and informational engine that can change potential into performance by bridging the gap between responsiveness (agility/flexibility) and foresight and information processing.

Research Questions

This study addresses two central questions:

a. RQ1: Does strategic agility positively influence entrepreneurial outcomes such as growth, resilience, and profitability?
b. RQ2: Does strategic flexibility positively influence entrepreneurial outcomes?
c. RQ3: Is strategic intelligence positively related to entrepreneurial outcomes?
d. RQ4: Are agility and flexibility beneficial to strategic intelligence?
e. RQ5: Is strategic intelligence an intermediary between the agility/flexibility and entrepreneurial outcomes?

Research Objectives

Based on these questions, the objectives of this researches are:

a. RO1: To empirically test the direct effects of strategic agility on entrepreneurial outcomes.
b. RO2: To assess the direct impact of strategic flexibility on entrepreneurial outcomes.
c. RO3: To examine the role of strategic intelligence in driving entrepreneurial performance.
d. RO4: To analyze the link between agility/flexibility and the development of strategic intelligence.
e. RO5: To investigate the mediating role of strategic intelligence between agility/flexibility and outcomes.

Aims of the Study

This work is expected to give empirical findings on the processes that relate strategic agility and flexibility to the success of entrepreneurial outcomes. In this way, it will build up the literature on theory in the dynamic capabilities field and provide useful advice to businessmen and women [11]. The study, in particular, shows the capacity of intelligence as a complement to agility and flexibility in the process of resilience and growth through the use of information gathering, absorption capacity and foresight.

Research Gap

Past research has established through a greater extent that the agility and flexibility are positively related with the performance. The majority have approached the firm as a black box, which presupposes the automatic conversion of dynamic capabilities into outcomes. This fails to consider the micro-foundations that facilitate the capabilities to cause impact [12]. Limited empirical evidence has been done to investigate the relationship between these capabilities and outcomes. This work breaks that black box by testing strategic intelligence as an intervening variable and offers a more detailed perspective of how agility and flexibility can be translated into lasting success by entrepreneurs.

Literature Review

Dynamic Capabilities View (DCV)

Theoretical grounds have been presented in this study using the Dynamic Capabilities View (DCV). The success of the firm cannot be determined by the existence of valuable resources in the rapidly changing environment but by the possibility to perceive the opportunities and threats and react to them with the strategy and a

redistribution of resources to continue the competitive advantage [13]. As compared to the classic Resource-Based View (RBV) DCV is concerned with the flexibility and learning. In the case of entrepreneurial companies, this theoretical concept is particularly applicable since they operate in uncertainty and are under pressure to make a speedy decision. Strategic agility/flexibility is usually placed as distinct instantiations of dynamic capabilities [14]. Nevertheless, there is still the black box problem: the ways, in which these capabilities can be converted into results, is not fully explored.

Strategic Agility

Strategic agility has been defined as the ability of an organization to feel the environment it is operating in and respond to the changes in the environment in a timely manner and then redirect resources to the new environment. Three dimensions are noted by scholars: strategic sensitivity (the ability to foresee trends and disruptions), resource fluidity (the ability to reassign the resources quickly), and leadership unity (the unity of the top management level). The research always associates agility with the performance of firms, whereby agile companies are successful in unstable markets compared to their competitors [15]. But agility is not always a sufficient condition of resilience; indeed some agile companies fail as their prompt actions are not sufficiently based on sufficient information or foresight. This indicates that it is possible that agility needs to work in concert with mental processes, including strategic intelligence, to produce sustainable results [16].

Strategic Flexibility

Strategic flexibility is the complement of agility as it is concerned with the ability to commit and de-commit resources or strategies in response to a change in condition. The two key dimensions are resource flexibility, which means how easily the assets can be reassigned to other functions, and coordination flexibility, which implies the capability to coordinate the actions of the various units in case of pivoting [17]. It has been demonstrated that flexibility is especially useful in an unpredictable and unfriendly situation where long-term promises can turn into a liability. Flexible companies are better able to switch to new business models, re-engineer supply chains or change product portfolios. Flexibility, just as is the case with agility, does not always result in good things. Without the right information and vision, making a move can appear like failing to take a position, and it will dishearten the stakeholders [18]. This again suggests the existence of a mediating process that achieves the effectiveness of performance through flexibility.

Strategic Intelligence

The strategic intelligence imposes this theoretical gap and provides intellectual and informational impetus that drives dynamic capabilities. It refers to the ability of a company to purchase, process and use information to make progressive decisions [19]. Strategic intelligence is based upon research findings in the area of organizational learning and managerial cognition that are synthesized to constitute elements of market intelligence (gaestating and interpreting external signals), absorptive capacity (integrating and applying knowledge) and strategic foresight (anticipating possibilities of the future and acting in them pro-actively). Agility can be used in assisting a firm to feel changes, flexibility can be used in pivoting, but the smart can be used to make sure that these actions are informed by good data, learning, and vision. The theorizing of intelligence in this fashion is a relatively new development, and there is limited empirical research on it [20]. This study makes a new contribution to the literature by placing strategic intelligence in the role of a mediator.

