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Linking Big Data Analytics Capabilities to Business Success Through Content Marketing in Hospitality and Tourism SMEs

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Abstract

Although the use of customer data is growing in hospitality and tourism businesses, the role of analytics capabilities in business success through marketing is not clear. This study aimed to investigate the structural relationships among Big Data Analytics Capabilities (BDAC), Content Marketing (CM), and Business Success (BS), as well as to examine the statistical mediating role of Content Marketing. A cross-sectional questionnaire survey was employed to collect 385 usable responses from business owners, executive directors, and managers of hospitality and tourism enterprises in Chumphon Province, Thailand, who possessed relevant knowledge of business operations, customer data management, and digital marketing activities. The data were analyzed using partial least squares structural equation modelling (PLS-SEM). The results indicated significant positive relationships between BDAC and BS ($\beta = 0.341$), BDAC and CM ($\beta = 0.416$), and CM and BS ($\beta = 0.295$). Content marketing also had a significant indirect effect on the relationship between BDAC and BS ($\beta = 0.123$), providing support for partial mediation. The model explained 28.7% of the variance in BS. Importance–performance map analysis further identified BDAC as the more influential antecedent of BS in terms of its total effect. From a practical perspective, the findings suggest that hospitality and tourism SMEs operating under resource constraints should prioritise reliable customer data, analytical skills, and the effective conversion of customer insights into relevant marketing content, rather than relying on technology investment alone. The findings supported positive relationships among Big Data Analytics Capabilities, Content Marketing, and Business Success as perceived by the respondents. However, the cross-sectional research design does not establish causal relationships, and this study did not directly measure environmental and social sustainability outcomes.

Keywords: big data analytics capabilities; content marketing; business success; hospitality and tourism businesses; Thailand

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1. Introduction

Digital transformation has emerged as a significant driver shaping business development, particularly within the hospitality and tourism industry. In Thailand, the shift towards an innovation-driven economy has placed increasing emphasis on digital technologies, data utilization, human capital development, and organizational competitiveness [1]. Against this context, hospitality and tourism small and medium-sized enterprises (SMEs)

contribute substantially to regional employment, income distribution, and economic development. Their capacity to respond to evolving market conditions is consequently important to sustaining long-term economic resilience. Yet, limited financial, technological, and human resources frequently constrain SMEs' ability to gather, analyze, and apply customer information effectively in managerial and marketing decision-making.

Tourism continues to make a substantial contribution to Thailand's economy, generating employment, supporting regional development, and creating revenue [2]. At the same time, the industry must contend with shifting market conditions and increasingly heterogeneous consumer expectations. From 1 January to 11 May 2025, Thailand received approximately 12.9 million international tourist arrivals, a decline of 1%, while international tourism revenue was projected to decrease by 2% [3]. These trends underscore the need for well-informed business decisions, especially among SMEs serving regional tourism markets. In Chumphon Province, hospitality and tourism enterprises must adjust to changing customer preferences while operating within financial, technological, and human-resource limitations. Big Data Analytics Capabilities (BDAC) offer a potential means of addressing these challenges by facilitating the collection, management, and interpretation of customer information for business and marketing decision-making.

Although prior research has established associations between BDAC and organizational performance, further investigation is needed to clarify how analytical capabilities relate to particular marketing practices. Previous studies have largely explored intermediate mechanisms involving process-oriented dynamic capabilities [4], entrepreneurial orientation [5], and disruptive business models [6]. These perspectives illuminate broader organizational and strategic processes, but offer less insight into how customer information is transformed into marketing communication that is relevant to specific audiences. Similarly, ref. [7] highlighted the importance of big data and marketing analytics in developing organizational marketing capabilities. Nevertheless, the mediating role of Content Marketing (CM), particularly Content Marketing Accuracy (CMA) and Content Audience Alignment (CAA), remains insufficiently examined among hospitality and tourism SMEs.

To address this gap, the present study investigates CM as a customer-facing mechanism through which BDAC is associated with perceived Business Success (BS). Although innovation-related and organizational mediators tend to focus on broader strategic or operational processes, CM centres on using customer insights to improve message relevance and audience alignment. The proposed framework draws on the Resource-Based View (RBV), which highlights the strategic value of organizational resources and capabilities, alongside Dynamic Capability Theory (DCT), which offers a complementary explanation of how organizations adapt their practices in response to changing customer requirements. Investigating these relationships among hospitality and tourism SMEs in Chumphon Province offers a context-specific perspective on the associations between analytics capabilities, marketing practices, and business outcomes in resource-constrained settings.

The primary objective of this study is therefore to examine the direct relationships among BDAC, CM, and BS, together with the mediating role of CM. The study makes three contributions to the literature. First, it extends the application of RBV and DCT by investigating how organizational analytics capabilities and marketing practices relate to perceived business success. Second, it identifies content marketing accuracy and audience alignment as a distinct customer-facing mechanism, differentiating this approach from organizational mediators examined in previous research. Third, it provides empirical evidence and practical insights for hospitality and tourism SMEs seeking to strengthen data-informed marketing decisions. While the relationships examined may have implications for economic resilience and resource utilization, the study neither establishes causal effects nor directly measures environmental and social sustainability outcomes.

2. Literature Review and Hypotheses Development

2.1. Theoretical Background

This study integrates the Resource-Based View (RBV) and Dynamic Capability Theory (DCT) to explain the relationships among Big Data Analytics Capabilities (BDAC), Content Marketing (CM), and Business Success (BS). Although both theoretical perspectives focus on organizational capabilities, they offer complementary explanations of how firms develop and utilize internal resources.

The Resource-Based View explains variations in organizational performance in terms of the possession and effective utilization of valuable and difficult-to-imitate resources [8]. From this perspective, data, technological infrastructure, and human expertise constitute potential organizational resources. However, these resources do not necessarily create business value on their own. Their contribution depends on how effectively they are integrated and applied within organizational processes. In this study, BDAC is conceptualized as an organizational capability comprising consumer data collection capability, consumer data quality, and data analytics capability. Together, these dimensions represent a firm's ability to acquire, maintain, and analyze customer information to support business decision-making.

Dynamic Capability Theory complements this resource-based perspective by emphasizing the importance of adapting and reconfiguring organizational resources in response to changing business environments [9]. This perspective is particularly relevant to hospitality and tourism businesses, where customer preferences, service demand, and digital communication practices may change rapidly. BDAC may facilitate adaptive business processes by helping firms identify emerging customer preferences and adjust their marketing activities accordingly. Nevertheless, this study treats BDAC as an organizational analytics capability that may facilitate dynamic processes rather than as a direct measure of dynamic capabilities themselves.

The integration of these perspectives explains the proposed relationships in two ways. First, RBV supports the expectation that firms with stronger analytics capabilities may achieve better business outcomes through more effective utilization of organizational resources. Second, DCT offers a complementary explanation of how firms may use data-derived customer insights to adapt their marketing communication practices. Within this framework, content marketing serves as a customer-facing mechanism through which analytical capabilities are applied to develop relevant and appropriately targeted communication. Accordingly, BDAC may be associated with business success both directly and indirectly through content marketing.

Taken together, RBV and DCT provide a theoretical foundation for investigating how organizational analytics capabilities are associated with business success through their application in customer-oriented marketing activities.

2.2. Big Data Analytics Capabilities and Business Success

The Resource-Based View (RBV) proposes that organizational performance depends partly on the effective utilization of valuable resources and capabilities [8]. Within this framework, Big Data Analytics Capabilities (BDAC) constitute an organizational capability that enables firms to integrate data, technology, and analytical expertise to support decision-making. Ref. [10] developed and empirically examined a multidimensional conceptualization of BDAC, while [11] demonstrated the relevance of BDAC and its alignment with business strategy to firm performance. Similarly, ref. [4] identified direct and indirect relationships between BDAC and firm performance through process-oriented dynamic capabilities. Collectively, these studies indicate that the value of analytics capabilities depends not simply on technology ownership but also on their effective organizational application.

Empirical evidence from hospitality businesses further supports this argument. Ref. [12] found that the use of big data analytics was associated with improved hotel performance, including financial performance, customer retention, and reputation. Ref. [13] likewise identified positive relationships among BDAC, organizational agility, innovation, and firm performance in Malaysian hotels. In Thailand, ref. [14] reported a positive relationship between social media analytics and SME performance. Although these studies differ in how they operationalize analytics capabilities and business outcomes, they provide relevant evidence of the organizational value of data-informed decision-making. Accordingly, stronger BDAC is expected to be positively associated with perceived business success among hospitality and tourism SMEs. On the basis of these theoretical principles and empirical findings, the following hypothesis is proposed:

Hypothesis 1 (H1). *Big Data Analytics Capabilities have a positive direct effect on Business Success.*

2.3. Big Data Analytics Capabilities and Content Marketing

Dynamic Capability Theory emphasizes the importance of adapting organizational activities to changing market conditions [9]. In digital marketing, BDAC may facilitate such adaptation by transforming customer information into actionable insights that inform content development and audience targeting. Ref. [15] highlighted the importance of marketing analytics in data-rich environments, particularly for understanding customers, personalization, and marketing decision-making. Ref. [7] empirically demonstrated that big data use supports marketing analytics, which in turn strengthens organizational marketing capabilities, including marketing planning, implementation, brand management, and customer relationship management.

