



The 4Cs Marketing Theory and Customer Satisfaction: The Mediating Role of Perceived Value among Specialized and New SMEs in China

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ABSTRACT

As the digital economy expands, customer orientation has become increasingly critical to enhancing satisfaction and maintaining competitiveness. However, limited research has examined the application of the 4Cs Marketing Theory among China's Specialized and New small and medium-sized enterprises (SMEs). This study examines the relationships among consumption factors, perceived value, and customer satisfaction, with particular attention to the potential mediating role of perceived value. Data were collected from 384 enterprise customers of 38 Specialized and New SMEs in the information technology sector in Shandong Province, China. Confirmatory factor analysis and structural equation modelling were conducted using AMOS. The findings revealed significant positive associations between consumption factors and customer satisfaction ($\beta = 0.292$), consumption factors and perceived value ($\beta = 0.478$), and perceived value and customer satisfaction ($\beta = 0.389$). The estimated indirect effect through perceived value ($\beta = 0.186$) accounted for approximately 38.91% of the total standardized effect, suggesting a potential partial mediation mechanism that requires further statistical confirmation through bootstrap confidence intervals. These findings contribute to the 4Cs Marketing Theory by highlighting the importance of perceived value in customer satisfaction. The study recommends that SMEs prioritize customer needs, cost efficiency, convenience, and effective communication to strengthen perceived value and customer satisfaction.

Keywords: 4Cs Marketing Theory; Customer Satisfaction; Perceived Value; Customer-Centric Marketing; Specialized and New SMEs

1.0 INTRODUCTION

The rapid expansion of the digital economy has transformed business operations, customer expectations, and how companies develop and maintain customer relationships (Li et al., 2023). The proliferation of digital platforms, emerging technologies, and interactive communication channels has given customers easier access to information about products and services. Consequently, customer expectations regarding quality, convenience, responsiveness, and value have increased (Jo & Park, 2023). In response, businesses are adopting customer-centric marketing strategies to adapt to evolving market conditions and maintain competitiveness (Lubis, 2023; Alnoor et al., 2024).

In today's markets, understanding customer needs, managing the costs of purchasing and using products or services, improving convenience, and maintaining clear communication are essential (Tamara et al., 2023). Customer satisfaction remains central in marketing research because it reflects individuals' evaluations of their experiences with products, services, and organizations. These evaluations are influenced not only by product or service attributes, but also by how customers assess the trade-off between benefits and sacrifices. Perceived value provides a framework for understanding how customers evaluate commercial offerings and determine their satisfaction (Purnomo, 2023; Alnoor et al., 2024). Integrating perceived value with customer-oriented marketing variables offers a more comprehensive explanation of customer satisfaction than examining these factors in isolation.

The 4Cs Marketing Theory, introduced by Lauterborn (1990), emphasizes four key areas: customer needs, cost, convenience, and communication. Unlike the traditional 4Ps framework, which centers on product, price, place, and promotion, the 4Cs approach views marketing from the customer's perspective (Hu, 2023; Ali & Ilyas, 2016; Qian et al., 2023). These four dimensions help analyze how consumption factors influence perceived value and customer satisfaction. These relationships are also significant for China's "Specialized and New" small and medium-sized enterprises (SMEs), which emphasize specialization, refinement, distinctiveness, and innovation.

In technology-driven markets, understanding how customers evaluate products, services, and business interactions is essential for developing effective customer-focused strategies. However, the connections among consumption factors, perceived value, and customer satisfaction require further investigation, particularly among enterprise customers of Specialized and New IT-sector SMEs in Shandong Province, China. To address this gap, this study examines the interconnections among these variables and assesses whether perceived value mediates the relationship between consumption factors and customer satisfaction within the 4Cs Marketing Theory framework. Ultimately, the findings provide context-specific evidence and practical recommendations to enhance customer-oriented marketing strategies and improve customer satisfaction in specialized industries.