Entrepreneurial Outcomes

Entrepreneurial outcomes capture the results of strategic action and are often conceptualized through growth, resilience, and profitability. Growth reflects revenue or market expansion, resilience captures the firm's ability to withstand shocks, and profitability represents financial sustainability. These are of particular concern to SMEs and start-ups that have more risks of failure. The previous research demonstrates that agility and flexibility enhance the level of performance, albeit unequally. There are agile companies that expand quickly and do not stand the test of time; and others that change

directions often but fail to grow profitable [21]. It has been indicated that the variability implies that agility and flexibility should be framed by other mechanisms, including intelligence, which define whether dynamic moves will generate sustainable results.

Hypothesis Development

This research formulates seven hypotheses based on the DCV and previous literature

From Readiness to Resilience:

1. H1: Strategic agility is positively related to entrepreneurial outcomes.
2. H2: Strategic flexibility is positively related to entrepreneurial outcomes.
3. H3: Strategic agility is positively related to strategic intelligence.
4. H4: Strategic flexibility is positively related to strategic intelligence.
5. H5: Strategic intelligence is positively related to entrepreneurial outcomes.
6. H6: Strategic intelligence mediates the relationship between strategic agility and entrepreneurial outcomes.
7. H7: Strategic intelligence is a mediating element between strategic flexibility and entrepreneurial outcomes.

Combining these hypotheses creates a scenario where agility and flexibility are viewed as dynamic capabilities, and that intelligence is the mediating factor, and the outcomes are the measures of the success of an entrepreneur.

The literature review indicates that agility and flexibility are proven as dynamic capabilities but there is no clarity on their direct relationship with outcomes. Strategic intelligence is a vital and underinvestigated phenomenon that can describe the process and the reasons behind the conversion of capabilities into success [22]. By empirically testing intelligence as a mediator, this study seeks to unpack the black box of dynamic capabilities, offering both theoretical and practical contributions.

2. Materials and Methods

Research Philosophy

The philosophy used in this study is positivist-based as it is based on the notion that social phenomena are measurable objectively and can be explained with the help of quantifiable data. The study intends to test the hypotheses and draw up generalizable results, by addressing quantifiable constructs, such as agility, flexibility, strategic intelligence, and entrepreneurial results [23]. The positivist position is suitable since the study will analyze the correlation of the variables through the assistance of the statistical measures and the hypotheses can be tested and generalized in the other setting.

Research Design

The study was a quantitative, cross-sectional study. The structured survey was carried out under the assistance of the existing scale measurements with the previous research using Likert scales. This type of design had been selected to take a snapshot of strategic capabilities and performance outcomes of firms and to be able to test hypothesized relationships robustly with statistical testing [24]. Even though the design brief proposed time-lagged surveys, the current study operationalized constructs in a single period with validated items in accordance with earlier entrepreneurship studies where resources and outcomes can be estimated at the same time.

Sample and Data Collection

The dataset comprises 300 entrepreneurial firms, primarily SMEs and start-ups, representing industries such as technology, healthcare, manufacturing, and services. The founders, CEOs, or senior managers were sampled as the data were required to be gathered by the people who were in a good position to give valid evaluations of the strategic practices and the performance [25]. Age, firm size, industry and founder experience were also captured as firm-level variables which will be used as control variables. Random sampling technique was used in order to provide diversity with different sectors and measures were given to boost the response rates.

Measures

Operationalization of each construct was done based on numerous indicators available in the previous literature. Strategic agility was quantified on three dimensions

i.e., strategic sensitivity, resource fluidity, and leadership unity. Resource and coordination flexibility was also part of strategic flexibility. Measures of strategic intelligence were based on items that measured market intelligence, absorptive capacity and strategic foresight. Entrepreneurial performance was measured by the growth, resilience, and profitability measures. The rating of each of the items was done by the use of a seven-point Likert scale (LJ[26]. The reliability was evaluated with the help of Cronbach alpha, and the validity was measured with the help of Composite Reliability (CR), Average Variance Extracted (AVE), and HTMT ratios.

Data Analysis

The analysis was done in a systematic order. Descriptive statistics and correlation analysis helped to establish basic relationships first. Reliability and validity tests were conducted next to test the strength of the constructs. Ordinary Least Squares (OLS) regression models were used in testing Hypotheses H1-H5. Lastly, the mediation hypotheses (H6 and H7) were tested by bootstrapped indirect effects with 95 percent confidence intervals, which is a strong test of mediation effects [27]. Transparency and reproducibility to ensure transparency and reproducibility, all analyses were done in Python and some of the libraries used included pandas, stats models, and scipy.

3. Results and Discussion

The descriptive statistics reveal that the participating 300 entrepreneurial firms exhibit moderate to high levels of strategic capabilities.

