Strategic Management Accounting on Competitive Advantage: An evidence from Vietnam

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ABSTRACT

The revolutionary influence of Big Data Analysis on strategic management accounting is indeed compelling in practice. Therefore, companies should strategically include Big Data Analysis approaches into their strategic management accounting systems to improve business plans and sustain a competitive advantage. This research aims to enhance the application of strategic management accounting in organizations to systematically improve corporate performance, including business strategies and competitive advantage, through the advanced use of management accounting instruments. The results of this investigation indicate a significant positive correlation between the utilization of Big Data Analysis (BDA), enhanced Business Strategies (BS), and Strategic Management Accounting (SMA) in producing more comprehensive and insightful analyses, thereby providing improved assessments of corporate profitability. Furthermore, the firm can effectively leverage modifications of contemporary SMA-related components to enhance corporate capability as a means of strengthening competitive advantage. A quantitative study methodology employing an online survey with Likert-scale items was executed to collect data from a sample of 88 instances out of 100 distributed surveys. Subsequent extensive statistical studies were performed using SPSS in conjunction with AMOS. The measurement instrument's reliability and internal consistency were rigorously evaluated, with necessary revisions recorded, utilizing Cronbach's Alpha, Exploratory Factor Analysis (EFA), One-Sample t-tests, Confirmatory Factor Analysis (CFA), and SEM testing. This study, conducted in Vietnam during the 2025 fiscal year, aims to enhance strategic accounting management through the strategic implementation of Big Data Analysis, thereby maximizing business performance in the dynamic modern market.

Keywords: Big Data Analysis (DBA), Business Strategy (BS), Strategic Management Accounting (SMA), Competitive Advantages (CA)

1. INTRODUCTION

1.1 Background

In Vietnam, despite the introduction of certain strategic management accounting techniques in international accounting certification programs and training courses, there remains a paucity of research regarding the extent of practical application of strategic management accounting within enterprises.

Tran, H.V. (2020) evaluated the extent of strategic management accounting implementation in Vietnamese firms. Survey data was gathered from 659 firms, located in various regions and engaged in diverse industries. The research findings indicated that, while the prevalence of firms fully implementing strategic management accounting procedures was low, Vietnamese enterprises have recognized and utilized accounting to furnish information for strategic direction (Tran, 2020).

Furthermore, Chuc, A.T. (2020) characterizes Strategic Management Accounting (SMA) as an evolution of conventional management accounting (TMA), emerging from alterations in the company environment and the informational needs for managerial decision-making. Emerging in the early 1980s, it has progressively evolved alongside specialized applied approaches designed for external information acquisition. Thus far, alongside its growing significance for businesses, SMA must also enhance the implementation of outcomes from the 4th Industrial Revolution. Simultaneously, Tu (2020) asserted that emphasis should be placed on the content to enhance the implementation of Strategic Management Accounting in contemporary Vietnamese firms (Chuc, 2020).

The legal evidence indicates a critical need to elucidate the positive correlation between the implementation of SMA and the survival of enterprises through the utilization of appropriate DBA tools in the present micro market. To achieve sustainable corporate success, how can the market effectively employ the SMA tool with the advantageous support of DBA systems? This will be the potential outcome of the investigation.

1.2 Problem Statement

To remain profitable in Vietnam, firms need strategic management accounting to strengthen their core business operations. This is required to meet Vietnamese market needs. On the other hand, the market is a source of misunderstanding on how to accurately evaluate the difficulty that their firm is experiencing at the present time. Some practical research guidelines should be updated to better align strategic management accounting with business opportunities. These guidelines include the competitive advantages that their market contains in depth.

Currently, the research focuses on explaining how strategic management accounting and Big Data Analysis positively impact a company's market value. In conclusion, the research offers several specific recommendations that are designed to aid the market in implementing SMA as rapidly as possible from this point forward in Vietnam, which is a dynamic market in the Southeast Asian region. These recommendations are intended to be implemented in Vietnam.

1.3 Methodology and Research Design's Concise Overview

A review of 130 pertinent papers has been completed, and an effort will be made to incorporate a business research paper published in 2023 in the International Journal of Asian Business and Information Management (IJABIM), 14(1), 1-17. The prior was entitled "Strategic Management Accounting and Competitive Advantage."

1.4 General Population Group's Identification

This analysis excludes multinational firms and concentrates on domestic and international investments in Vietnam. Individuals from Vietnam or other nations possessing a high school diploma, a bachelor's degree, or equivalent qualifications in accounting and taxation are mandated to participate in research studies. They assume many jobs, including students, accountants, officers, and departmental managers. The interview participants will comprise individuals of diverse ages and genders lacking prior work experience.

1.5 Significance of the Study

The study aims to focus on two primary objectives, as outlined in the previously established research framework. The research primarily examines how organizations may develop an efficient framework for big data analysis integrated with a solid business plan to improve the use of strategic management accounting within enterprises. The second step will focus on enhancing the competitive strength of the firms through the implementation of a modern strategic management accounting information system, particularly prioritizing the development of effective business strategy solutions. Proper implementation of the current strategic management accounting information system will ensure that the unique circumstances yield enhanced value for the companies.

Consequently, it may yield tangible results for innovation in the micro market and enhance the theoretical framework for the adaption of the strategic management accounting information system in Vietnam, as presently demonstrated at the national level.

1.6 Study Objectives

This study aims to ascertain the importance of integrating Big Data Analysis into the business analytics tools employed by strategic management accounting to bolster the company's competitive advantage within the framework of contemporary Vietnamese culture. Thus, the way in which the enhanced strategic management accounting framework could be modified to improve the firm's operational performance more efficiently.

2. MATERIALS AND METHODOLOGY

2.1 Literature Review

The paper examines the relationship between Big Data Analysis (BDA) and Business Analytics (BA) in the realm of Strategic Management Accounting (SMA), and its practical implications for enhancing competitive advantages in business. The study analyzed 130 previous research works, identifying 93 units pertaining to the benefits of Business Analytics (BA) to Strategic Management Accounting (SMA), 75 units related to SMA's contribution to Business's Competitive Advantage (CA), and a total of 115 units associated with Big Data Analytics (BDA) and its impact on SMA.