In the hospitality industry, ref. [16] examined the role of digital marketing analytics in supporting knowledge-driven digital transformation within organizations. This study provides a relevant foundation for understanding the application of data in marketing activities. However, further evidence is needed to explain the specific relationship between Big Data Analytics Capabilities and the accuracy and suitability of marketing content delivered to target audiences.

In this study, Content Marketing is operationalized through Content Marketing Accuracy (CMA) and Content Audience Alignment (CAA). CMA concerns the relevance and timeliness of marketing messages, whereas CAA reflects the extent to which content characteristics correspond to the preferences of target audience segments. BDAC may support both dimensions by enhancing firms' understanding of customer needs and enabling the development of relevant, audience-appropriate communications. Therefore, stronger BDAC is expected to be positively associated with content marketing practices. Drawing on these theoretical foundations and the supporting empirical evidence, the following hypotheses are proposed:

Hypothesis 2 (H2). *Big Data Analytics Capabilities have a positive direct effect on Content Marketing.*

2.4. Content Marketing and Business Success

Content Marketing is an organizational marketing practice through which firms communicate valuable and relevant information to existing and potential customers. Ref. [17] conceptualized digital content marketing as a means of fostering consumer engagement, trust, and value, highlighting the importance of relevant and meaningful brand-related content. In the hospitality context, ref. [18] experimentally investigated social media con-

tent strategies and demonstrated the importance of content characteristics and response congruence for customer engagement, hotel brand image, and booking intentions.

More recently, ref. [19] reported positive relationships among digital content marketing, consumer trust, digital engagement, and brand attitude in a hospitality-related social commerce context. Similarly, ref. [20] examined the role of content marketing within a model linking smart experience and green health tourism. Although these studies primarily focused on consumer-level outcomes rather than organizational business success, they illustrate how relevant digital content may contribute to favorable customer responses.

For hospitality and tourism SMEs, content marketing accuracy and audience alignment may improve the communication of service information, facilitate customer understanding, and increase the relevance of marketing activities. These mechanisms may, in turn, contribute to more favorable perceptions of organizational performance. Accordingly, Content Marketing is expected to be positively associated with Business Success. Consequently, based on these theoretical principles and empirical evidence, the following hypothesis is proposed:

Hypothesis 3 (H3). *Content Marketing has a positive direct effect on Business Success.*

2.5. Content Marketing as a Mediating Variable

The integration of RBV and Dynamic Capability Theory suggests that the contribution of organizational capabilities to business outcomes may depend on the processes through which firms deploy their resources. Previous studies have identified several mechanisms linking BDAC to organizational performance. Ref. [4] demonstrated the mediating role of process-oriented dynamic capabilities, whereas [6] identified partial mediation through disruptive business models. These findings suggest that the relationship between analytical capabilities and organizational outcomes may operate through different strategic and managerial mechanisms.

Research on marketing provides further theoretical support for examining these mechanisms. Ref. [21] found that holistic marketing decision-making mediated the relationship between marketing analytics capability and competitive marketing performance. Similarly, ref. [22] developed a conceptual framework linking BDAC, marketing agility, and firm performance, emphasizing the importance of adaptive marketing processes. These studies demonstrate the relevance of marketing-related mechanisms while examining constructs that differ from content marketing accuracy and audience alignment.

This study extends the discussion by conceptualizing Content Marketing as a specific customer-facing mechanism through which analytical insights are translated into relevant and appropriately targeted communications. Unlike mediators that emphasize organizational agility, business model innovation, or general marketing decision-making, this mechanism focuses on applying customer information to improve message relevance and audience fit. Stronger BDAC may therefore enhance content marketing practices, which may subsequently be associated with perceived business success. Based on the integration of the Resource-Based View and Dynamic Capability Theory, together with relevant empirical evidence, Content Marketing is proposed as a mechanism that may help explain the relationship between Big Data Analytics Capabilities and Business Success. Accordingly, the following research hypothesis is proposed.

Hypothesis 4 (H4). *Content Marketing mediates the relationship between Big Data Analytics Capabilities and Business Success.*

3. Research Model

The conceptual framework presented in Figure 1 draws on the Resource-Based View (RBV), Dynamic Capability Theory (DCT), and prior research concerning Big Data Analytics Capabilities (BDAC), Content Marketing (CM), and Business Success (BS). RBV offers a theoretical basis for explaining how organizational resources and capabilities relate to business outcomes, whereas DCT complements this perspective by addressing firms' capacity to adapt their capabilities and marketing practices in response to evolving customer requirements. Building on these theoretical foundations, the proposed model investigates the direct relationship between BDAC and BS and the indirect relationship mediated by CM, with particular attention to Content Marketing Accuracy (CMA) and Content Audience Alignment (CAA).

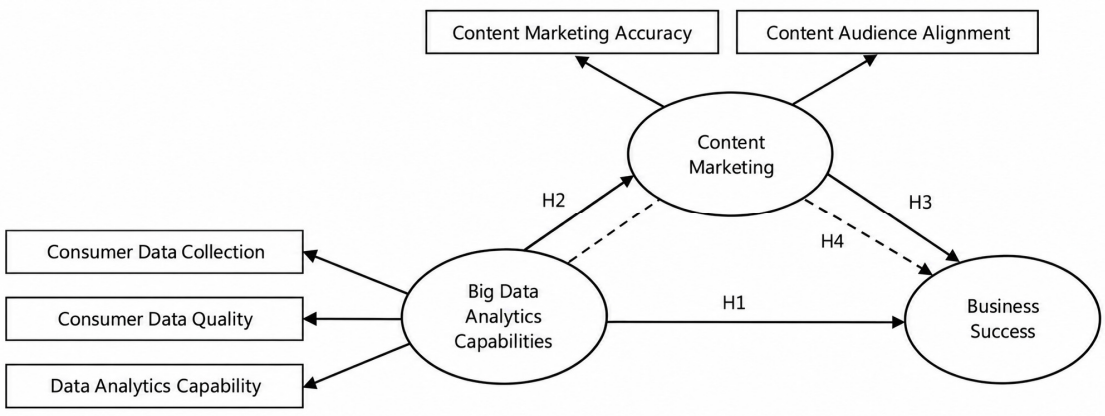


Figure 1. Research model.

To capture their multidimensional characteristics, the research model conceptualizes BDAC and CM as higher-order constructs. BDAC consists of three lower-order dimensions: Consumer Data Collection Capability (CDCC), Consumer Data Quality (CDQ), and Data Analytics Capability (DAC). Together, these dimensions characterize an organization's ability to acquire, maintain, and analyze consumer information. CM, in turn, comprises two lower-order dimensions, CMA and CAA, which reflect the relevance and timeliness of marketing messages and the extent to which those messages correspond to the characteristics and preferences of their intended audiences. Representing BDAC and CM at the higher-order level allows the model to examine their relationships with perceived business success while preserving the theoretically specified dimensions of each construct.

The specification of the higher-order measurement model was considered in light of the conceptual properties of its constituent dimensions. Although the dimensions of BDAC and CM are theoretically associated, each captures a distinct organizational or marketing attribute. Accordingly, the relationships between the lower-order dimensions and their respective higher-order constructs require theoretical justification as well as empirical evaluation. A central consideration is the distinction between reflective and formative measurement, which determines whether lower-order dimensions are understood as manifestations of a higher-order construct or as components that define it. In this study, both BDAC and CM were specified as reflective–reflective hierarchical component models. Under this specification, the lower-order dimensions are modeled as reflective manifestations of their corresponding higher-order constructs. Given the conceptual differences among these dimensions, the suitability of this specification must be evaluated carefully against its underlying theoretical assumptions and measurement properties. The estimation procedure and the assessment of reliability and validity at both measurement levels are detailed in Section 5.

4. Methods

4.1. Survey Administration and Sample

A cross-sectional questionnaire survey was conducted among hospitality and tourism businesses in Chumphon Province, Thailand. The study used non-probability purposive sampling to identify 400 business establishments relevant to the research objectives. The business establishment served as the unit of analysis, with one respondent representing each participating enterprise. Eligible participants comprised business owners, executive directors, and managers with relevant knowledge of business operations, customer data management, and digital marketing activities.

Data were collected between 14 August and 25 September 2026 using a Thai-language online questionnaire distributed through Google Forms. Invitations were sent directly to the 400 purposively selected establishments, and eligible respondents were invited to participate voluntarily. After data screening, 385 complete and usable questionnaires were retained, yielding a usable questionnaire rate of 96.25% of the establishments invited. Because each establishment contributed only one respondent, the final dataset consisted of 385 respondents representing 385 distinct business establishments, with no multiple responses from the same enterprise.