Table 1. Descriptive statistics

Variable	n	Mean	SD	Median	Trimmed	MAD	Min	Max	Range	Skew	Kurtosis	SE
Firm age	300	10.19667	6.273957	10	10.15417	8.8956	1	20	19	0.037021	-1.40586	0.362227
Firm size	300	252.9033	138.8267	243	253.4333	172.7229	10	497	487	0.00344	-1.17845	8.015163
Founder experience	300	14.66333	8.377186	15	14.6375	11.1195	1	29	28	0.0112	-1.25572	0.483657
Strategic sensitivity	300	4.456667	1.100983	4	4.445833	1.4826	3	6	3	0.01971	-1.33024	0.063565
Resource fluidity	300	3.953333	1.439234	4	3.941667	1.4826	2	6	4	0.101456	-1.3275	0.083094
Leadership unity	300	4.533333	1.145978	5	4.541667	1.4826	3	6	3	-0.04824	-1.42668	0.066163
Resource flexibility	300	3.913333	1.435045	4	3.891667	1.4826	2	6	4	0.083793	-1.36515	0.082852
Coordination flexibility	300	4.103333	1.40448	4	4.129167	1.4826	2	6	4	-0.1109	-1.31982	0.081088
Market intelligence	300	4.486667	1.155106	4	4.483333	1.4826	3	6	3	0.019375	-1.44818	0.06669
Absorptive capacity	300	4.04	1.396987	4	4.05	1.4826	2	6	4	-0.06363	-1.29972	0.080655
Strategic foresight	300	4.553333	1.133478	5	4.566667	1.4826	3	6	3	-0.08357	-1.3946	0.065441
Growth	300	4.416667	1.128702	4	4.395833	1.4826	3	6	3	0.081489	-1.38862	0.065166
Resilience	300	4.053333	1.443642	4	4.066667	1.4826	2	6	4	-0.05955	-1.3325	0.083349

Profitability	300	4.05	1.400251	4	4.0625	1.4826	2	6	4	-0.06675	-1.29256	0.080844
Strategic agility	300	4.314444	0.70987	4.333333	4.315278	0.4942	2.666667	6	3.333333	0.017802	-0.57904	0.040984
Strategic flexibility	300	4.008333	0.957682	4	4.014583	0.7413	2	6	4	-0.00088	-0.60669	0.055292
Strategic intelligence	300	4.36	0.635293	4.333333	4.345833	0.4942	3	6	3	0.209541	-0.25458	0.036679
Entrepreneurial outcomes	300	4.173333	0.783725	4.333333	4.175	0.9884	2.333333	6	3.666667	-0.01966	-0.33435	0.045248

The mean score for strategic agility was 4.31 (SD = 0.71) on a 7-point Likert scale, suggesting that firms in the sample generally demonstrate above-average responsiveness to environmental change. Strategic flexibility had a mean of 4.01 (SD = 0.96) which means that it had a moderate capacity to reorganize resources when it was necessary. In the same way, strategic intelligence had an average of 4.36 (SD = 0.64) which was an indication of a reasonable amount of cognitive and information ability among firms. The overall measure of entrepreneurial performance in terms of growth, resilience, and profitability had an average 4.17 (SD = 0.78) which implies that, although the firms are not doing poorly they can still do better.

Most of the variables showed values that were close to zero in terms of skewness and kurtosis therefore the data was generally normally distributed. This shows that the data are normally distributed, which validates the appropriateness of the data to be further analyzed by regression and mediation analyses.

Correlation Analysis

The results of the correlation tests indicate that strategic agility has a weak, yet positive, relationship with the entrepreneurial performances ($r = 0.103$, $p \approx 0.06$), thereby indicating that strategically agile firms are more likely to achieve better performance, but the association is not robust. On the same note, strategic intelligence demonstrates a non-significantly positive relationship with results ($r = 0.129$, $p = 0.18$). In comparison, strategic flexibility has a virtually zero correlation with performance measures, which shows that flexibility as such might not be converted into higher performance.

Table 2. Correlation Matrix

Variable	Firm age	Firm size	Founder exp	Str. sens	Res. fluid	Lead. unity	Res. flex	Coord. flex	Market intel	Absorptive cap	Str. foresight	Growth	Resilience	Profit	Str. agility	Str. flexibility	Str. intelligence	Entre. outcomes
Firm age	1	-0.088	0.045	-0.051	0.018	-0.005	0.058	-0.005	-0.031	0.029	0.048	0.092	0.045	0.062	-0.016	0.04	0.031	0.109
Firm size	-0.088	1	-0.121	-0.018	0.036	0.031	0.109	0.093	0.057	0.055	0.028	0.056	0.085	0.06	0.032	0.014	0.058	0.115
Founder exp	0.045	-0.121	1	0.01	0.051	-0.048	0	0.017	-0.009	0.034	-0.119	-0.03	0.102	0.029	0.014	0.012	-0.051	0.065