2.1.1 Related Keyword's Definition

2.1.1.1. Definition of Business Analysis Process

A Business Operating Model defines the system's conceptual requirements. This is supplemented by Business Process Analysis, which shows how activities are executed. These process models rely on understanding business events and business rules. Key techniques include event analysis, process modelling, rule analysis, decision tables, and decision trees (Cadle, 2010).

2.1.1.2 Definition of Strategic Management Accounting

Keith (2012) characterized Strategic Management Accounting (SMA) as an ongoing process of analysis, planning, and control that guarantees pertinent information is congruent with the overarching business strategy. It's used spans several organizations (multinational, non-profit) with the primary objective of attaining a strategic advantage (Keith, 2012).

2.1.1.3 Definition of Big Data

Big Data encompasses various concepts, including the technology employed for data storage and processing, as well as the cultural transformation prevalent in an information-saturated business environment and society. Andrea (2015) examined the available literature to accomplish two objectives: to encapsulate important research domains, trends, and prospective prospects, and to provide a cohesive description by integrating prevalent themes (Andrea, 2015).

2.1.1.4 Definition of Competitive Advantage

Competitive advantage is the most commonly employed yet least defined concept in strategic management. Ma (2000) delineated three major observations and examines their correlation with firm performance. The fundamental points were that competitive advantage is not equivalent to higher performance, it is a relational concept, and it is contingent upon circumstance (Ma, 2000).

2.1.2 Related Theories Constituted

2.1.2.1 Systems Theory

Wilkinson convinced that System Theory was a conceptual framework that characterizes a system as an interconnected entity, highlighting the interconnectedness of its components. It emphasized the system's capacity to sustain dynamic equilibrium (homeostasis) while effectively reacting to external inputs (Wilkinson, 2011).

2.1.2.1 Contingency Theory

Lawrence (1967) asserted Contingency Theory that situational factors—such as environment, technology, and size—were key to business operations. The theory explained organizational outcomes by analyzing how these specific contextual elements influence firm behavior and performance (Lawrence, 1967).

2.1.3 Literature Review

2.1.3.1 Scenario of Business Strategy (BS) influencing to Strategic Management Accounting (SMA)

The study investigated the specific parameters that enabled BS to enhance profitability. It analyzed 93 previous studies concerning the correlation between BS and the practical improvement of SMA. The modern business strategies and their implementation have markedly improved the company's strategic market advantage, including the creation of efficient business models. In detail, Guilding (2000), Roslender (2002), Tayles (2002), Cadez (2008), Langfield (2008), Tillmann (2008), Ma (2009), Cinquini (2010), Henri (2010), Hutaibat (2011), Shah (2011), Cadez (2012), Cuganesan (2012), Gond (2012), Nixon (2012), Arjaliès (2013), Aksoylu (2013), Bhimani (2014), Egbunike (2014), Fullerton (2014), De Mauro (2015), Carlsson (2015), Constantiou (2015), Kalkhouran (2015), Pavlatos (2015), Senftlechner (2015), Angrave (2016), Otley (2016), Huerta (2017), Cockcroft (2018), Harlow (2018), Li (2018), Rybicka (2018), Alamri (2019), Cescon (2019), Moll (2019), Zakirova (2019), Bhimani (2020), Petera (2020), Duçi (2021), Flammer (2021), Gunarathne (2021), Hadid (2021), Latifah (2021), Ojra (2021), Ping (2021), Rashid (2021), Shi (2021), Zhang (2021), Alawattage (2022), Asiaei (2022), Ma (2022), Nik (2022), Oyewo (2022), Schaltegger (2022), Appannan (2023), Bresciani (2023), Deb (2023), Di Vaio (2023), Grewatsch (2023), Saputra (2023), Alsharari (2024), Chang (2024), Hendrawan (2024), Odonkor (2024), and others emphasized the necessity of improving the adaptability of SMA to ensure sustained corporate profitability across various specific business domains, including asset structure, credit mediation, liberal origins and neoliberal trends, sustainable performance, organizational information systems, technology management, intellectual capital, strategic cost management, sense-making in multinational corporations, and Resource-Based View (RBV) perspectives.

2.1.4 The Impact of Strategic Management Accounting (SMA) on the innovation of Competitive Advantages within enterprises

The study identified 75 previous researchers involved in strategic management accounting and its advantageous effects on the firm's competitive edge. These cases demonstrated a definitive and positive link between the two previously specified criteria, as elaborated above. Detailly, Guilding (2000), Arithi (2001), Roslender (2002), Tayles (2002), Tillmann (2003), Cooper (2006), Cadez (2008), Tillmann (2008), Ma (2009), Cinquini (2010), Henri (2010), Hutaibat (2011), Shah (2011), Cadez (2012), Cuganesan (2012), Gond (2012), Nixon (2012), Aksoylu (2013), Arjaliès (2013), Bhimani (2014), Fullerton (2014), Carlsson (2015), Constantiou (2015), Kalkhouran (2015), Pavlatos (2015), Senftlechner (2015), Berliantiningrum (2017), Richins (2017), Harlow (2018), Li (2018), Alamri (2019), Cescon (2019), Zakirova (2019), Oyewo (2019), Petera (2020), Duçi (2021), Flammer (2021), Gunarathne (2021), Hadid (2021), Höglund (2021), Rashid (2021), Oyewo (2021), Alawattage (2022), Asiaei (2022), Nik (2022), Ma (2022), Oyewo (2022), Schaltegger (2022), Bresciani (2023), Deb (2023), Grewatsch (2023), Nurhayati (2023), Saleh (2023), Saputra (2023), Hendrawan (2024), Odonkor (2024), Thanasas (2024), and others elucidated the advantageous elements of strategic management accounting and its influence on competitive advantages within businesses, especially with business objectives included Market orientation and deliberate strategy formulation, asset configuration and profitability, credit intermediation sector, Performance Evaluation System for Marketing Enterprises, liberal foundations and neoliberal tendencies, green competitive advantage in sustainable performance, workforce, capital investments, research and development, and corporate social responsibility, organizational information systems, business environment, Technology Management, lean manufacturing and organizational performance, management control systems (MCSs) and sustainability control systems (SCSs), cost dynamics, strategic decision-making, environmental volatility and competitive pressures, organizational culture and information systems, competitor and customer assessments, and cost evaluation through streamlined analytical processes, strategic management accounting techniques (SMAT).