The sample comprised hotels (47.27%), restaurants (28.57%), travel services (14.29%), and travel agencies (9.87%). In terms of organizational size, 46.50% of the businesses employed fewer than 20 people, 50.10% employed between 20 and 50 people, and 3.40% employed more than 50 people. Although purposive sampling enabled the recruitment of informed organizational respondents across several hospitality and tourism business categories, the non-probability sampling design and geographical concentration constrain the statistical generalizability of the findings to the broader population of hospitality and tourism SMEs, as reported in Table 1.

Table 1. Sample characteristics.

Factor	*N* = 385	%	Factor	*N* = 385	%
Gender			Type of Business		
Male	142	36.90	Hotel	182	47.27
Female	243	63.10	Restaurant	110	28.57
Age			Travel services	55	14.29
20–30 Years old	50	13.00	Travel agency	38	9.87
31–40 Years old	241	62.60	Scale of Business		
41–50 Years old	88	22.90	Less than 20 employees	179	46.50
51–60 Years old	5	1.30	20–50 employees	193	50.10
Above 60 years old	1	0.20	More than 50 employees	13	3.40
Education			Channel of Advertising		
Below bachelor's degree	113	29.40	Facebook	45	11.70
Bachelor's degree	265	68.80	Instagram	81	21.00
Postgraduate	7	1.80	TikTok	67	17.40
Position			Website	84	21.80
Entrepreneur	113	29.40	Marketplace	80	20.80
Executive Director	265	68.80	Line OA	28	7.30
Manager	7	1.80			
Working time					
Less than 1 Year	92	23.90			
1–5 Years	135	35.10			
6–10 Years	111	28.80			
More than 10 Years	47	12.20			

4.2. Pilot Test

The pilot test was conducted with 30 respondents using a questionnaire containing 30 measurement items, producing an overall respondent-to-item ratio of 1:1. However, because internal consistency was assessed separately for six dimensions, each comprising five items, the respondent-to-item ratio within each dimension was 6:1. The purpose of the pilot test was to obtain an initial assessment of questionnaire clarity and internal consistency, rather than to establish definitive validation of the measurement model. Subsequent evaluation of the complete measurement model was undertaken using the main sample of 385 respondents. Regarding internal consistency, it was assessed using Cronbach's alpha coefficients, with a value greater than 0.70 established as the threshold for acceptable reliability [23], as detailed in Table 2.

Table 2. Pilot test reliability summary.

Construct	Items	Cronbach's Alpha
Big Data Analytics Capabilities (BDAC)		
Consumer Data Collection Capability (CDCC)	5	0.842
Consumer Data Quality (CDQ)	5	0.855
Data Analytics Capability (DAC)	5	0.798
Content Marketing (CM)		
Content Marketing Accuracy (CMA)	5	0.828
Content Audience Alignment (CAA)	5	0.885
Business Success (BS)	5	0.812

4.3. Measures and Questionnaire Development

The questionnaire contained 30 items covering six first-order constructs: Consumer Data Collection Capability (CDCC), Consumer Data Quality (CDQ), Data Analytics Capability (DAC), Content Marketing Accuracy (CMA), Content Audience Alignment (CAA), and Business Success (BS). These constructs were grouped under three principal variables: Big Data Analytics Capabilities (BDAC), Content Marketing (CM), and Business Success (BS). The measurement framework drew on established literature addressing organizational analytics capabilities, information quality, content marketing, and organizational performance. Each of the six first-order constructs was assessed using five indicators rated on a five-point Likert scale.

Big Data Analytics Capabilities (BDAC) was conceptualized as a multidimensional organizational capability encompassing CDCC, CDQ, and DAC. The conceptual basis for CDCC was drawn from [10,24], particularly their treatment of organizational data access, data integration, and information-related resources. CDQ was informed by the information quality frameworks developed by [25,26], which emphasize data accuracy, completeness, timeliness, and consistency. DAC was grounded in the literature on organizational analytics capabilities, including [10,11,24], with particular emphasis on analytical skills, technological resources, and data-informed decision-making. Collectively, these three dimensions represent the organizational capabilities required to acquire, maintain, and analyse consumer information.

Content Marketing (CM) was operationalized as a multidimensional construct consisting of Content Marketing Accuracy (CMA) and Content Audience Alignment (CAA), each measured using five indicators. CMA reflects perceived message relevance, the development of customer-oriented content, and the timing of communication. CAA, by contrast, captures the perceived alignment of marketing content with the characteristics of intended audience segments. This operationalization reflects the study's specific focus on data-

informed content relevance and audience targeting, rather than attempting to encompass the entire range of content marketing activities.

The conceptualization of CMA drew on studies addressing customer-perceived content value, relevance, personalization, and communication timing [27–29]. The CAA dimension was similarly informed by research examining target-audience relevance, content personalization, and advertising intrusiveness [28–30]. Although the two dimensions are related conceptually, they capture distinct aspects of content marketing. CMA primarily concerns the relevance, accuracy, and timeliness of marketing messages, whereas CAA addresses the extent to which content is appropriate for the characteristics, expectations, and communication preferences of particular audiences.

With respect to item coding, the fifth Content Audience Alignment (CAA5) item, "Marketing content does not cause intrusion or generate negative sentiments among consumers," is phrased negatively but expresses a positive underlying meaning. Greater agreement with the statement indicates that respondents perceive marketing content as less intrusive and less likely to provoke negative consumer reactions. Accordingly, the item was coded positively and did not require reverse coding.

Business Success (BS) was conceptualized as perceived organizational performance, drawing on research into subjective performance assessment and the multidimensional character of business outcomes [31–34]. Five indicators were used to assess perceived improvements in operational performance, customer growth, competitive position, brand recognition, and organizational stability. This operationalization captures respondents' evaluations of business-related outcomes rather than objective financial performance or directly measured environmental and social sustainability outcomes.

The specific wording of the measurement items and their corresponding literature sources is provided in Table 3, while the measurement specifications are reported in Table 4. The measurement instrument was developed based on concepts and construct dimensions drawn from relevant studies, with the content of the questionnaire items adapted to reflect the operational context of tourism and hospitality businesses in Thailand.

Table 3. Constructs, measurement items, and literature sources.

Variable	Measurement Items	References
	Big Data Analytics Capabilities (BDAC)	
Consumer Data Collection Capability (CDCC)	1. The organization can efficiently collect consumer data from multiple digital channels. 2. The organization possesses systems or tools that systematically record consumer data. 3. The organization is capable of tracking customer search and booking behaviors. 4. The organization can capture and store data from customer interactions on social media platforms. 5. The organization can continuously and consistently gather customer information.	[10,24]
Consumer Data Quality (CDQ)	1. The consumer data possessed by the organization is accurate and reliable. 2. The consumer data is comprehensive and sufficient for analytical purposes. 3. The consumer data is up-to-date and current. 4. The consumer data is consistent across different data sources. 5. The consumer data is regularly updated and verified for accuracy.	[25,26]

Table 3. *Cont.*

Variable	Measurement Items	References
Data Analytics Capability (DAC)	1. The organization can analyze consumer data to understand customer behaviors. 2. The organization utilizes data to support marketing decision-making. 3. The organization can transform raw data into valuable insights. 4. The organization possesses personnel with specialized data analytics skills. 5. The organization utilizes digital tools or software to assist in data analysis.	[10,11,24]
	Content Marketing (CM)	
Content Marketing Accuracy (CMA)	1. Digital marketing content aligns with the needs of the target audience. 2. Marketing content accurately reflects consumer interests. 3. Marketing content is primarily designed based on consumer data. 4. Marketing content aligns with the customer's decision-making timeline. 5. Marketing content helps answer questions or resolve consumer problems.	[27–29]
Content Audience Alignment (CAA)	1. Marketing content is appropriate for the characteristics of the target audience. 2. Marketing content aligns with the expectations of each tourist segment. 3. Marketing content can clearly segment the target recipients. 4. The formats and language used in the content align with the target audience. 5. Marketing content does not cause intrusion or generate negative sentiments among consumers.	[28–30]
Business Success (BS)	1. The business has achieved an improvement in overall operational performance. 2. The number of customers or service users has consistently increased. 3. The business has enhanced its competitive advantage. 4. The business has gained wider recognition or achieved a better brand image. 5. The business can operate with long-term stability.	[31–34]

Table 4. Construct measurement specification.

Construct	Specification	Higher-Order Dimensions and Specification
Big Data Analytics Capabilities (BDAC)	Reflective	Higher-order constructs: (1) Consumer Data Collection Capability, (2) Consumer Data Quality, and (3) Data Analytics Capability
Content Marketing (CM)	Reflective	Higher-order constructs: (1) Content Marketing Accuracy and (2) Content Audience Alignment
Business Success (BS)	Reflective	Five reflective indicators

4.4. Data Analysis

This study used Partial Least Squares Structural Equation Modeling (PLS-SEM) in SmartPLS 4.0 to evaluate the reliability and validity of the measurement model and examine the structural relationships specified in the proposed hierarchical research model. PLS-SEM was selected because it can estimate relationships among multiple latent constructs, accommodate hierarchical measurement structures, and address prediction-oriented

research objectives. Statistical significance was evaluated through nonparametric bootstrapping based on 5000 resamples, using two-tailed tests and percentile-based 95% confidence intervals [35].