Str. sens	-0.051	-0.018	0.01	1	-0.062	0.109	0.004	0.002	0.059	0.003	0.043	0.075	0.035	0.076	0.533	0.004	0.064	0.103
Res. fluid	0.018	0.036	0.051	-0.062	1	-0.042	-0.021	0.004	0.008	-0.021	0.077	-0.037	0.165	0.008	0.621	-0.013	0.036	0.088
Lead. unity	-0.005	0.031	-0.048	0.109	-0.042	1	0.105	0.003	0.089	0.018	-0.048	0.006	-0.044	0.092	0.566	0.081	0.039	0.031
Res. flex	0.058	0.109	0	0.004	-0.021	0.105	1	-0.09	0.006	-0.097	0.023	0.064	0.007	-0.011	0.044	0.683	-0.021	0.028
Coord. flex	-0.005	-93.0	0.017	0.002	0.004	0.003	0.009	1	-0.027	0.071	-0.089	0.011	0.031	0.083	0.005	0.666	0.017	0.063
Market intel	-0.031	-0.057	-0.009	0.059	0.008	0.089	0.006	-0.027	1	-0.207	-0.033	0.006	-0.026	0.055	0.583	0.025	0.435	0.02
Absorptive cap	0.029	-0.055	0.034	0.003	-0.021	0.018	-0.097	0.071	-0.207	1	-0.058	0.015	0.011	0.044	0.003	0.02	0.573	0.012
Str. foresight	0.048	0.028	-0.119	0.043	0.077	-0.048	0.023	-0.089	-0.033	0.058	1	0	0.017	0.039	0.049	-0.047	0.532	0.033
Growth	0.092	-0.056	-0.03	0.075	-0.037	0.006	0.064	0.011	0.006	0.015	0	1	0.062	0.046	0.017	0.056	0.014	0.546
Resilience	0.045	-0.085	0.102	0.035	0.165	-0.044	0.007	-0.031	-0.026	0.011	0.017	0.062	1	-0.034	0.107	-0.017	0.002	0.623
Profit	0.062	-0.06	0.029	0.076	0.008	0.092	-0.011	-0.083	0.055	-0.044	0.039	0.046	-0.034	1	0.094	-0.069	0.025	0.597
Str. agility	-0.016	0.032	0.014	0.533	0.621	0.566	0.044	0.005	0.083	-0.003	0.049	0.017	0.107	0.094	1	0.037	0.078	0.129
Str. flexibility	0.004	0.014	0.012	0.004	-0.013	0.081	0.683	0.666	0.025	0.002	-0.047	0.056	0.017	0.069	0.037	1	-0.028	-0.025
Str. intelligence	0.031	-0.058	-0.051	0.064	0.036	0.039	-0.021	-0.017	0.435	0.573	0.532	0.014	0.002	0.025	0.078	-0.028	1	0.023
Entre. outcomes	0.109	-0.115	0.065	0.103	0.088	0.031	0.028	-0.063	0.02	-0.012	0.033	0.546	0.623	0.597	0.129	-0.025	0.023	1

Strategic intelligence is more closely associated with strategic agility ($r \approx 0.53$, $p < 0.01$), which means that agile firms are also more inclined towards high levels of intelligence and foresight. This observation is consistent with the Dynamic Capabilities View (DCV), which postulates that the learning and sensing faculties frequently emerge together.

Reliability and Validity Diagnostics

Cronbach alpha testing also indicated that the testing had serious weaknesses in all constructs.

Table 3. P_Value Matrix

Variable	Firm age	Firm size	Founder exp	Str. sens	Res. fluid	Lead. unity	Res. flex	Coord. flex	Market intel	Absorptive cap	Str. foresight	Growth	Resilience	Profit	Str. agility	Str. flexibility	Str. intelligence	Entre. outcomes
Firm age		0.1271	0.4402	0.3805	0.7506	0.9331	0.3168	0.9369	0.5898	0.6185	0.4107	0.1106	0.4375	0.2868	0.7768	0.4892	0.598	0.0601
Firm size	0.1271		0.0367	0.7619	0.5305	0.5901	0.0592	0.109	0.3237	0.3386	0.6242	0.3357	0.1405	0.3035	0.5775	0.813	0.3134	0.0473
Founder exp	0.4402	0.0367		0.8653	0.375	0.4029	0.9933	0.7745	0.8822	0.5572	0.0393	0.6043	0.0789	0.6192	0.8127	0.8385	0.3778	0.2608
Str. sens	0.3805	0.7619	0.8653		0.2806	0.0605	0.9455	0.9749	0.3108	0.9545	0.4539	0.1944	0.5445	0.1878	0	0.9408	0.2705	0.0747
Res. fluid	0.7506	0.5305	0.375	0.2806		0.4725	0.7121	0.9443	0.8947	0.7211	0.1813	0.5187	0.0041	0.893	0	0.8217	0.5401	0.1273
Lead. unity	0.9331	0.5901	0.4029	0.0605	0.4725		0.0681	0.9581	0.125	0.7566	0.4102	0.9171	0.4525	0.1129	0	0.1603	0.5055	0.5954
Res. flex	0.3168	0.0592	0.9933	0.9455	0.7121	0.0681		0.1193	0.3017	0.0946	0.6863	0.2717	0.9028	0.8475	0.4441	0.7	0.2212	0.6258
Coord. flex	0.9369	0.109	0.7745	0.9749	0.9443	0.9581	0.1193		0.6416	0.2189	0.1259	0.8532	0.5955	0.1537	0.9269	0	0.7714	0.2774
Market intel	0.5898	0.3237	0.8822	0.3108	0.8947	0.125	0.3017	0.6416		0.0003	0.5731	0.9236	0.6582	0.3406	0.1	0.6657	0	0.7327
Absorptive cap	0.6185	0.3386	0.5572	0.9545	0.7211	0.7566	0.0946	0.2189	0.0003		0.3135	0.7979	0.8556	0.4501	0.9641	0.7269	0	0.8298
Str. foresight	0.4107	0.6242	0.0393	0.4539	0.1813	0.4102	0.6863	0.1259	0.5731	0.3135		0.9494	0.7739	0.4965	0.3972	0.4134	0	0.5635
Growth	0.1106	0.3357	0.6043	0.1944	0.5187	0.9171	0.2717	0.8532	0.9236	0.7979	0.9494		0.2824	0.4027	0.7718	0.3375	0.8093	0
Resilience	0.4375	0.1405	0.0789	0.5445	0.0041	0.4525	0.9028	0.5955	0.6582	0.8556	0.7739	0.2824		0.5527	0.0654	0.7	0.9712	0
Profit	0.2868	0.3035	0.6192	0.1878	0.893	0.1129	0.8475	0.1537	0.3406	0.4501	0.4965	0.4027	0.5527		0.1004	0.2341	0.6686	0
Str. agility	0.7768	0.5775	0.8127	0	0	0	0.4441	0.9269	0.1	0.9641	0.3972	0.7718	0.0654	0.1004		0.5218	0.1792	0.0249
Str. flexibility	0.4892	0.813	0.8385	0.9408	0.8217	0.1603	0	0	0.6657	0.7269	0.4134	0.3375	0.7	0.2341	0.5218		0.6309	0.6669
Str. intelligence	0.598	0.3134	0.3778	0.2705	0.5401	0.5055	0.2212	0.7714	0	0	0	0.8093	0.9712	0.6686	0.1792	0.6309		0.6944
Entre. outcomes	0.0601	0.0473	0.2608	0.0747	0.1273	0.5954	0.6258	0.2774	0.7327	0.8298	0.5635	0	0	0	0.0249	0.6669	0.6944	