2.1.5 The Impact of Big Data Analysis (DBA) on the innovation of Effective Business Strategy (BS)

The study identified 58 previous researchers involved in Big Data Analysis and its advantageous effects on company strategy. These examples revealed a definitive and positive correlation between the two previously specified requirements, as outlined above. Here, Bhimani (2014), Bertei (2015), Pavlatos (2015), Warren (2015), Edwards (2016), Gamage (2016), Wang (2016), Appelbaum (2017), Huerta (2017), Richins (2017), Bogdan (2018), Cockcroft (2018), Harlow (2018), Rybicka (2018), Moll (2019), Bhimani (2020), Geddes (2020), Mcbride (2022), Arroyo (2021), Ibrahim (2021), Ping (2021), Rashid (2021), Shi (2021), Zhang (2021), Dai (2022), Nik (2022), Sanusi (2022), Dai (2023), Deb (2023), Munir (2023), Saleh (2023), Sun (2023), Abdelhalim (2024), Hendrawan (2024), Odonkor (2024), Thanasas (2024), and others elucidated the beneficial aspects of effective Big Data Analysis (BDA) and its impact on business strategy, particularly concerning objectives such as Strategic Management Accounting (SMA), SMA techniques, asset structure and profitability, environmental management accounting, technology management, process-oriented dynamic capabilities (PODC), Management Control Systems (MCS) and Management Accounting Systems (MAS), Knowledge Management, corporate financial management, digital data environments, corporate strategy, firm structure, information systems, accounting education, intelligent demand for accounting information, machine learning (ML), data mining, cloud technology, and finance.

2.1.5 The Impact of Big Data Analysis (DBA) on the innovation of Effective Strategic Management Accounting (SMA)

The study discovered 57 prior scholars engaged in Big Data Analysis and its beneficial impacts on corporate strategic management accounting. These cases exhibited a definitive and positive correlation between the two previously specified criteria, as outlined above. In detail, Bhimani (2014), Egbunike (2014), Bertei (2015), Pavlatos (2015), Warren (2015), Angrave (2016), Edwards (2016), Gamage (2016), Wang (2016), Appelbaum (2017), Gärtner (2017), Huerta (2017), Richins (2017), Bogdan (2018), Cockcroft (2018), Harlow (2018), Rybicka (2018), Moll (2019), Bhimani (2020), Geddes (2020), Alam (2021), Arroyo (2021), Ibrahim (2021), Shi (2021), Spraakman (2021), Zhang (2021), Dai (2022), Mcbride (2022), Nielsen (2022), Nik (2022), Saleh (2023), Sanusi (2022), Yan (2022), Dai (2023), Munir (2023), Sun (2023), Abdelhalim (2024), Hendrawan (2024), Thanasas (2024), and others elucidated the advantageous facets of effective Big Data Analysis (BDA) and its influence on business strategy, particularly regarding objectives such as SMA on business goals, big data analytics, technology management, competitor and customer analyses, and cost optimization through streamlined analysis processes. Additionally, they addressed the role of asset structure in enterprise profitability, financial forecasting, risk management, fraud detection, strategic decision-making, process-oriented dynamic capabilities (PODC), management control systems (MCS) and management accounting systems (MAS),

strategic management accounting in hotels, knowledge management, corporate financial management, business intelligence (BI), and digital data environments, corporate strategy, organizational structure, information systems, accounting education, sustainability performance measurement, machine learning (ML), cloud technology, accounting and finance, HR analytics, digital economy, financial reporting quality.

2.2 Methodology

2.2.1 Research Method and Design Appropriateness

Initial data for the study objectives were collected via surveys of various firms in Vietnam (excluding multinational corporations and major Vietnamese organizations) throughout the 2025 fiscal year. The statistical software SPSS analysed resolution data. A self-administered questionnaire was employed to gather quantitative data, requiring employees to evaluate their level of agreement on a 5-point scale ([5] strongly agree; [4] agree; [3] neutral; [2] disagree; [1] strongly disagree). An initial exploratory study may utilize a Cronbach's Alpha of 0.6 (Hair, 2009). The scale exhibits more dependability with an increased Cronbach's Alpha. The Total Correlation value of the observed variables must be 0.3 or higher for a scale to be deemed successful (Cristobal, 2007). The Corrected Item-Total Correlation coefficient improves the quality of observed variables. The standard deviation quantifies the dispersion of a dataset in relation to its mean. It calculates the absolute variability of a distribution. The T-test is a statistical instrument employed to compare the means of one or two populations in hypothesis testing (Paul, 2008). Furthermore, it was determined to adjust the particular testing of EFA which includes KMO, Bartlett's test of sphericity, and Eigenvalue in exploratory factor analysis are utilized, to reaffirm the correlation among the sub-elements in the study model and ensure that the model is credible. Moreover, the study will include the CFA tests.

2.2.2 Population, Sampling, Data Collection Procedures and Rationale

The selected business objects were categorized by the type of FDI-Vietnamese enterprises in 2025. The study examined Vietnamese and foreign-invested enterprises in important areas such Northern, Middle, and Central South Vietnam and surrounding provinces. The non-probability sampling approach was then applied to the study issue, and the class sample is used to represent the various categories of investors in Vietnam. In addition, the questionnaire's respondents' gender, level of education, and occupation were taken into consideration while evaluating the sample's characteristics. Consequently, using https://www.qualtrics.com/blog/calculating-sample-size/, total sample sizes in scientific research are adjusted to accurate units, with the margin of error set at 5% and the confidential level set at 95%. The Statistical Package for Social Sciences was used to analyse the research data (SSPS).