To determine whether the sample size was adequate, an additional power-based calculation was conducted using an F-test for linear multiple regression with a fixed model and R^2 deviation from zero, consistent with the G*Power 3.1 framework. The calculation specified a medium effect size ($f^2 = 0.15$), a significance level of 0.05, statistical power of 0.80, and two predictors, corresponding to the maximum number of direct predictors of an endogenous construct in the proposed model. Under these assumptions, the minimum required sample size was 68 observations. Survey invitations were therefore distributed to 400 purposively selected business establishments, allowing for potential nonresponse, incomplete questionnaires, and unusable submissions. This recruitment strategy provided a practical margin above the minimum statistical requirement and reduced the likelihood that data loss would result in an inadequate analytical sample. In total, 385 complete and usable questionnaires were obtained from 385 distinct business establishments, yielding a usable questionnaire rate of 96.25% relative to the 400 establishments invited. The final sample considerably exceeded the calculated minimum. Nevertheless, an adequate sample size does not, in itself, establish model validity. Measurement quality, structural diagnostics, bootstrap confidence intervals, and out-of-sample predictive performance were therefore also examined [35,36].

The higher-order constructs were specified as reflective–reflective hierarchical component models and estimated using the repeated indicators approach, following [37]. Big Data Analytics Capabilities (BDAC) was operationalized as a second-order construct comprising Consumer Data Collection Capability (CDCC), Consumer Data Quality (CDQ), and Data Analytics Capability (DAC), represented by 15 indicators in total. Content Marketing (CM) was likewise modeled as a second-order construct comprising Content Marketing Accuracy (CMA) and Content Audience Alignment (CAA), represented by 10 indicators. Under the repeated indicators approach, the indicators assigned to each lower-order component were also included in the measurement of its corresponding higher-order construct. The relationships between the higher-order constructs and their respective lower-order components were interpreted as measurement loadings rather than structural effects. Before examining the structural relationships, reliability, convergent validity, and discriminant validity were assessed at both measurement levels. This procedure facilitated the joint estimation of the multidimensional constructs and their interrelationships within the proposed PLS-SEM framework.

5. Results

5.1. Measurement Model

The measurement model was assessed separately for the first-order and second-order reflective constructs using Cronbach's alpha (CA), composite reliability (CR), and average variance extracted (AVE). Among the first-order constructs, CA values ranged from 0.889 to 0.909, CR values from 0.918 to 0.932, and AVE values from 0.692 to 0.734 (Table 5). For the second-order constructs, CA ranged from 0.889 to 0.947, CR from 0.918 to 0.953, and AVE from 0.574 to 0.692 (Table 6). These results satisfy the commonly recommended thresholds of 0.70 for internal consistency reliability and 0.50 for convergent validity [35,38]. Discriminant validity was examined using both the Fornell–Larcker criterion and the heterotrait–monotrait (HTMT) ratio. At both measurement levels, the square root of AVE exceeded the corresponding interconstruct correlations (Tables 5 and 6). The highest reported HTMT ratios were 0.821 for the first-order constructs and 0.505 for the second-order constructs (Tables 7 and 8), both below the commonly applied threshold of 0.85. Collec-

tively, these results provide support for the reliability, convergent validity, and discriminant validity of the measured constructs.

Table 5. Reliability, convergent validity, and Fornell–Larcker discriminant validity (first-order constructs).

	1	2	3	4	5	6
Fornell–Larcker Discriminant Validity						
1. Business Success (BS)	**0.832**					
2. Content Audience Alignment (CAA)	0.426	**0.856**				
3. Consumer Data Collection Capability (CDCC)	0.426	0.340	**0.839**			
4. Consumer Data Quality (CDQ)	0.411	0.309	0.735	**0.838**		
5. Content Marketing Accuracy (CMA)	0.382	0.719	0.355	0.332	**0.838**	
6. Data Analytics Capability (DAC)	0.410	0.354	0.693	0.693	0.386	**0.857**
Mean	3.762	3.756	3.741	3.740	3.741	3.725
Standard Deviation	0.727	0.761	0.747	0.755	0.748	0.783
AVE	0.692	0.733	0.704	0.703	0.703	0.734
Cronbach's Alpha	0.889	0.909	0.895	0.894	0.894	0.909
Composite Reliability	0.918	0.932	0.922	0.922	0.922	0.932

Note: Bold diagonal values represent the square roots of the average variance extracted (AVE), while off-diagonal values represent correlations between constructs.

Table 6. Reliability, convergent validity, and Fornell–Larcker discriminant validity (second-order constructs).

	1	2	3
Fornell–Larcker Discriminant Validity			
Big Data Analytics Capabilities (BDAC)	**0.757**		
Business Success (BS)	0.463	**0.832**	
Content Marketing (CM)	0.416	0.437	**0.786**
Mean	3.735	3.762	3.748
Standard Deviation	0.623	0.727	0.699
AVE	0.574	0.692	0.617
Cronbach's Alpha	0.947	0.889	0.931
Composite Reliability	0.953	0.918	0.942

Note: Bold diagonal values represent the square roots of the average variance extracted (AVE), while off-diagonal values represent correlations between constructs.

Table 7. HTMT discriminant validity (first-order constructs).

	1	2	3	4	5	6
1. Business Success (BS)						
2. Content Audience Alignment (CAA)	0.473					
3. Consumer Data Collection Capability (CDCC)	0.478	0.376				
4. Consumer Data Quality (CDQ)	0.460	0.342	0.821			
5. Content Marketing Accuracy (CMA)	0.428	0.797	0.396	0.371		
6. Data Analytics Capability (DAC)	0.455	0.389	0.767	0.768	0.429	

Table 8. HTMT discriminant validity (second-order constructs).

	1	2	3
1. Big Data Analytics Capabilities (BDAC)			
2. Business Success (BS)	0.505		
3. Content Marketing (CM)	0.443	0.479	

Indicator reliability was additionally examined through standardized outer loadings and their squared values. As reported in Table 9, the outer loadings of the 30 first-order indicators ranged from 0.813 to 0.876, exceeding the commonly recommended threshold of 0.708. Their corresponding squared loadings ranged from approximately 0.661 to 0.767, indicating that the respective latent constructs accounted for more than 50% of the variance in each indicator. At the higher-order level, loadings for the lower-order components ranged from 0.889 to 0.931, providing further evidence of satisfactory measurement relationships under the specified reflective hierarchical model. Considered alongside the internal consistency, convergent validity, and discriminant validity results, these findings support the adequacy of the measurement model.

Table 9. Outer loadings and indicator reliability of first-order constructs.

Construct	Item Code	Outer Loading (λ)	Indicator Reliability (λ^2)
Consumer Data Collection Capability (CDCC)	CDCC1	0.834	0.696
	CDCC2	0.859	0.738
	CDCC3	0.823	0.677
	CDCC4	0.826	0.682
	CDCC5	0.853	0.728
Consumer Data Quality (CDQ)	CDQ1	0.836	0.699
	CDQ2	0.845	0.714
	CDQ3	0.847	0.717
	CDQ4	0.850	0.722
	CDQ5	0.813	0.661
Data Analytics Capability (DAC)	DAC1	0.853	0.728
	DAC2	0.863	0.745
	DAC3	0.845	0.714
	DAC4	0.865	0.748
	DAC5	0.858	0.736
Content Marketing Accuracy (CMA)	CMA1	0.821	0.674
	CMA2	0.842	0.709
	CMA3	0.839	0.704
	CMA4	0.828	0.686
	CMA5	0.863	0.745
Content Audience Alignment (CAA)	CAA1	0.876	0.767
	CAA2	0.851	0.724
	CAA3	0.849	0.721
	CAA4	0.867	0.752
	CAA5	0.837	0.701
Business Success (BS)	BS1	0.828	0.686
	BS2	0.837	0.701
	BS3	0.823	0.677
	BS4	0.846	0.716
	BS5	0.825	0.681

5.2. Structural Model

The estimated structural model accounted for 28.7% of the variance in Business Success (BS; $R^2 = 0.287$) and 17.3% of the variance in Content Marketing (CM; $R^2 = 0.173$). These results indicate that the model explains a proportion of the variance in both endogenous constructs, although its explanatory coverage remains partial. Despite the statistical significance of all hypothesized relationships, the R^2 values indicate that a substantial share of the variance in perceived business success remains unexplained by the predictors included in the model. The findings should therefore be interpreted as identifying relevant associations among organizational capabilities, marketing practices, and business outcomes, rather than

as providing an exhaustive account of business success. Other determinants, such as service quality, competitive conditions, financial resources, and managerial experience, may also contribute to business success but were not examined in this study, as shown in Figure 2.