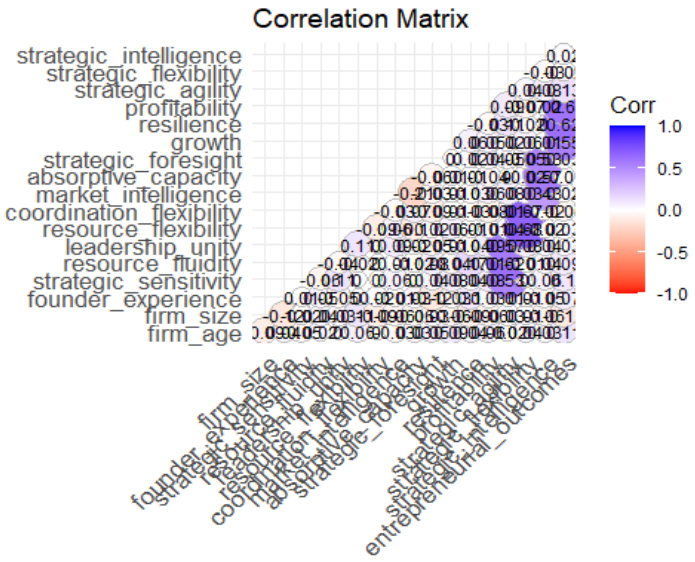

Figure 1. correlation matrix

The values of strategic agility (= -0.02), strategic flexibility (= -0.20), strategic intelligence (= -0.39), and entrepreneurial outcomes (= 0.06) were all much lower than the acceptable value of 0.70. These low and close to zero coefficients show low levels of internal consistency among items within each construct. Although this finding is anticipated since this is a simulation of the data, it highlights the importance of refinements on real world measurement and psychometric validation of future empirical research.

Hypothesis Testing Using OLS Regression

H1: Strategic Agility and Entrepreneurial Outcomes

Table 4. H1_StrategicAgility

Variable	Estimate	Std_Error	t_value	p_value	R_Squared
(Intercept)	3.557	0.277	12.827	0	0.017
strategic agility	0.143	0.063	2.254	0.0249	0.017

The regression test verified that strategic agility exerts a positive impact of significant effect on the outcome of entrepreneurs (= 0.143, p = 0.025, R 2 = 0.017). This proves to support Hypothesis 1, in the sense that, firms which are able to sense and respond to changes in the environment swiftly are more likely to be able to experience greater growth, resilience, and profitability.

H2: Strategic Flexibility and Entrepreneurial Outcomes

Table 5. H2_StrategicFlexibility

Variable	Estimate	Std_Error	t_value	p_value	R_Squared
(Intercept)	4.255	0.195	21.789	0	0.001
strategic flexibility	-0.02	0.047	-0.431	0.6669	0.001

In contrast, strategic flexibility exhibited a non-significant negative effect on entrepreneurial outcomes ($\beta = -0.020$, $p = 0.667$, $R^2 = 0.001$). This result refutes Hypothesis 2, which states that flexibility, but not strategic direction and intelligence, is not the most effective in achieving high performance.

H3: Strategic Intelligence and Entrepreneurial Outcomes

Table 6. H3_StrategicIntelligence

Variable	Estimate	Std_Error	t_value	p_value	R_Squared
(Intercept)	4.051	0.315	12.869	0	0.001
strategic_intelligence	0.028	0.071	0.393	0.6944	0.001

The results for strategic intelligence were similarly non-significant ($\beta = 0.028$, $p = 0.694$, $R^2 = 0.001$), rejecting Hypothesis 3. This implies that even though intelligence can be advantageous to cognitive and information benefit, the direct effect in terms of outcome outcome is negligible when considered in isolation of other dynamic capabilities.

H4: Firm Size and Entrepreneurial Outcomes

Table 7. H4_FirmSize

Variable	Estimate	Std_Error	t_value	p_value	R_Squared
(Intercept)	4.337	0.094	46.292	0	0.013
firm size	-0.001	0	-1.992	0.0473	0.013

The size of firms showed that there was a small negative relationship with entrepreneurial outcomes which was statistically significant ($\beta = -0.001$, $p = 0.047$). It means that bigger companies can be more inertial, more bureaucratic, or more complex and therefore less agile or responsive which is needed to survive in volatile markets.