2.2.3 Internal and External Validity

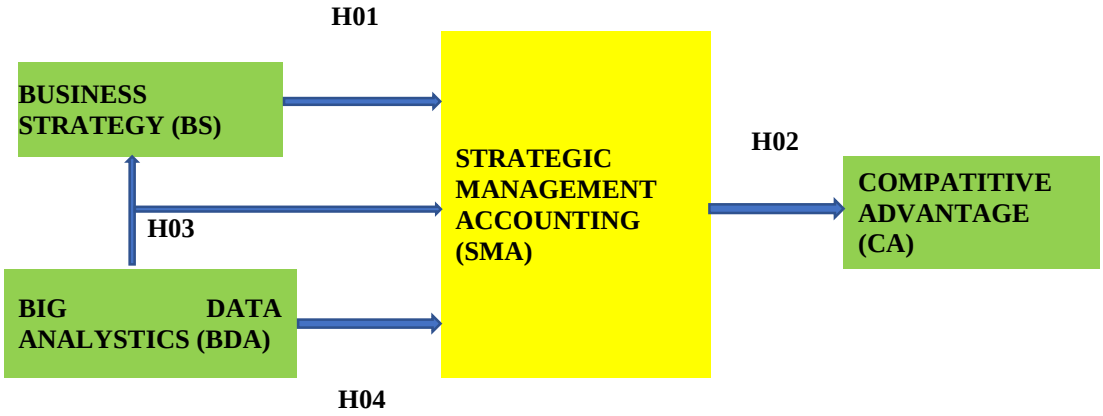
This study analyzed prior research to assess the impact of strategic management accounting on competitive advantage, as detailed by Ditkaew (2023) in the Journal of Asian Business and Information Management (IJABIM), 14(1), 1-17, published in 2023. We initially analyzed 130 previous occurrences in our literature from 2000 to the present. We have established that comparatively few previous studies have been conducted on the same research topic and context as our current investigation in Vietnam.

2.2.4 Research Design

The study design includes five principal dependent variables and five independent variables that collectively form the research framework. Table 01 illustrates the current state of the influence of strategic management accounting on competitive advantage. Furthermore, it substantiates the examination of the interconnections between Business Strategy (BS), Big Data Analysis (BDA), and Strategic Management Accounting (SMA), as well as their effective impact on competitive advantage through the practical use of SMA.

Table 01 illustrates the influence of strategic management accounting on competitive advantage (Ditkaew, 2023).

Inde Variable	**Variables**



2.2.5 Study Hypothesis

Table 02. Null Research Hypotheses (Ho)

H01	Business strategy does not affect strategic management accounting (SMA) positively.
H02	Strategic management accounting (SMA) positively does not affect competitive advantage.
H03	Big data analytics (BDA) does not influence business strategy and the strategic management accounting (SMA) relationship positively.
H04	Big data analytics (BDA) positively does not affect strategic management accounting (SMA).

2.2.6 Statistical Analysis

A self-administered questionnaire was employed to collect quantitative data, necessitating employees to assess their level of agreement on a 5-point scale ([5] strongly agree; [4] agree; [3] neutral; [2] disagree; [1] strongly disagree). An initial exploration study may employ a Cronbach's Alpha of 0.6 (Hair, 2009). The scale exhibits enhanced dependability with an elevated Cronbach's Alpha. The T-test is a statistical tool that facilitates the comparison of the means of one or two populations in hypothesis testing (Paul, 2008). Furthermore, KMO, Bartlett's test of sphericity, and Eigenvalue in exploratory factor analysis are utilized to guarantee the superior quality of the research model. The study subsequently conducts the final CFA testing.

3. RESULTS, ANALYSIS AND FINDINGS

3.1 Sample Characteristics

The research utilized a nonprobability sample. The study identifies eight factors necessary for an individual to be integrated into the group. The research investigates five independent variables and five dependent factors, emphasizing the impact of big data on business analysis via management accounting for decision-making objectives. Comrey (1973), Roger (2006), and Hair et al. (2014) projected that at least 50 (10x5) research surveys from practice will be compelling, and 88 online surveys from a total of 100 data sets have already undergone experimental analysis. Additionally, it obtained sample statistics. The predominant number of participants was below the age of 30. The bulk of participants possess less than five years of industry experience. The bulk of survey samples on research issues showed that Vietnamese

capital predominates in enterprises and organizations. Therefore, we are assured that it will provide adequate data to substantiate the research undertaken here.

Table 03. Description of Researching Objectives

No.	Research Items		Researching %
1	**Gender of the survey subject**	Female	77%
		Male	24.3%
2	**Age of survey subjects**	Under 30 years old	77 %
		Over 30 years old	23 %
3	**Current duration of employment's background**	Less than 5 years of practical accounting	80 %
		Over 5 years of practical accounting experience	20 %
	Current position in the organization	Staff	17%
		Management	24%
		Students	59%
4	**Current working location**	South of VN	90 %
		The rest ones	10 %
5	**Nature of the industry**	Production	7 %
		Trading	69 %
		Others	24 %
6	**The capital structure**	100% Vietnamese	43%
		100% foreign investment	8 %
		Joint venture with FDIs	36 %
		Other	13 %

3.2 Research Variables

Table 04. Description of Research Variables

No	Classification	Researching Questionnaires	References
		Dependent Research Variables	
H11	**Business strategy - SMA**	Proactive strategies include exploring new opportunities, like fortune tellers, in a changing environment.	(Miles et al., 1978)
H12	**Business strategy - SMA**	The defender strategy maintains a stable, predictable, efficient, rigorous, and formal environment, preventing attacks or departure.	(Keyser et al., 2000)
H13	**Business strategy - SMA**	Constantly searching for new products and innovation opportunities, and opinionated creators seeking product and market potential are proactive techniques.	(Guilding, 1999)
		Dependent Research Variables	
H21	**SMA – Competitive Advantage**	The benefits of using SMA include gaining and sustaining a competitive advantage	(International Federation of Accountants, IFAC, 1998; Roslender & Hart, 2003; Oboh & Ajibolade, 2017).
H22	**SMA – Competitive Advantage**	Financial and non-financial SMA may include customer happiness, product development, quality, and financial returns.	(Eker et al., 2017).