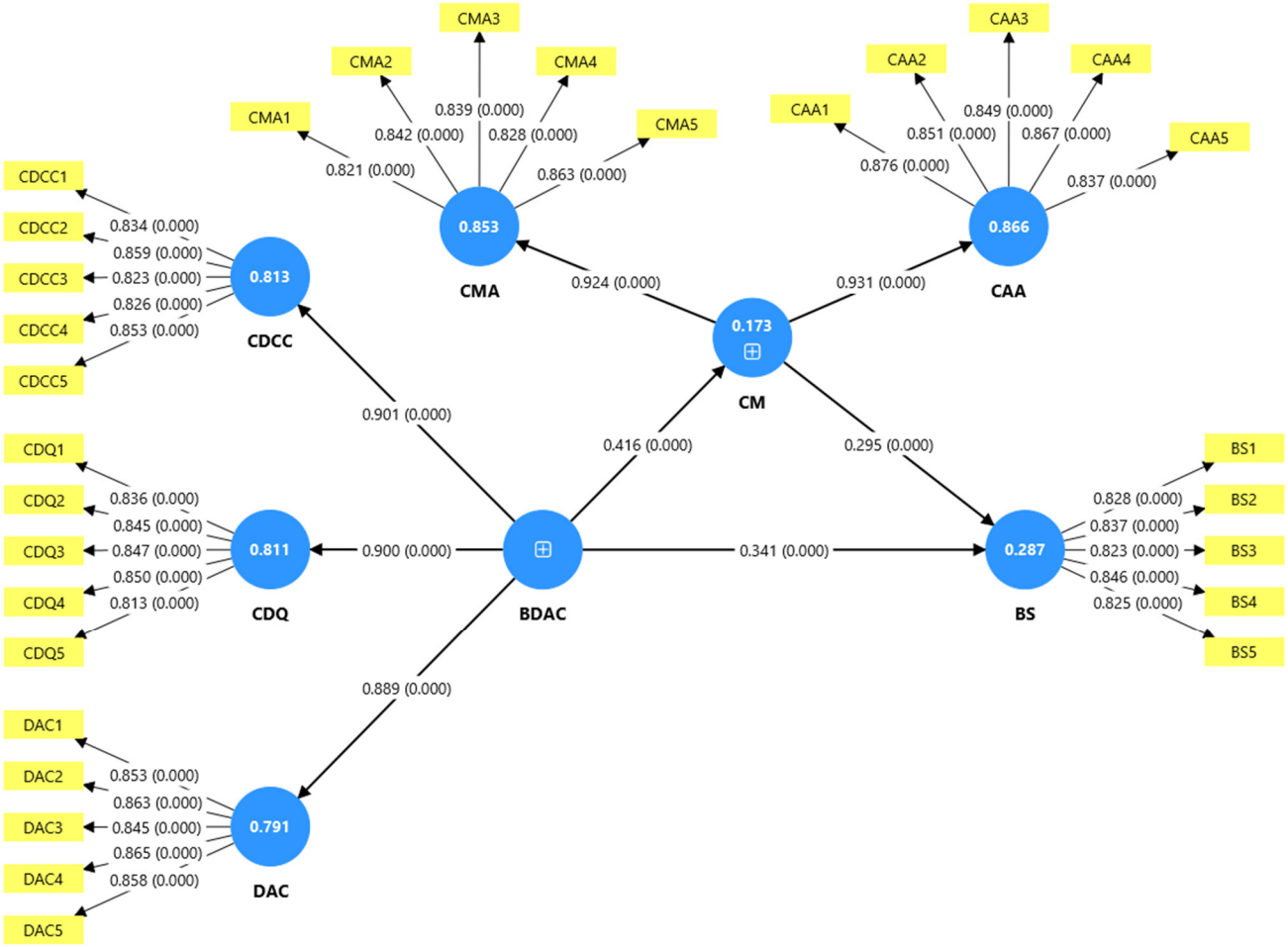


Figure 2. Structural model.

The structural equation modeling (SEM) analysis was performed to examine the hypothesized relationships through which Big Data Analytics Capabilities influence Business Success, with Content Marketing specified as a mediating variable. The empirical findings are categorized into two primary sections: direct effects and indirect effects, with the comprehensive statistical indices detailed in Table 10.

Table 10. Path Analysis (coefficients of direct effect, indirect effect, and total effect).

Dependent Variable	**CM**			**BS**		
Independent Variable	**DE**	**IE**	**TE**	**DE**	**IE**	**TE**
BDAC	0.416	-	0.416	0.341	0.123	0.464
CM	-	-	-	0.295	-	0.295

Note: BDAC = Big Data Analytics Capabilities, CM = Content Marketing, BS = Business Success.

The analysis of direct effects revealed a positive relationship between Big Data Analytics Capabilities and Business Success ($\beta = 0.341$, S.E. = 0.048, t = 7.051, $p < 0.001$, 95% CI [0.246, 0.435]). BDAC was also positively associated with Content Marketing ($\beta = 0.416$, S.E. = 0.043, t = 9.570, $p < 0.001$, 95% CI [0.327, 0.499]). In turn, Content Marketing

demonstrated a positive relationship with Business Success ($\beta = 0.295$, S.E. = 0.049, t = 5.992, $p < 0.001$, 95% CI [0.201, 0.394]). Accordingly, the results supported Hypotheses 1–3.

The mediation analysis further demonstrated a significant indirect effect of Big Data Analytics Capabilities on Business Success through Content Marketing ($\beta = 0.123$, S.E. = 0.026, t = 4.677, $p < 0.001$, 95% CI [0.076, 0.180]). This result provided support for Hypothesis 4.

The results of hypothesis testing are presented in Table 11, which summarizes the tests of the hypothesized relationships among Big Data Analytics Capabilities, Content Marketing, and Business Success.

Table 11. Summary of structural paths and results.

	Hypothesis	Path Coefficients (β)	S.E.	t-Values	*p*-Values	95% CI	Results
H1	BDAC → BS	0.341	0.048	7.051	<0.001	[0.246, 0.435]	Supported
H2	BDAC → CM	0.416	0.043	9.570	<0.001	[0.327, 0.499]	Supported
H3	CM → BS	0.295	0.049	5.992	<0.001	[0.201, 0.394]	Supported
H4	BDAC → CM → BS	0.123	0.026	4.677	<0.001	[0.076, 0.180]	Supported
	Total: BDAC → BS	0.464	0.041	11.172	<0.001	[0.383, 0.544]	

Note: S.E. = standard error; *p*-values are reported as inequalities rather than 0.000; BDAC = Big Data Analytics Capabilities, CM = Content Marketing, BS = Business Success.

Structural collinearity was examined using variance inflation factors (VIFs). The resulting VIF values ranged from 1.000 to 1.210, suggesting that multicollinearity among the predictors in the specified structural equations was not substantial. The f^2 effect sizes were 0.134 for BDAC → BS, 0.210 for BDAC → CM, and 0.101 for CM → BS. These estimates indicate that BDAC made a moderate incremental contribution to explaining CM, whereas the individual contributions of BDAC and CM to BS were comparatively smaller. Together with the path coefficients and R^2 values, these diagnostics provide additional insight into predictor collinearity and the incremental explanatory contribution of each relationship, as reported in Table 12.

Table 12. Structural collinearity and effect sizes.

Structural Relationship	Structural VIF	f^2	Effect-Size Interpretation
BDAC → BS	1.210	0.134	Small, approaching medium
BDAC → CM	1.000	0.210	Medium
CM → BS	1.210	0.101	Small

Note: BDAC = Big Data Analytics Capabilities, CM = Content Marketing, BS = Business Success.

5.3. Importance–Performance Map Analysis (IPMA)

To complement the structural model assessment and provide greater managerial insight into the antecedents of Business Success (BS), an Importance–Performance Map Analysis (IPMA) was conducted using SmartPLS, with BS specified as the target construct. IPMA extends the interpretation of PLS-SEM results by simultaneously considering two dimensions: importance, represented by the total effect of a predecessor construct on the target construct, and performance, represented by the corresponding latent-variable performance score on a 0–100 scale [35]. By jointly considering these two dimensions, IPMA facilitates the identification of constructs that offer comparatively greater potential for managerial improvement.

The Importance–Performance Map Analysis (IPMA), presented in Table 13 and Figure 3, indicated that Big Data Analytics Capabilities (BDAC) had greater importance for Business Success (BS), with a total effect of 0.464, than Content Marketing (CM), which had a total effect of 0.295. In terms of performance, CM attained a marginally higher score of 68.719 than

BDAC, which scored 68.393. The relatively small difference suggests that the two constructs exhibited comparable performance levels. Nevertheless, BDAC had greater importance in relation to Business Success despite its slightly lower performance score.

Table 13. Importance (total effects) of antecedents of Business Success in the IPMA.