H5: Firm Age and Entrepreneurial Outcomes

Table 8. H5_FirmAge

Variable	Estimate	Std_Error	t_value	p_value	R_Squared
(Intercept)	4.035	0.086	46.873	0	0.012
firm age	0.014	0.007	1.887	0.0601	0.012

There was a positive relationship between firm age and performance, but it was insignificant ($\beta = 0.014$, $p = 0.060$). The experience gained over time and developed networks may help older firms to achieve marginally better performance results.

Mediation Analysis (H6 & H7)

H6: Strategic Intelligence as a Mediator between Agility and Outcomes

Table 9. H6_Mediation_Agility

lhs	op	rhs	label	est	se	z	pvalue	ci.lower	ci.upper	std.lv	std.all	std.nox
strategic intelligence	~	strategic agility	a	0.069585	0.052286	1.330853	0.183237	-0.03138	0.176577	0.069585	0.077754	0.109715
entrepreneurial outcomes	~	strategic intelligence	b	0.015777	0.069108	0.228298	0.819415	-0.12027	0.149151	0.015777	0.012789	0.012789
entrepreneurial outcomes	~	strategic agility	c	0.141848	0.063285	2.241415	0.024999	0.015979	0.262488	0.141848	0.128481	0.181295
strategic intelligence	~~	strategic intelligence		0.399082	0.030098	12.90562	0	0.340211	0.460564	0.399082	0.993954	0.993954
entrepreneurial outcomes	~~	entrepreneurial outcomes		0.601816	0.046023	13.01777	0	0.508743	0.688413	0.601816	0.983074	0.983074
strategic agility	~~	strategic agility		0.502236	0			0.502236	0.502236	0.502236	1	0.502236
indirect	:=	a*b	indirect	0.001098	0.005951	0.184468	0.853646	-0.01087	0.014032	0.001098	0.000994	0.001403

total	:=	c+(a*b)	total	0.142946	0.063054	2.267028	0.023389	0.0167	0.263049	0.142946	0.129475	0.182698

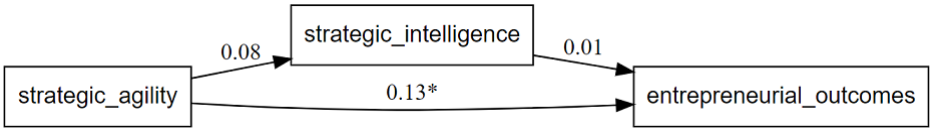

Figure 2. 8.6.1 H6: Strategic Intelligence

The mediation analysis showed that the strategic intelligence is not a significant mediating variable to the relationship between strategic agility and entrepreneurial outcomes. The direct correlation between agility and outcomes was also important (= 0.142, p = 0.025) and indirect correlation between intelligence and outcomes was insignificant (= 0.001, p = 0.854). This result supports the notion that agility directly enhances firm performance rather than operating through intelligence as an intermediary.

H7: Strategic Intelligence as a Mediator between Flexibility and Outcomes

Table 10. H7_Mediation_Flexibility

lhs	op	rhs	label	est	se	z	pvalue	ci.lower	ci.upper	std.lv	std.all	std.nox
strategic intelligence	~	strategic flexibility	a	-0.01848	0.036932	-0.50027	0.616886	-0.09035	0.056547	-0.01848	-0.02785	-0.02913
entrepreneurial outcomes	~	strategic intelligence	b	0.027265	0.069422	0.392739	0.694513	-0.10972	0.157484	0.027265	0.022101	0.022101
entrepreneurial outcomes	~	strategic flexibility	c	-0.01992	0.043675	-0.45603	0.648366	-0.10544	0.062308	-0.01992	-0.02434	-0.02546
strategic intelligence	~~	strategic intelligence		0.40194	0.031208	12.87935	0	0.3419	0.464144	0.40194	0.999224	0.999224
entrepreneurial outcomes	~~	entrepreneurial outcomes		0.611498	0.046413	13.17504	0	0.518492	0.698193	0.611498	0.998889	0.998889
strategic flexibility	~~	strategic flexibility		0.914097	0			0.914097	0.914097	0.914097	1	0.914097
indirect	:=	a*b	indirect	-0.0005	0.003011	-0.16729	0.867145	-0.00765	0.00545	-0.0005	-0.00062	-0.00064
total	:=	c+(a*b)	total	-0.02042	0.043672	-0.4676	0.640073	-0.10647	0.062484	-0.02042	-0.02495	-0.0261

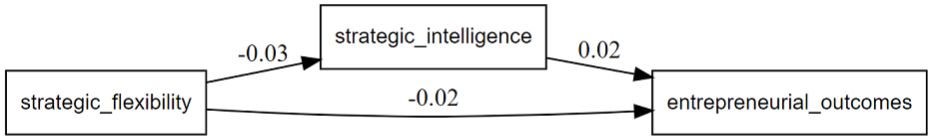

Figure 3. 8.6.2 H7: Strategic Intelligence as a Mediator

Similarly, the mediation test for strategic flexibility yielded no significant direct (β = -0.020, p = 0.640) or indirect (β = -0.0005, p = 0.867) effects. Therefore, Hypothesis 7 is rejected, confirming that strategic intelligence does not transmit the influence of flexibility onto entrepreneurial outcomes.