		Independent Research Variables	
H31	**BDA - business strategy - SMA**	Strategic management accounting involves analyzing data on a corporation and its rivals to design and monitor business strategy.	(Simmonds, 1981)
H32	**BDA - business strategy - SMA**	SMA is a long-term accounting strategy that focuses on the future and external factors.	(Guilding et al., 2000)
H33	**BDA - business strategy - SMA**	SMA focuses on external and internal data to align goals.	(CIMA, 2005)
		Dependent Research Variables	
H42	**BDA - SMA**	Effective and efficient problem-solving requires a customer-centric system, requiring the usage of IT.	(Torres et al., 2005)
H43	**BDA - SMA**	A positive correlation exists between IT competency and organizational performance.	(e.g.Bharadwaj (2000); Broadbent et al. (1999); Ravinchandran et al.2005; Ray et al., 2005; Wade et al. 2004).

3.3 Data Analysis and Findings

3.3.1 Cronbach Alpha Testing

The study continues to assess its research data by analyzing the reliability of the 10 research variables that demonstrate the relationship between Big Data Analysis (BDA), Business Strategy (BS), and Strategic Management Accounting (SMA) to enhance business performance. The data values are indicated as 0.797 and 0.822 in the references of Tables 05.1.2 and 05.2.2.

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Table 05. Cronbach Alpha Testing

Table 05.1. Reliability Statistics for Dependent Variables

Table 05.1.1. Case Processing Summary

		N	%
Cases	Valid	88	100,0
	Excluded[a]	0	0,0
	Total	88	100,0

a. Listwise deletion based on all variables in the procedure.

Table 05.1.2. Reliability Statistics

Cronbach's Alpha	N of Items
0,797	6

Table 05.1.3. Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
H11	20,7386	7,758	,663	,739

H12	20,6932	8,767	,443	,790
H13	20,7045	8,303	,521	,773
H21	20,6023	8,058	,587	,758
H22	20,7955	8,555	,537	,770
H23	20,7273	7,649	,568	,764

Table 05.2. Reliability Statistics for Independent Variables

Table 05.2.1. Case Processing Summary			
		N	%
Cases	Valid	88	100,0
	Excluded[a]	0	0,0
	Total	88	100,0

a. Listwise deletion based on all variables in the procedure.

Table 05.2.2. Reliability Statistics	
Cronbach's Alpha	**N of Items**
0,822	6

Table 05.2.3. Item-Total Statistics				
	Scale Mean if Item Deleted	**Scale Variance if Item Deleted**	**Corrected Item-Total Correlation**	**Cronbach's Alpha if Item Deleted**
H31	20,9659	7,780	,628	,785
H32	20,8182	8,541	,621	,787
H33	20,8068	8,709	,519	,807
H41	20,8636	8,395	,626	,785
H42	20,8977	8,507	,517	,808
H43	20,8750	8,157	,625	,785

3.3.2 EFA Testing

The sub-conclusion assesses the effectiveness of the study module about the research factors presented in tables 06.1 and 06.2. The results reveal that the KMO of 0.805 and 0.824 (both > 0.5), a significance level of 0.0, and cumulative eigenvalue percentages of 50.045% and 53.251% (≥ 50%) as presented in Table 06.1.3 and Table 06.2.3. Moreover, the variance analysis is illustrated in Table 06.1.4. and Table 06.1.4. Finally, component demonstrated that all variances converged to a single factor. As a result, all assessed outcomes are substantiated, affirming that the study modules (EFA) demonstrated robustness concerning their independent variables, necessitating our ongoing commitment moving forward.

Table 06.1. KMO and Bartlett's Test for Dependent Variables

Table 06.1.1. KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		,805
Bartlett's Test of Sphericity	**Approx. Chi-Square**	142,277
	df	15
	Sig.	,000

Table 06.1.2. Communalities		
	Initial	**Extraction**
H11	1,000	,638
H12	1,000	,355

H13	1,000	,453
H21	1,000	,554
H22	1,000	,489
H23	1,000	,514

Extraction Method: Principal Component Analysis.

Table 06.1.3. Total Variance Explained						
	Initial Eigenvalues			**Extraction Sums of Squared Loadings**		
Component	**Total**	**% of Variance**	**Cumulative %**	**Total**	**% of Variance**	**Cumulative %**
1	3,003	50,045	50,045	3,003	50,045	50,045
2	,882	14,708	64,753			
3	,712	11,873	76,626			
4	,568	9,466	86,093			
5	,463	7,709	93,801			
6	,372	6,199	100,000			

Extraction Method: Principal Component Analysis.

Table 06.1.4. Component Matrix[a]	
	Component
	1
H11	,799
H21	,744
H23	,717
H22	,699
H13	,673
H12	,596
Extraction Method: Principal Component Analysis.	
a. 1 component extracted.	

Table 06.2. KMO and Bartlett's Test for Independent Variables

Table 06.2.1. KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		,824
Bartlett's Test of Sphericity	**Approx. Chi-Square**	161,786
	df	15
	Sig.	,000

Table 06.2.2. Communalities		
	Initial	Extraction
H31	1,000	,586
H32	1,000	,581
H33	1,000	,435
H41	1,000	,578
H42	1,000	,433
H43	1,000	,581

Extraction Method: Principal Component Analysis.

Table 06.2.3. Total Variance Explained		
Component	**Initial Eigenvalues**	**Extraction Sums of Squared Loadings**

	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	3,195	53,251	**53,251**	3,195	53,251	53,251
2	,780	13,005	66,256			
3	,643	10,713	76,969			
4	,547	9,118	86,087			
5	,503	8,385	94,473			
6	,332	5,527	100,000			

Extraction Method: Principal Component Analysis.

Table 06.2.4. Component Matrix[a]	
	Component
	1
H31	,766
H32	,762
H43	,762
H41	,760
H33	,660
H42	,658

Extraction Method: Principal Component Analysis.

a. 1 component extracted.

3.3.3 CFA Testing for Dependent Variables

3.3.3.1 Model Fit

The outcomes of CFA Testing for Dependent Variables are presented in tables 07.1.1, 07.1.2, 07.1.3, and 07.1.4. In detail, the CMIN/DF was computed at 1.662 (<=3), GFI at 0.946 (>=0.9), CFI at 0.955 (>=0.9), and PCLOSE at 0.196 (>=0.05). Consequently, two studies by Baumgartner (1995) and Doll (1994) demonstrated that the study model's fit is adequate.