2.0 LITERATURE REVIEW

2.1 Theoretical Foundation

Multiple theoretical perspectives contribute to the understanding of customer satisfaction. Expectancy-Disconfirmation Theory conceptualizes satisfaction as the outcome of comparing customer expectations with actual experiences (Pizam & Milman, 1993; Elkhani & Bakri, 2012; Chatterjee & Suy, 2019; Chen et al., 2022). Market-Oriented Theory emphasizes customer orientation, competitor analysis, and cross-functional coordination (Alhakimi & Mahmoud, 2020). The 4Ps Marketing Theory addresses product, price, place, and promotion as key marketing elements (Xu et al., 2026). Collectively, these theories offer complementary perspectives on how customers evaluate products and how marketing strategies function. Lauterborn's (1990) 4Cs Marketing Theory serves as the study's primary framework, emphasizing customer needs, cost, convenience, and communication (Hu, 2023; Qian et al., 2023). The 4Cs framework underscores the need to understand customer requirements, account for both financial and non-financial costs, facilitate convenient transactions, and maintain clear communication (Wang, 2020; Xu, 2023; Durak et al., 2023).

This customer-centric approach is especially relevant in today's digital business environment (Jo & Park, 2023; Alnoor et al., 2024). In this context, consumption factors are defined according to the four dimensions of the 4Cs framework. This study examines the relationships among these factors, perceived value, and customer satisfaction, as well as perceived value's mediating role, among enterprise customers of Specialized and New IT-sector small and medium-sized enterprises (SMEs) in Shandong Province, China.

2.2 Specialized and New SMEs in China

China's "Specialized and New" small and medium-sized enterprises (SMEs) emphasize specialization, refinement, distinctiveness, and innovation. These enterprises typically focus on niche markets, technological advancement, and industrial competitiveness (Yidana et al., 2023). Within the digital business environment, understanding customer needs, managing costs, enhancing convenience, and maintaining effective communication are essential for strengthening customer relationships (Lubis, 2023; Li et al., 2023; Jo & Park, 2023). These characteristics highlight the relevance of customer-oriented marketing strategies in specialized industries. Accordingly, this study examines enterprise customers of Specialized and New SMEs in the information technology sector in Shandong Province, China, focusing on the relationships among consumption factors, perceived value, and customer satisfaction.

2.3 Customer Satisfaction

Customer satisfaction refers to customers' evaluation of products and services based on their expectations and actual experiences (Iqbal et al., 2023). Expectancy-Disconfirmation Theory posits that satisfaction occurs when outcomes meet or exceed expectations, whereas dissatisfaction arises when experiences fall short (Pizam & Milman, 1993; Elkhani & Bakri, 2012; Chatterjee & Suy, 2019). This study assesses customer satisfaction using five dimensions: perceived performance, disconfirmation, willingness to recommend, willingness to repurchase, and complaint handling. Established models such as SCSB, ACSI, ECSI, and CCSI further indicate that perceived value significantly determines satisfaction. The study uses customer satisfaction as a dependent variable and examines its direct relationship with consumption in enterprise-to-enterprise transactions among specialized and New IT-sector SMEs.

2.4 Consumption Factors

Consumption factors are customer-focused aspects that influence how people buy and use products or services. Following Lauterborn's (1990) 4Cs Marketing Theory, this study conceptualizes consumption factors in four dimensions: customer needs, cost, convenience, and communication (Hu, 2023; Qian et al., 2023). Customer needs encompass brand image, service quality, and product quality (Wang, 2020; Wu & Li, 2018). Cost includes monetary, time, physical, and psychological components (Nofrizal et al., 2023). Convenience pertains to the ease of accessing, purchasing, or utilizing products and services (García-Fernández et al., 2018; Josimovski et al., 2023; Al-Adwan & Yaseen, 2023). Communication involves information clarity, relevance, emotional experience, and organizational responsiveness to customers (Durak et al., 2023; Tamara et al., 2023). Collectively, these dimensions constitute the consumption-factors framework examined in relation to perceived value and customer satisfaction.

2.5 Perceived Value

Perceived value refers to customers' evaluation of the benefits they receive relative to the sacrifices they make when purchasing goods or services (Chen et al., 2017; Kim & Cho, 2016). This concept encompasses not only price and quality, but also functional, social, and emotional dimensions of the consumption experience (Pham et al., 2018; Blut et al., 2024). In the present study, perceived value is conceptualized as comprising three components: functional value, which concerns the utility and effectiveness of the product or service; social value, which pertains to social recognition or acceptance; and emotional value, which relates to the positive feelings and enjoyment derived from use (Sweeney & Soutar, 2001; Kadhim et al., 2021). Previous research has demonstrated a positive association between perceived value and customer satisfaction (Chen et al., 2017; Gumussoy & Koseoglu, 2016; Kim & Cho, 2016). Accordingly, this study examines perceived value as a mediator between consumption-related variables and customer satisfaction among enterprise customers of Specialized and New IT-sector small and medium-sized enterprises (SMEs).