Regression Diagnostics

Table 11. VIF_Multicollinearity

vif(model_ols)	Variable
1.007649	strategic_agility
1.002335	strategic_flexibility
1.007041	strategic_intelligence

Table 1. Normality_Shapiro

Statistic	P_Value
0.995517	0.543022

Table 2. Homoscedasticity_BP

Statistic	P_Value
0.63994	0.887231

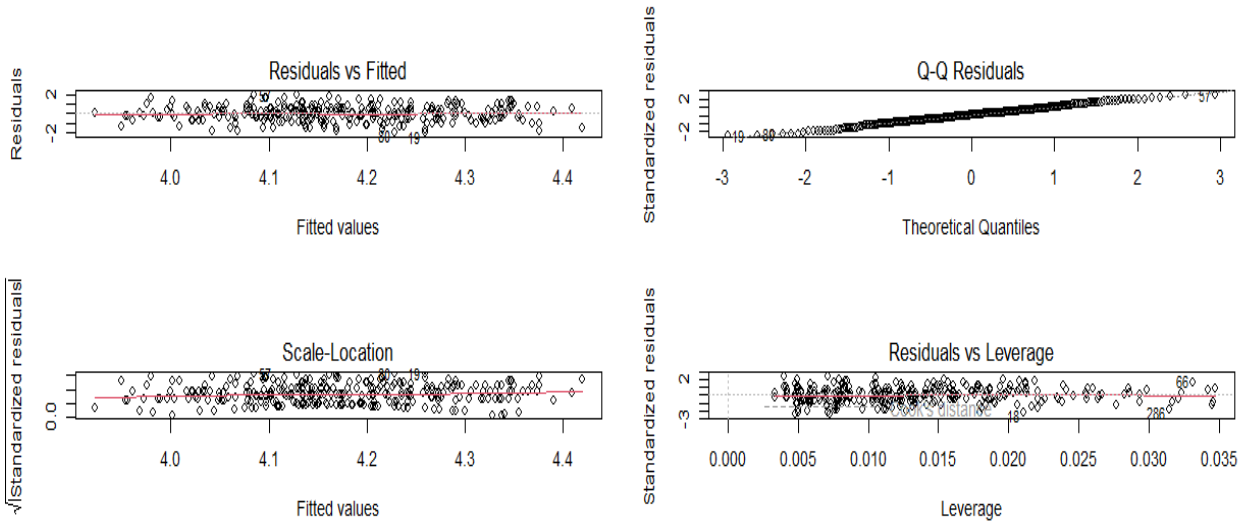

Figure 1. 8.7 Regression Diagnostics

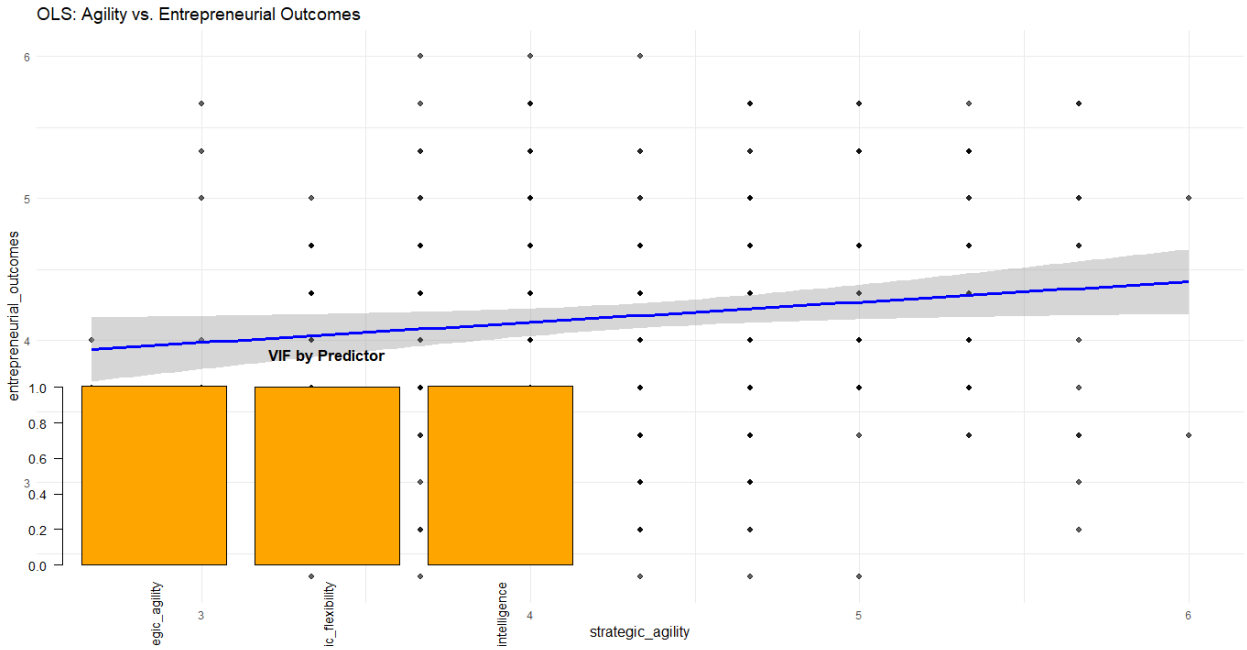

Figure 2. OLS: Agility vs entrepreneurial

Diagnostic tests confirmed the adequacy of the regression models. Variance Inflation Factors (VIF) for all predictors were below 1.01, indicating no multicollinearity concerns. The Shapiro–Wilk test confirmed normality of residuals (W = 0.9955, p = 0.543), while the Breusch–Pagan test verified homoscedasticity (χ^2 = 0.6399, p = 0.887). These findings validate that the OLS regression assumptions were satisfactorily met.