Table 07.1.1 CMIN					
Model	**NPAR**	**CMIN**	**DF**	**P**	**CMIN/DF**
Default model	12	14,958	9	0,092	1,662
Saturated model	21	0	0		
Independence model	6	147,066	15	0	9,804

Table 07.1.2. RMR, GFI				
Model	**RMR**	**GFI**	**AGFI**	**PGFI**
Default model	0,033	0,946	0,873	0,405
Saturated model	0	1		
Independence model	0,216	0,547	0,365	0,39

Table 07.1.3. Baseline Comparisons					
Model	**NFI**	**RFI**	**IFI**	**TLI**	**CFI**
	Delta1	*rho1*	*Delta2*	*rho2*	
Default model	0,898	0,83	0,957	0,925	0,955
Saturated model	1		1		1
Independence model	0	0	0	0	0

Table 07.1.4. RMSEA

Model	RMSEA	LO 90	HI 90	PCLOSE
Default model	0,087	0	0,163	0,196
Independence model	0,318	0,272	0,366	0

3.3.3.2 Indicator Reliability

Hair et al. (2009) asserted that an observed variable possesses significant explanatory power for the parent factor if its standardized effect coefficient in the Estimate column is equal to or exceeds 0.5. The CFA testing result for Indicator Reliability indicates that the P ratio is already indicated at *** in the table of 07.2.1, and the corresponding dependent variable possesses significant explanatory power for the parent factor. Furthermore, the observed variables have standardized impact coefficients in the Estimate column in Table 07.2.2. that are greater than 0.5, so the observed variables have good explanatory meaning for the parent factor.

Table 07.2.1. Regression Weights: (Default model)

			Estimate	S.E.	C.R.	P
H11	<---	Component	1			
H21	<---	Component	0,894	0,158	5,639	***
H23	<---	Component	0,945	0,18	5,239	***
H22	<---	Component	0,751	0,143	5,273	***
H13	<---	Component	0,758	0,157	4,817	***
H12	<---	Component	0,642	0,149	4,299	***

Table 07.2.2. Standardized Regression Weights:(Default model)

			Estimate
H11	<---	Component	0,76
H21	<---	Component	0,682
H23	<---	Component	0,628
H22	<---	Component	0,633
H13	<---	Component	0,575
H12	<---	Component	0,512

3.3.3.3. Composite Reliability

A composite dependability of dependent variables equal to or exceeding 0.7, as indicated by Hair et al. (2022), signifies that the reliability of the composite model is deemed sufficient. The results, calculated at 0.801 in Table 07.2, indicate that the study demonstrates that its internal consistency reliability is influenced by the number of observed variables on the scale.

Table 07.2. Standardized Regression Weights: (Default model)

			Estimate
H11	<---	Component	0,76
H21	<---	Component	0,682
H23	<---	Component	0,628
H22	<---	Component	0,633
H13	<---	Component	0,575
H12	<---	Component	0,512
Composite Reliability (CR)			**0,801**

3.3.3.4. Convergent Validity

Hulland (1999) asserted that when the Average Variance Extracted (AVE) ranged from 0.4 to 0.7, the standardized loading factor of the variables had to achieve statistical significance. The scale had to be dependable for the observed variable, or the latent variable, to account for over fifty percent of the variance in its observed variables. Hence, the scale currently demonstrated effective convergence. According to Table 07.3, AVE is determined to be 0.5.

Table 07.3. Component Matrix[a]

	Component
	1
H31	,799
H32	,744
H43	,717
H41	,699
H33	,673
H42	,596
AVE (CA)	0,500
SMV(CA)	0,200

3.3.4. CFA Testing for Independent Variables

3.3.3.1 Model Fit

The results of CFA Testing for independent variables are displayed in Tables 08.1, 08.2, 08.3, and 08.4. The CMIN/DF was calculated at 1.41 (<=3), GFI at 0.957 (>=0.9), CFI at 0.976 (>=0.9), and PCLOSE at 0.317 (>=0.05). Thus, two studies by Baumgartner (1995) and Doll (1994) established that the model's fit is satisfactory.

Table 08.1. CMIN					
Model	**NPAR**	**CMIN**	**DF**	**P**	**CMIN/DF**
Default model	12	12,694	9	0,177	1,41
Saturated model	21	0	0		
Independence model	6	167,232	15	0	11,149

Table 08.2. RMR, GFI				
Model	**RMR**	**GFI**	**AGFI**	**PGFI**
Default model	0,026	0,957	0,9	0,41
Saturated model	0	1		
Independence model	0,225	0,504	0,306	0,36

Table 08.3. Baseline Comparisons					
Model	**NFI**	**RFI**	**IFI**	**TLI**	**CFI**
	Delta1	*rho1*	*Delta2*	*rho2*	
Default model	0,924	0,873	0,977	0,96	0,976
Saturated model	1		1		1
Independence model	0	0	0	0	0

Table 08.4. RMSEA				
Model	**RMSEA**	**LO 90**	**HI 90**	**PCLOSE**
Default model	0,069	0	0,149	0,317
Independence model	0,342	0,296	0,389	0

3.3.3.2 Indicator Reliability

According to Hair et al. (2009), the CFA testing results for Indicator Reliability demonstrate that the P ratio is denoted as *** in Table 08.6, and the associated dependent variable exhibits substantial explanatory power for the parent factor. Moreover, the observed variables have standardized effect coefficients exceeding 0.5 in the Estimate column of Table 08.5, indicating that they possess significant explanatory power for the parent factor.