2.6 The Relationship Between Consumption Factors and Customer Satisfaction

The 4Cs Marketing Theory identifies customer needs, cost, convenience, and communication as key components of customer-focused marketing (Lauterborn, 1990; Hu, 2023; Qian et al., 2023). Empirical studies indicate that product and service quality, customer costs, purchasing convenience, and effective communication are significantly associated with customer satisfaction (Wang, 2020; Rahman et al., 2023; Ayinaddis et al., 2023; Chong et al., 2023; Negassa & Japee, 2023). These findings justify examining the relationship between the four dimensions of the 4Cs framework and customer satisfaction.

H1: Consumption factors are positively and significantly associated with customer satisfaction.

2.7 The Relationship Between Consumption Factors and Perceived Value

Perceived value refers to customers' evaluation of the benefits they receive relative to the costs and sacrifices they incur. Within the 4Cs framework, addressing customer needs, managing costs, enhancing convenience, and ensuring effective communication increase perceived value (Wang, 2020; Xu, 2023). Additional research has linked customer-focused marketing strategies to perceived value (Juliana et al., 2022; Ghorbani et al., 2023). Consequently, consumption factors are expected to be positively associated with perceived value.

H2: Consumption factors are positively associated with perceived value.

2.8 The Relationship Between Perceived Value and Customer Satisfaction

Perceived value critically determines customer satisfaction, as individuals evaluate products and services based on perceived benefits and associated costs (Chen et al., 2017; Kim & Cho, 2016). Empirical studies have demonstrated a positive relationship between perceived value and customer satisfaction across various service and consumption contexts (Gumussoy & Koseoglu, 2016; Chen et al., 2017). Functional, social, and emotional values offer distinct perspectives on these evaluations (Sweeney & Soutar, 2001; Kadhim et al., 2021). Consequently, higher perceived value is associated with increased customer satisfaction.

H3: Perceived value is positively and significantly associated with customer satisfaction.

2.9 The Mediating Role of Perceived Value

Perceived value goes beyond a direct relationship with customer satisfaction; it also clarifies how different consumption factors link to satisfaction outcomes. Within the 4Cs framework, customer needs, cost, convenience, and communication collectively shape the consumption experience and influence customers' assessments of functional, social, and emotional value. These assessments, in turn, may impact customer satisfaction. Previous research has identified perceived value as a mediating link between marketing factors and customer outcomes (Alkufahy et al., 2023). Building on this foundation, the present study investigates whether perceived value mediates the relationship between overall consumption factors and customer satisfaction.

H4: Perceived value mediates the relationship between consumption factors and customer satisfaction.

2.10 Conceptual Framework

Based on the 4Cs Marketing Theory and previous research, the conceptual framework comprises three primary elements: consumption factors as the independent variable, perceived value as the mediating variable, and customer satisfaction as the dependent variable. Consumption factors encompass customer needs, cost, convenience, and communication, while perceived value includes functional, social, and emotional dimensions. Figure 1 illustrates three direct relationships: between consumption factors and customer satisfaction (H1), consumption factors and perceived value (H2), and perceived value and customer satisfaction (H3). Additionally, perceived value mediates one indirect relationship (H4).