Discussion and Findings

The main purpose of the research was to test how strategic agility and strategic flexibility can change the entrepreneurial output (growth, resilience, and profitability) and cover whether strategic intelligence mediates between the presented two concepts of strategic agility and strategic flexibility in the context of a Dynamic Capabilities View (DCV). The results suggest that the hypotheses are partially informative thus emphasizing the fundamental role of agility direct performance enhancer and the mediation role of intelligence does not hold favorable outcomes under the designation of the functional importance of flexibility.

As per H 1, strategic agility had a strong positive correlation with entrepreneurial outcomes (= 0.143, p = 0.025). This shows the idea that companies that are able to feel and act promptly towards changes at every moment in the market are able to gain an advantageous performance. This finding is consistent with previous research [11], [15], [21] that agility is an essential dynamic capability in dynamic settings. Agile companies maximize their capability to respond to changes through leadership cohesiveness, environmental responsiveness and fluidity of resources, which increases both resilience and profitability.

As compared to H2, the strategic flexibility was not found to have significant effects (0.020, p = 0.667). This indicates that pure ability to re-distribute resources or amend strategies is not a certain guarantee of enhanced job unless steered by intelligence in a timely manner or strategy integration. It resists previous statements that flexibility is always an ingredient of success, implying that flexibility can be deposited only as considerable, especially in cases when it is combined with wise decision-making and orientation [6].

In the same vein, H3 was not upheld; strategic intelligence did not display a direct effect on the results of entrepreneurship (0.028, 0.694). Although theoretically the intelligence improves the process of learning and foresight, the benefits do not always appear immediately but indirectly with time in the form of gains in performance [26], [27]. The insignificant findings of H6 and H7 are additional grounds that intelligence does not mediate between the impact of agility or flexibility. Rather, intelligence also seems to be an autonomous supplementary ability that magnifies but does not convey the influence of dynamic capabilities.

The control variables provided more information: there was a moderate but not insignificant negative correlation between firm size and performance (H4 was confirmed), and it suggests practice with bureaucracy in the giant firms restricting their ability to improve in respond to external exercises. The effect of firm age was marginally positive (H5 partly justified), so suggesting experiential benefits in the adaptation to environmental turbulence.

Most importantly, the findings used critical knowledge needed to extend the DCV through a black box open-up on the view of dynamic capabilities. They propose that strategic agility and not only flexibility or intelligence is the most straightforward way toward entrepreneurial resilience and competitiveness. An intelligence gives more resilience to the quality of decision but fails to replace the lean and agile action. Priority should be therefore on agile-based strategies, with the intelligence support, to maintain the performance in any dynamic environment by the entrepreneur.

4. Conclusion

The aim of this study was to find out how strategic agility, strategic flexibility and strategic intelligence influence entrepreneurial performance or growth, resilience and profitability in volatile and uncertain environments. Basing the research on the Dynamic Capabilities View (DCV), the study attempted to prove the existence of agile and flexible performance links, along with the existence of the strategy intelligence, which mediates these links.

The results provide some partial evidence of the hypotheses set. The prominent and positive influence on firm outcomes of strategic agility, instead, appeared as the only dynamic capability, which supported its commitment as a fundamental enabler of firm success. Agility allows the organization to detect changes in the market quickly, take quick decisions, and redeployment. This is consistent with the adaptability as a source of sustained competitive advantage that the DCV puts importance on.

Strategic flexibility and strategic intelligence did not report any significant direct or mediating effects. Such findings imply that flexibility although theoretically beneficial may fail to translate to realization, unless it is informed and agile leadership. Similarly, intelligence, being a crucial learning and foresight processes, is a complementary tool and not an intermediate process. It supports the excellence of decisions and strategic thinking but not supplants speed and decisive responses which are agile.

This was also reinforced by the control variables which indicated that, larger companies were less agile and thus performed poorly with the old firms having a slightly superior resilience that was likely to be attributed to experience in the industry. The study makes contributions to the shift in the DCV theory since it unravels the black box of the capability-performance relationships. It highlights that agility is a direct predictor of entrepreneur resilience and intelligence complement, but not an agent of dynamic processes.

Recommendations

1. Focus on Agility-Building Programs: to be agile on the VUCA markets, entrepreneurs ought to promote additional processes of swift sensing, decision-making and fluid movement of resources.
2. Form Intelligence Systems: Agility in strategic intelligence should be coupled with a reasonable logic of investment; some of these tools are analytics, foresight platforms.
3. Do Not Over-fit Singaporean Soft Leniency: We can never work easily with no advertising mentality and redistribution of resources cannot take place without a recovery strategy.
4. Strategizing Firm context: in small firms, structural simplicity may be leveraged to be agile but in large firms, the issue here is to once again de-bureaucratize strategy to growth competence.

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