Table 08.5. Standardized Regression Weights: (Default model)			
			Estimate
H31	<---	Component	0,714
H32	<---	Component	0,73
H43	<---	Component	0,707
H41	<---	Component	0,69
H33	<---	Component	0,564
H42	<---	Component	0,559

Table 08.6. Regression Weights: (Default model)						
			Estimate	**S.E.**	**C.R.**	**P**
H31	<---	Component	1			
H32	<---	Component	0,827	0,14	5,91	***
H43	<---	Component	0,896	0,156	5,755	***
H41	<---	Component	0,814	0,144	5,638	***
H33	<---	Component	0,686	0,146	4,69	***
H42	<---	Component	0,726	0,156	4,646	***

3.3.3.3. Composite Reliability

Composite Reliability is computed as 0.824 in Table 08.7, indicating that the study's internal consistency reliability is affected by the quantity of observed variables on the scale (Hair, 2022).

Table 08.7. Standardized Regression Weights: (Default model)			
			Estimate
H31	<---	Component	0,714
H32	<---	Component	0,73
H43	<---	Component	0,707
H41	<---	Component	0,69
H33	<---	Component	0,564
H42	<---	Component	0,559
Composite Reliability (CR)			**0.824**

3.3.3.4. Convergent Validity

Table 08 indicates that the Average Variance Extracted (AVE) is 0.533, suggesting that the latent variable accounts for over half of the variance in its observed variables, hence demonstrating adequate convergence of the scale. Hulland (1999).

Table 08.8. Component Matrix[a]	
	Component
	1
H31	,766
H32	,762
H43	,762
H41	,760
H33	,660

H42	,658
AVE (CA)	**0,533**
SMV(CA)	**0,191**

3.3.4. Mean Testing

The study elucidated the necessity of employing means testing. Their testing outcomes are elucidated in the Descriptive Statistics of Table 09. The average mean consistently surpasses 4.000, indicating that the interviewers' perspectives align with the favorable correlation between Big Data Analysis, Business Strategy, and Strategic Management Accounting for their effective business performance.

Table 9. Descriptive Statistics

Descriptive Statistics					
	N	**Minimum**	**Maximum**	**Mean**	**Std. Deviation**
H11	88	1,00	5,00	4,1136	,79411
H12	88	2,00	5,00	4,1591	,75637
H13	88	1,00	5,00	4,1477	,79567
H21	88	1,00	5,00	4,2500	,79148
H22	88	2,00	5,00	4,0568	,71692
H23	88	1,00	5,00	4,1250	,90735
H31	88	2,00	5,00	4,0795	,87391
H32	88	3,00	5,00	4,2273	,70674
H33	88	2,00	5,00	4,2386	,75801
H41	88	2,00	5,00	4,1818	,73571
H42	88	1,00	5,00	4,1477	,80999
H43	88	2,00	5,00	4,1705	,79106
Valid N (listwise)	88				

3.3.5. T-One Testing

In addition, T-One Testing has been applied in the research investigation in order to validate the accuracy of its concepts. As a consequence of examining the findings of the research testing, we have come to the conclusion that the null research hypotheses, H01, H02, H03, and H04, will be rejected. This conclusion is based on the fact that Table 10.02 of the One-Sample Test contains a significant value of .000 for the two-tailed test.

Table 10.1. Descriptive Statistics

One-Sample Statistics				
	N	**Mean**	**Std. Deviation**	**Std. Error Mean**
H11	88	4,1136	,79411	,08465
H12	88	4,1591	,75637	,08063
H13	88	4,1477	,79567	,08482
H21	88	4,2500	,79148	,08437
H22	88	4,0568	,71692	,07642
H23	88	4,1250	,90735	,09672
H31	88	4,0795	,87391	,09316
H32	88	4,2273	,70674	,07534
H33	88	4,2386	,75801	,08080
H41	88	4,1818	,73571	,07843
H42	88	4,1477	,80999	,08635

H43	88	4,1705	,79106	,08433

Table 10.2. One-Sample Test

One-Sample Test						
	Test Value = 3.41					
	T	Df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
H11	8,312	87	,000	,70364	,5354	,8719
H12	9,291	87	,000	,74909	,5888	,9094
H13	8,698	87	,000	,73773	,5691	,9063
H21	9,956	87	,000	,84000	,6723	1,0077
H22	8,464	87	,000	,64682	,4949	,7987
H23	7,392	87	,000	,71500	,5228	,9072
H31	7,187	87	,000	,66955	,4844	,8547
H32	10,848	87	,000	,81727	,6675	,9670
H33	10,255	87	,000	,82864	,6680	,9892
H41	9,841	87	,000	,77182	,6159	,9277
H42	8,544	87	,000	,73773	,5661	,9093
H43	9,018	87	,000	,76045	,5928	,9281

3.3.6. SEM Analysis on AMOS

3.3.6.1. SEM Analysis on AMOS for Effected Strategic Management Accounting (ESMA) to Business Strategies (BS)

Tables 11.1 illustrates the comprehensive effect relationships of latent variables, which encompass independent variables such as strategic management accounting tools (SMA) and market competitiveness elements (CA), as well as the relationships between latent variables and their corresponding observed variables.

All impacts of Strategic Management Accounting (SMA) on Business Strategy (BS) are significant, since the p-value (***) is below 0.05, except for its association with Business Strategy (BS), which is negligible due to environmental variations. Thus, SMA can affect the overall BS factor. Furthermore, Competitive Advantage (CA) significantly influences SMA, as indicated by a p-value (***) of 0.000 in AMOS.

Tables 11.2 and 11.3 show SMA's impact declining from 33.1% in H13 (technological development strategy) to 26.2% in H12 (defensive business strategy). Tables 11.2 and 11.3 show a decline in Competitive Advantage (CA) impact on Strategic Management Accounting (SMA): Hypothesis 21 at 46.4%, Hypothesis 22 at 40%, and Hypothesis 23 at 39.5%.