Construct	Importance (Total Effects)	Performance (0–100)
Big Data Analytics Capabilities	0.464	68.393
Content Marketing	0.295	68.719

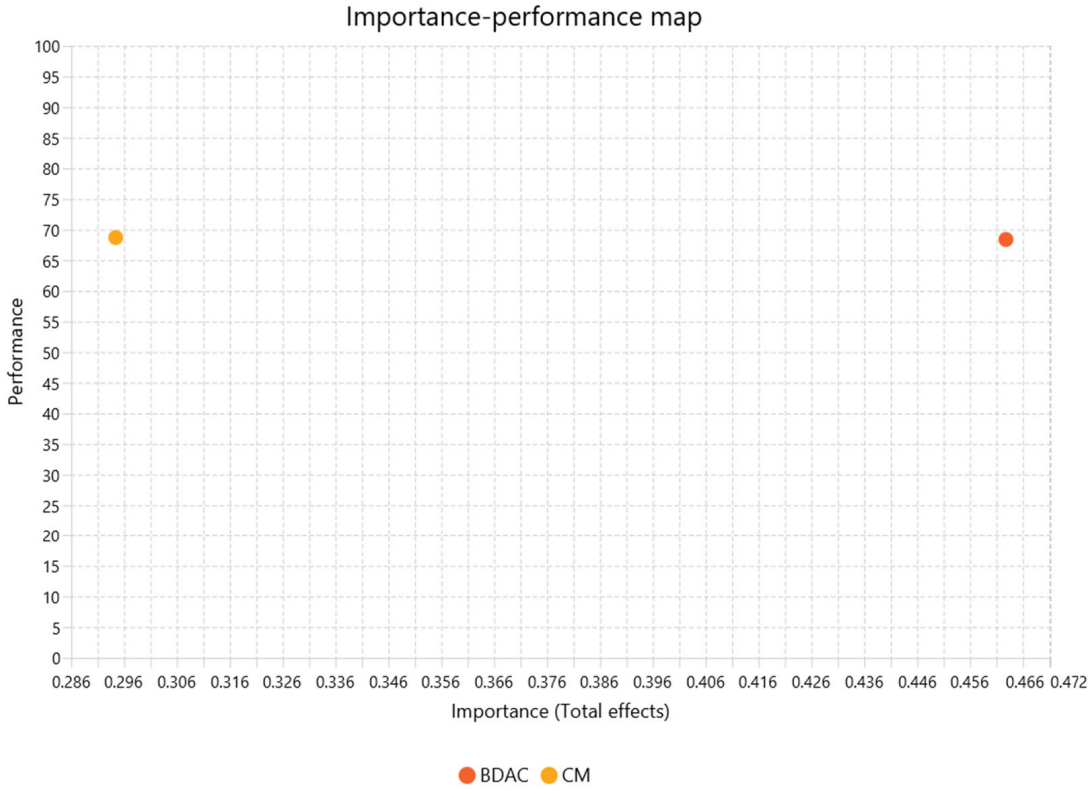


Figure 3. Importance–Performance map analysis for business success.

Figure 3 presents the relative importance and performance of BDAC and CM in relation to Business Success. Although the performance scores were similar, BDAC exhibited substantially greater importance. This pattern suggests that strengthening BDAC could warrant greater managerial attention among hospitality and tourism SMEs seeking to improve business outcomes. However, the IPMA results do not support the assignment of specific quadrant classifications because the corresponding classification thresholds were not defined.

Although CM had a lower importance score of 0.295, its marginally higher performance score of 68.719 underscores its continuing relevance to Business Success. The significant indirect effect of BDAC on BS through CM also supports the interpretation of content marketing as a mediating mechanism. Taken together, these findings suggest that hospitality and tourism SMEs should prioritize the development of data analytics capabilities and integrate these capabilities effectively into content marketing activities to support Business Success.

At the higher-order construct level, the IPMA identified BDAC as the more influential antecedent of Business Success, with a total effect of 0.464 compared with 0.295 for Content Marketing. This result highlights organizational analytics capabilities as a potentially important focus for managerial attention. However, the present IPMA did not estimate the importance–performance positions of the individual BDAC dimensions—Consumer Data

Collection Capability, Consumer Data Quality, and Data Analytics Capability—separately. Consequently, the findings do not establish which specific BDAC dimension should receive the highest statistical priority. Further IPMA at the dimension level would be required to identify such priorities more precisely.

5.4. Common Method Bias Assessment

Potential common method bias (CMB) arising from the cross-sectional, single-source survey was examined using the full collinearity variance inflation factor (VIF) test, following [39]. As reported in Table 14, the full collinearity VIF values for BDAC, CM, and BS were 1.371, 1.332, and 1.402, respectively. All values were below the suggested cut-off of 3.30, indicating that the specified full collinearity diagnostic did not identify severe collinearity of the kind that may be associated with common method bias. Nevertheless, this diagnostic alone cannot definitively exclude all forms of method bias.

Table 14. Full collinearity VIF assessment for common method bias.

Construct	Full Collinearity VIF	Assessment
Big Data Analytics Capabilities (BDAC)	1.371	Below 3.30
Content Marketing (CM)	1.332	Below 3.30
Business Success (BS)	1.402	Below 3.30

5.5. Predictive Assessment

The model's out-of-sample predictive performance was examined using PLSpredict and the Cross-Validated Predictive Ability Test (CVPAT) in SmartPLS 4. The analysis involved 10-fold cross-validation repeated 10 times, with the software's Fixed Seed option applied to maintain consistent random data partitioning and facilitate reproducibility under identical settings. Predictive performance was evaluated using Q^2_predict, root mean square error (RMSE), and mean absolute error (MAE), with the linear model (LM) used as the benchmark.

As reported in Table 15, all five BS indicators yielded positive Q^2_predict values, ranging from 0.135 to 0.152. The PLS-SEM model also produced lower RMSE and MAE values than the LM benchmark for each of the five indicators. These results provide evidence of out-of-sample predictive relevance for the measures of BS.

Table 15. Out-of-Sample Predictive Assessment of Business Success.

Indicator	Q^2_Predict	PLS RMSE	LM RMSE	PLS MAE	LM MAE
BS1	0.138	0.797	0.817	0.618	0.634
BS2	0.135	0.803	0.821	0.612	0.623
BS3	0.145	0.847	0.878	0.653	0.675
BS4	0.151	0.837	0.868	0.661	0.685
BS5	0.152	0.762	0.785	0.601	0.620

Note: BS = Business Success.

The CVPAT assessment used mean squared error (MSE) as the criterion for evaluating prediction loss. The analysis involved 10-fold cross-validation repeated 10 times. At the latent-variable level, the reported prediction losses represented the aggregation of squared prediction errors across the indicators of the respective endogenous constructs. Repeated cross-validation was applied to reduce dependence on individual random data partitions and obtain more stable estimates of predictive performance. The resulting average prediction losses were then compared with those of the indicator-average (IA) and linear model (LM) benchmarks.

The CVPAT results offered further evidence of predictive performance. At the latent-variable level, the model achieved significantly lower prediction loss for BS than both the indicator-average benchmark, with a loss difference of −0.111 ($p < 0.001$), and the linear model benchmark, with a loss difference of −0.040 ($p < 0.001$). A comparable pattern emerged for CM, for which prediction loss was significantly lower than that of the indicator-average benchmark (−0.082, $p < 0.001$) and the linear model benchmark (−0.037, $p < 0.001$), as presented in Table 16.

Table 16. CVPAT—latent variable assessment.

Target	Benchmark	PLS Loss	Benchmark Loss	Loss Difference	*p*-Value
BS	Indicator Average	0.656	0.767	−0.111	<0.001
BS	Linear Model	0.656	0.696	−0.040	<0.001
CM	Indicator Average	0.714	0.796	−0.082	<0.001
CM	Linear Model	0.714	0.751	−0.037	<0.001

Note: CM = Content Marketing, BS = Business Success.

Overall, the results indicate that the proposed model demonstrated out-of-sample predictive ability for BS and CM under the specified cross-validation procedure. These findings complement the model's in-sample explanatory performance but should not be construed as evidence of causal relationships.

6. Discussion

This study investigated the relationships among Big Data Analytics Capabilities (BDAC), Content Marketing (CM), and Business Success (BS) among hospitality and tourism SMEs in Chumphon Province, Thailand. The results supported all four hypotheses: BDAC was positively associated with both CM and BS, CM was positively associated with BS, and CM partially mediated the relationship between BDAC and BS. These findings offer insight into how organizational analytics capabilities relate to business outcomes through customer-oriented marketing practices. Informed by the Resource-Based View (RBV) and Dynamic Capability Theory (DCT), the discussion focuses on the organizational processes that may account for these associations, without treating statistically significant coefficients as conclusive evidence of causation.

The positive relationship between BDAC and BS ($\beta = 0.341$) supports H1 and accords with the RBV, which identifies the effective deployment of organizational resources and capabilities as a foundation for competitive advantage [8]. The finding suggests that the business value of customer data may depend on an organization's capacity to collect reliable information, preserve data quality, and incorporate analytical insights into managerial decision-making. Similarly, ref. [10] conceptualized BDAC as a capability arising from the integration of organizational resources, while [11] emphasized the importance of aligning analytics capabilities with business strategies. Empirical findings reported by [4] also linked BDAC with firm performance, including the contribution of process-oriented dynamic capabilities. In the hospitality sector, ref. [12] associated the use of big data analytics with favorable hotel performance outcomes, whereas [13] identified relationships among BDAC, organizational agility, innovation, and firm performance. More specifically, ref. [40] investigated the relationship between big data capabilities and organizational performance in hospitality, highlighting knowledge management and sustainability marketing as mechanisms for generating business value. Collectively, this literature supports the view that analytics capabilities may contribute to organizational outcomes when integrated into relevant managerial and marketing processes. The present findings extend this perspective to hospitality and tourism SMEs in a regional Thai setting, where the combination of reliable

customer information and analytical expertise may be particularly valuable to businesses operating under resource constraints. Nevertheless, the observed association does not demonstrate that BDAC independently causes improvements in business performance.