Table 11.1. Regression Weights

			Estimate	S.E.	C.R.	P	Label
H11	<---	Component	1				
H21	<---	Component	0,894	0,16	5,639	***	
H23	<---	Component	0,945	0,18	5,239	***	
H22	<---	Component	0,751	0,14	5,273	***	
H13	<---	Component	0,758	0,16	4,817	***	
H12	<---	Component	0,642	0,15	4,299	***	

Table 11.2. Standardized Regression Weights

			Estimate
H11	<---	Component	0,76
H21	<---	Component	0,682
H23	<---	Component	0,628
H22	<---	Component	0,633
H13	<---	Component	0,575
H12	<---	Component	0,512

Table 11.3. Squared Multiple Correlations	
	Estimate
H12	0,262
H13	0,331
H22	0,4
H23	0,395
H21	0,464
H11	0,578

3.3.6.2. SEM Analysis on AMOS for Big Data Analysis (BDA)

Table 11.4 illustrates the comprehensive relationships among latent variables, encompassing independent factors like Big Data Analysis (DBA) and dependent variables such as SMA and BS, together with the associations between latent variables and their corresponding observable variables. All effects of Business Strategy (BS) on Database Administration (DBA) are substantial, since the p-value (***) is below 0.05, except for its correlation with Business Strategy (BS), which is insignificant due to competing studied variance. Consequently, BS can influence the overall DBA factor. Moreover, SMA exerts a substantial impact on DBA, as evidenced by a p-value (***) of 0.000 in AMOS.

Tables 11.5 and 11.6 illustrate BS's influence on BDA decreasing from 73% in H32 (long-term business plan) to 26.2% in H33 (SMA's capacity to leverage internal and external forces). Tables 11.5 and 11.6 indicate a reduction in the impact of SMA on BDA: H43 (IT and Corporate Governance) at 50%, H41 (SMA's capacity to leverage external and internal performance and effectiveness) at 47.6%, and H42 (problem-solving in IT) at 31.2%.

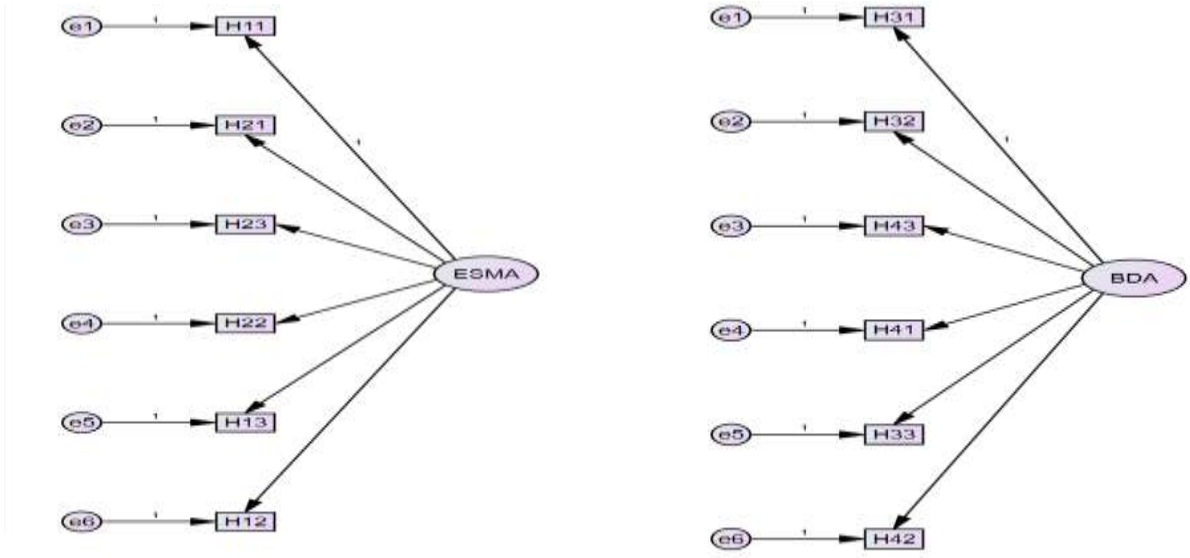
Table 11.4. Regression Weights							
			Estimate	**S.E.**	**C.R.**	**P**	**Label**
H31	<---	Component	1				
H32	<---	Component	0,827	0,14	5,91	***	
H43	<---	Component	0,896	0,156	5,755	***	
H41	<---	Component	0,814	0,144	5,638	***	
H33	<---	Component	0,686	0,146	4,69	***	
H42	<---	Component	0,726	0,156	4,646	***	

Table 11.5. Standardized Regression Weights			
			Estimate
H31	<---	Component	0,714
H32	<---	Component	0,73
H43	<---	Component	0,707
H41	<---	Component	0,69
H33	<---	Component	0,564
H42	<---	Component	0,559

Table 11.6. Squared Multiple Correlations	
	Estimate
H42	0,312
H33	0,318
H41	0,476
H43	0,5
H32	0,533
H31	0,509

3.3.6.2. SEM Analysis Modules on AMOS

Table 12. SEM Analysis Mode



CONCLUSIONS AND RECOMMENDATIONS

4.1 Discussion of Findings

The Cronbach Alpha coefficients for the eight research variables in the study exceed 0.6 (Hair, 2009). Moreover, EFA and CFA testing surpass their respective criteria due to their precise calculations. Thus, the study model is trustworthy, its related variable elements demonstrate consistent reliability, and its research scale exhibits enough convergence. The study further examines SEM testing and demonstrates the beneficial effects of SMA and CA on the research variables, including DBA and BS.

Consequently, it compromises the integrity of the study's research variables and eventually affects the future evaluation of the hypotheses. Table 10.2, One-Sample Test, indicates that the significant (2-tailed) results are definitively established at .000. The study can clarify their research findings by the following precise methods. The study must reject its null hypotheses $H0_1$, $H0_2$, $H0_3$, and $H0_4$. In conclusion, the amalgamation of Big Data Analysis and Business Strategy will significantly augment the competitive advantages of firms in the contemporary Vietnamese market via incremental innovation in Strategic Management Accounting.

4.2. Recommendations

Although the research module successfully assessed the beneficial effects of Big Data Analysis in conjunction with enhanced Business Strategy on strategic management accounting and the company's competitive advantage in the market, it failed to elucidate the specific mechanisms through which Big Data Analysis could bolster corporate competitive power via the application of strategic management accounting in modern Vietnamese enterprises. Consequently, subsequent research should focus on these issues and illustrate the implementation of specific methodologies in Big Data Analysis within small and medium-sized enterprises (SMEs) in the Vietnamese market, as well as in various comparable global market environments.

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