Regarding H2, the positive association between BDAC and CM ($\beta = 0.416$) indicates that organizations reporting stronger capabilities in collecting, managing, and analyzing customer data also tend to report more developed content marketing practices that align with target audience needs. One possible explanation is that customer insights help organizations create more relevant and targeted marketing messages. This interpretation is consistent with Dynamic Capability Theory (DCT), which emphasizes the adaptation of organizational resources and practices in response to changing market conditions [9]. Nevertheless, the cross-sectional design of the study does not establish that BDAC directly causes changes in content marketing practices. Research by [7] linked the use of big data and marketing analytics to organizational marketing capabilities, including marketing planning, implementation, and customer relationship management. Likewise, ref. [41] demonstrated that data analytics can facilitate marketing agility, with market knowledge specificity playing a mediating role. Their findings underscore that the value of analytics depends partly on the conversion of information into market-relevant knowledge. In tourism and hospitality, ref. [42] illustrated how web analytics and big data can inform the optimization of multichannel digital marketing, while [16] examined the use of behavioral analytics in knowledge-driven hospitality management. Ref. [43] further established the relevance of marketing analytics and marketing agility to hotel performance. Although these studies offer complementary evidence that analytical information can support adaptive marketing activities, they do not directly examine content marketing accuracy and audience alignment in the manner adopted here. In addition, ref. [44] stressed that the strategic application of big data in marketing depends on interconnected organizational capabilities rather than isolated technological investments. The positive BDAC–CM association may therefore reflect the importance of combining analytical resources with the organizational capacity to translate customer insights into marketing communication. In the proposed model, this process is captured specifically through Content Marketing Accuracy (CMA) and Content Audience Alignment (CAA), rather than through the broader spectrum of digital marketing activities.

The positive relationship between CM and BS ($\beta = 0.295$) supports H3 and highlights the potential value of translating customer knowledge into relevant marketing communication. Although collecting and analyzing customer data concern the acquisition and interpretation of information, content marketing focuses on communicating information that reflects the needs and expectations of target audiences. Ref. [17] proposed that relevant and valuable digital content can contribute to consumer engagement, trust, and brand-related value. Within hospitality, ref. [18] showed that social media content characteristics and response congruence can influence customer engagement, hotel brand image, and booking intentions. The relevance of content marketing in technology-enabled tourism experiences was also examined by [20]. Further evidence from [45] indicated that the linguistic characteristics of social media communication and patterns of customer engagement can differ across tourism crisis contexts, underscoring the need to adapt communication to the circumstances of particular audiences. More recently, ref. [46] found a positive relationship between content alignment involving destination marketing organizations' own photographs and curated user-generated photographs and Instagram engagement. Although these studies focus primarily on consumer engagement and communication outcomes rather than organizational business success, they reinforce the importance of content characteristics and audience fit in tourism marketing. For hospitality and tourism SMEs, marketing communication that reflects customer needs, appropriate message characteristics,

and audience preferences may facilitate more effective marketing interactions. However, customer engagement, trust, loyalty, and booking intentions were not directly assessed as intervening variables in the present study. These factors should consequently be regarded as plausible explanatory mechanisms rather than empirically established pathways within the estimated model.

One of the study's principal findings concerns the mediating role of CM in the relationship between BDAC and BS. The positive indirect effect ($\beta = 0.123$) supports H4, while the continued significance of the direct relationship is consistent with partial mediation. BDAC had a total effect of 0.464 on BS, indicating that the indirect pathway through CM represented approximately 26.5% of the estimated total effect. This result identifies content marketing as one potentially important mechanism linking analytics capabilities with perceived business success, although it does not account for the entire relationship. Previous research has identified alternative mediating processes. For instance, ref. [4] examined process-oriented dynamic capabilities, ref. [6] investigated the mediating role of disruptive business models, and [47] explored corporate entrepreneurship in the relationship between analytics-related capabilities and business model innovation. More recent research in hospitality has provided further evidence of alternative mechanisms. Ref. [43] investigated marketing agility as a mediator between marketing analytics use and hotel performance, while [48] identified business intelligence adoption as a mediator in relationships involving organizational capabilities and performance among tourism and hospitality firms. Similarly, ref. [49] demonstrated that marketing agility mediates the relationship between digital marketing capabilities and service innovation in the hospitality industry. In contrast to these broader strategic and organizational mechanisms, the present study examines a customer-facing marketing process centred on applying customer information to message relevance and audience alignment. This perspective extends the literature by positioning content marketing alongside other strategic, technological, and organizational mechanisms through which digital capabilities may be associated with business outcomes. Nevertheless, because the study employed a cross-sectional design, it cannot establish the temporal sequence implied by the proposed mediation model.

The integration of RBV and DCT provides complementary perspectives for interpreting these findings. RBV helps explain why BDAC may constitute a valuable organizational capability arising from the combination of customer data, information quality, and analytical expertise. DCT, meanwhile, provides a theoretical basis for understanding how such capabilities may facilitate adjustments to marketing practices as customer requirements evolve. Ref. [44] highlighted the interconnected dynamic capabilities required to convert big data into strategic marketing value, particularly the importance of organizational reconfiguration. In a systematic literature review, ref. [50] also emphasized the need for greater conceptual clarity in distinguishing BDAC from other organizational capabilities. Together, these perspectives caution against automatically equating BDAC with dynamic capabilities merely because it incorporates advanced technology or analytical processes. In this study, BDAC is conceptualized as an organizational analytics capability, while DCT serves as a complementary framework for explaining how that capability may support adaptive marketing practices. The partial mediation finding further suggests that the relationship between BDAC and business success may operate through both customer-facing marketing activities and other organizational mechanisms outside the proposed model. Importantly, sensing, seizing, and reconfiguring were not directly measured as separate dynamic capability constructs. DCT therefore functions as an explanatory theoretical perspective rather than a separately tested dynamic capability mechanism.

Despite the statistical significance of all hypothesized relationships, the explanatory capacity of the model warrants careful consideration. The structural model accounted for

28.7% of the variance in BS ($R^2 = 0.287$) and 17.3% of the variance in CM ($R^2 = 0.173$). These results indicate that BDAC and CM explain meaningful, albeit limited, proportions of the variation in the endogenous constructs. The remaining unexplained variance suggests that other organizational and environmental conditions may also contribute to business success, including service quality, financial resources, competitive intensity, and managerial experience. Although the estimated direct association between BDAC and BS was numerically stronger than the association between CM and BS, the difference between these coefficients was not independently tested for statistical significance. The relative magnitudes should therefore not be taken as definitive evidence that one capability is universally more important than the other.

Alternative explanations should also be considered when interpreting the observed relationships. Reverse causality is possible because more successful businesses may have greater financial and managerial resources available for investment in data analytics and content marketing. Unobserved firm heterogeneity, including differences in organizational size, digital maturity, managerial expertise, and market positioning, may likewise influence both the development of analytics capabilities and perceived business success. Moreover, although BDAC was conceptualized as an organizational capability rather than simply the possession of technological resources, the cross-sectional survey did not empirically distinguish technology ownership from capability development. The observed associations may therefore partly reflect organizational characteristics and reciprocal processes that were not explicitly represented in the proposed model. Future research using longitudinal designs, objective measures of organizational resources, and appropriate organizational controls could provide further insight into these alternative explanations.

The Importance–Performance Map Analysis (IPMA) adds a managerial perspective to the findings. BDAC exhibited a higher total effect on BS (0.464) than CM (0.295), indicating greater relative importance at the higher-order construct level. This pattern suggests that analytics capabilities warrant managerial attention alongside efforts to develop effective content marketing practices. For hospitality and tourism SMEs facing resource constraints, relevant initiatives may include improving customer data accuracy, organizing information collected through existing digital platforms, strengthening basic analytical skills, and incorporating customer insights into content planning. These recommendations accord with the broader emphasis on integrating analytical information into marketing decisions found in [42,43]. However, because dimension-level importance–performance results were not reported, the current IPMA does not identify which individual BDAC dimension should receive the highest priority. The findings should therefore inform managerial deliberation rather than be interpreted as evidence of the financial returns associated with particular interventions.

Finally, the study also has implications for research examining digital capabilities in relation to responsible business management, although sustainability outcomes were not directly measured. Ref. [51] discussed the conceptual relationship between BDAC and business performance within a broader sustainability reporting framework. Similarly, ref. [40] examined the relationship between big data capabilities and organizational outcomes through sustainability marketing in the hospitality sector. These studies illustrate how analytics-related capabilities can inform broader discussions of responsible organizational practices. In the present study, the relationships among BDAC, CM, and BS may have implications for better-informed managerial decisions and the potential efficiency of marketing resource allocation. Nevertheless, the findings do not demonstrate reductions in environmental impacts, improvements in employee or community well-being, or gains in other dimensions of sustainability performance. Such outcomes require separate measurement and empirical investigation.

Overall, this study advances understanding of the relationship between BDAC and business success by identifying content marketing as a distinct, partially mediating, customer-facing mechanism. The findings indicate that analytics capabilities are associated with business outcomes both directly and indirectly through their relationship with relevant marketing communication aligned with audience needs. By bringing RBV and DCT together, the study develops a theoretically grounded interpretation of how organizational analytics capabilities may relate to business outcomes through their application in marketing practices. Comparisons with recent research also highlight the conceptual distinction between content marketing and other mechanisms, including organizational agility, business intelligence adoption, and business model innovation. These interpretations must nevertheless be considered in light of the single-source, cross-sectional design and purposively selected sample. Future research incorporating longitudinal data, multiple organizational informants, and objective performance indicators could clarify the proposed mechanisms and assess their generalizability.

7. Implications

7.1. Theoretical Implications

This study contributes to the literature in three ways. First, it extends the application of the Resource-Based View to data-oriented organizational capabilities in hospitality and tourism SMEs. By conceptualizing BDAC in terms of data collection, data quality, and analytical capability, the study highlights how the coordinated deployment of organizational resources is associated with perceived business outcomes.

Second, the study integrates RBV with Dynamic Capability Theory to explain the relevance of analytics capabilities to adaptive marketing practices. RBV identifies the organizational capabilities that may support business outcomes, whereas DCT offers a complementary perspective on how these capabilities can be applied in response to evolving customer requirements.

Third, the findings identify content marketing as a specific mediating mechanism linking BDAC with business success. Rather than examining broader mediators, such as organizational innovation or data-driven insight generation, the proposed model focuses on how customer information is used to improve message relevance and audience alignment. The significant partial mediation indicates that customer-facing marketing practices constitute one, but not the only, pathway through which analytics capabilities are associated with business outcomes. This finding provides a foundation for future research to investigate other mediating mechanisms and compare their relative contributions.

7.2. Managerial Implications

The findings provide practical guidance for hospitality and tourism SMEs seeking to improve business performance through the effective use of customer information. The IPMA results suggest that BDAC has greater overall importance for Business Success than Content Marketing. However, this result should inform managerial priorities rather than be interpreted as evidence that technology investments necessarily produce higher financial returns.

For resource-constrained SMEs, a practical first step is to improve customer data quality before investing in sophisticated analytical technologies. Managers can introduce straightforward procedures to maintain accurate booking records, update customer information, identify duplicate entries, and organize feedback gathered through existing digital platforms. These practices can enhance the usability of customer information without requiring substantial investment in new infrastructure.

A second priority is to develop basic analytical skills. Rather than immediately purchasing expensive analytics software, SMEs can use existing spreadsheet applications, reservation systems, and platform analytics to identify customer segments, frequently requested services, seasonal demand patterns, and recurring service concerns. Training employees to interpret these patterns may help businesses incorporate data into routine marketing and operational decisions.

Third, businesses should establish a systematic process for translating customer insights into content marketing activities. For instance, accommodation providers can use booking patterns and customer inquiries to create content addressing commonly requested information, while tour operators can tailor their communication to the preferences of different traveler segments. Marketing teams can monitor engagement and booking-related indicators to assess message relevance and refine subsequent communications.

These recommendations should be implemented progressively, taking into account organizational readiness, staff capabilities, and available budgets. The present findings support the importance of BDAC at the overall construct level; however, determining the relative priority of its individual dimensions requires further dimension-level importance–performance analysis.

For example, a small hotel in Chumphon could use Google Forms or an existing reservation system to collect and organize customer inquiries, booking preferences, and service feedback while ensuring appropriate customer consent and compliance with data protection procedures. Managers could then use spreadsheet applications or existing social media analytics to identify frequently requested services, customer segments, and seasonal booking patterns. These insights could inform a monthly content plan, with messages tailored to the needs of relevant traveler segments. The business could assess the relevance of its communication by monitoring customer inquiries, engagement metrics, and booking-related responses over time. This approach illustrates how SMEs can progressively apply BDAC and content marketing without making substantial investments in advanced analytical technologies.

8. Limitations and Future Research

Despite its theoretical and practical contributions, this study has several limitations that should be considered when interpreting the findings and determining directions for future research.

First, the study was conducted exclusively among hospitality and tourism SMEs in Chumphon Province, Thailand. Although this setting provides useful insights into businesses operating in a regional tourism destination, the findings may not be directly generalizable to enterprises in major tourism destinations, other geographical regions, or different economic and institutional contexts. In addition, a non-probability purposive sampling approach was used to recruit business owners and executives with relevant managerial knowledge. Although this approach facilitated the selection of informed respondents, it does not guarantee statistical representativeness of the broader population of hospitality and tourism SMEs. Future research should consider probability-based sampling where feasible and conduct comparative studies across regions, countries, and business categories to assess the generalizability of the proposed relationships.

Second, the cross-sectional research design restricts the ability to establish temporal relationships and causal effects among Big Data Analytics Capabilities (BDAC), Content Marketing (CM), and Business Success (BS). Although the structural model revealed statistically significant direct and indirect relationships, these associations do not establish that changes in BDAC necessarily precede or cause improvements in content marketing practices or business outcomes. Future studies should use longitudinal or time-lagged research

designs to investigate how the development of analytics capabilities relates to subsequent changes in marketing practices and organizational performance. These approaches may provide stronger evidence concerning the temporal ordering of the proposed relationships and the mediating role of content marketing.

Third, the study used self-reported questionnaire data collected from individual business owners or executives at a single point in time. Consequently, the findings may be affected by common method bias, social desirability, and individual perceptions of organizational capabilities and business performance. Although statistical procedures can assess potential common method bias, such diagnostics cannot fully eliminate concerns arising from single-source data. Future research should adopt multi-informant approaches by collecting information from different organizational representatives, including executives, data analysts, and marketing personnel. Combining survey responses with objective indicators, such as revenue growth, customer retention, and operational performance, would further strengthen the robustness and validity of the findings.

Fourth, Business Success was assessed through respondents' perceptions of organizational performance rather than exclusively through objective financial or operational records. Although perceptual measures provide useful insights into how organizational decision-makers evaluate business outcomes, they may not fully capture actual changes in profitability, productivity, or market performance. Moreover, the estimated model explained 28.7% of the variance in Business Success and 17.3% of the variance in Content Marketing, indicating that additional factors remain outside the proposed framework. Future investigations could incorporate organizational characteristics, service quality, competitive intensity, digital maturity, financial resources, and managerial expertise to provide a more comprehensive explanation of business success in hospitality and tourism SMEs.

Fifth, Content Marketing was operationalized using two dimensions: Content Marketing Accuracy (CMA) and Content Audience Alignment (CAA). These dimensions were selected to examine how customer information is applied to the relevance and audience appropriateness of marketing communications. However, they do not cover the full range of content marketing activities, including content distribution, platform management, posting frequency, creative quality, and campaign effectiveness. Accordingly, the findings should be interpreted in the context of the specific conceptualization of content marketing adopted in this study. Future research could develop and validate broader multidimensional measures of content marketing and investigate whether additional dimensions strengthen or alter the mediating relationship between BDAC and business success.

Finally, the study examined BDAC as an overall organizational capability without separately investigating the effects of emerging technologies, particularly artificial intelligence (AI), generative AI, and advanced marketing automation tools. These technologies may affect how hospitality and tourism enterprises collect and interpret customer information, develop marketing content, and respond to changing consumer preferences. Future research could investigate their roles in improving content marketing accuracy, audience alignment, and organizational adaptability. Further attention should also be given to data privacy, ethical data management, and responsible AI adoption, particularly among SMEs with limited technological and managerial resources.

Importantly, although the findings indicated relationships among Big Data Analytics Capabilities, Content Marketing, and Business Success, the measure of Business Success used in this study did not represent overall sustainability performance. In particular, the study did not directly employ environmental and social indicators. Therefore, the findings cannot establish that Big Data Analytics Capabilities or Content Marketing reduce environmental impacts, enhance social responsibility, or promote sustainable tourism development.

Future research should consider incorporating verifiable environmental and social indicators, such as energy consumption per occupied room, waste generated per guest, the proportion of purchases sourced from local businesses, employee retention rates, and the level of community participation. Data could be collected from operational records, business documents, and other appropriate sources to enable a more comprehensive assessment of the relationships among digital capabilities, marketing activities, and business sustainability across its economic, environmental, and social dimensions.

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Data Availability Statement: The data supporting the findings of this study are available from the corresponding author upon reasonable request. The data are not publicly available because they contain information collected from human participants and are subject to the confidentiality conditions specified in the informed consent process and ethical approval.

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