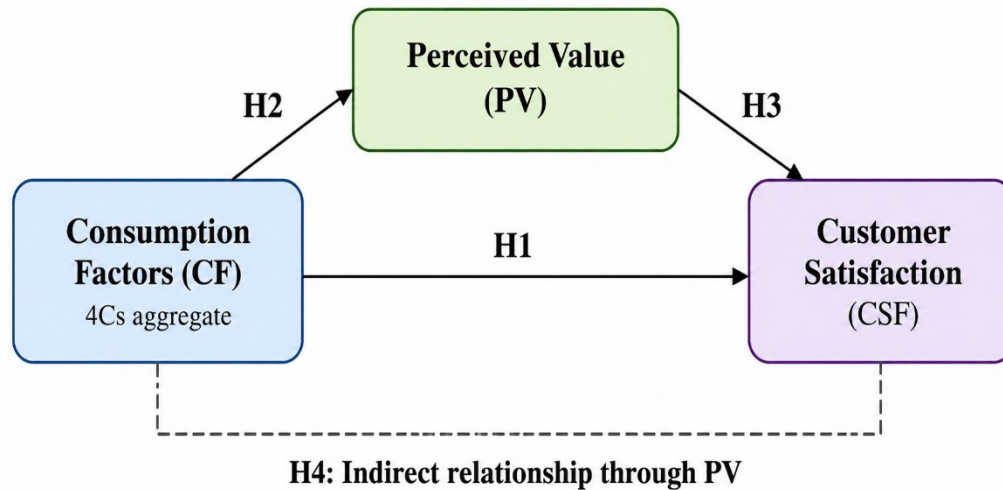


Figure 1. Proposed Conceptual Framework

3.0 METHODOLOGY

3.1 Research Design

A quantitative, cross-sectional design grounded in a positivist approach was employed to examine the relationships among consumption factors, perceived value, and customer satisfaction. Consistent with the 4Cs Marketing Theory, the study treated consumption factors as the independent variable, perceived value as the mediator, and customer satisfaction as the dependent variable. The study collected primary data through a structured questionnaire administered to enterprise customers of Specialized and New IT-sector SMEs in Shandong Province, China.

3.2 Population and Sampling

The target population comprised 3,251 enterprise customers associated with 38 Specialized and New small and medium-sized enterprises (SMEs) in the information technology sector in Shandong Province, China. Using a 95% confidence level, a 5% margin of error, a 50% assumed population proportion, and the finite-population correction, the minimum required sample size was approximately 344 respondents. A total of 384 valid questionnaires were obtained, exceeding the minimum sample requirement and representing 11.81% of the accessible population. The sample was proportionally stratified across the 38 enterprises according to their customer populations. All 384 valid responses were included in the statistical analysis.

3.3 Data Collection Procedure

The study collected primary data through a structured questionnaire administered to enterprise customers of Specialized and New IT-sector small and medium-sized enterprises (SMEs) in Shandong Province, China. The survey included customers from 38 participating enterprises, selected through proportional sampling. The questionnaire collected demographic information and asked about consumption factors, perceived value, and customer satisfaction. The final dataset comprised 384 completed questionnaires.

3.4 Measurement of Variables

The study collected data using a structured bilingual (English and Chinese) questionnaire with two sections. The first section gathered information on respondents' demographics and background, including the enterprise from which they purchased, gender, job position, duration of business collaboration, age, education level, and annual income. The second section addressed three domains: consumption factors, perceived value, and customer satisfaction. Consumption factors (CF), the independent variable, were measured using 17 items derived from the 4Cs Marketing Theory: customer needs (3 items), cost (4 items), convenience (6 items), and communication (4 items). Perceived value (PV), the mediating variable, was assessed with three items reflecting functional, social, and emotional value. Customer satisfaction (CSF), the dependent variable, was evaluated using five items related to perceived performance, expectation disconfirmation, willingness to recommend, repurchase intention, and complaint handling. All 25 items utilized a five-point Likert scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree).

The questionnaire was designed to capture enterprise customers' evaluations of products, services, and purchasing experiences with Specialized and New IT-sector small and medium-sized enterprises (SMEs) in Shandong Province, China.

Table 1. Measurement of Variables

Construct	Dimension / indicator	Items
Consumption Factors (CF)	Customer needs	3
	Cost	4
	Convenience	6
	Communication	4
Perceived Value (PV)	Functional value	1
	Social value	1
	Emotional value	1
Customer Satisfaction (CSF)	Perceived performance	1
	Expectation disconfirmation	1
	Willingness to recommend	1
	Repurchase intention	1
	Complaint handling	1

3.5 Data Analysis Techniques

The study analyzed the data using SPSS and AMOS, summarized respondents' demographic information with descriptive statistics, and conducted confirmatory factor analysis to assess the measurement model. Further, evaluated internal consistency using Cronbach's alpha and composite reliability (CR), examined convergent validity using standardized factor loadings and average variance extracted (AVE), and assessed discriminant validity by comparing the square roots of AVE with inter-construct correlations. It also evaluated model fit using χ^2/df , GFI, AGFI, CFI, TLI, NFI, IFI, and RMSEA. It used structural equation modeling (SEM) to test the three direct relationships and the mediating effect of perceived value. Moreover, the study tested the indirect effect using bootstrapping with 5,000 resamples and a 95% confidence interval.

4.0 RESULTS AND DISCUSSION

4.1 Descriptive Statistical Analysis

Table 2 presents the demographic characteristics of the 384 respondents. Males accounted for 55.73% of the sample, while females accounted for 44.27%. Most respondents worked in purchasing (46.88%), with technical staff (42.19%) and management (10.94%) making up the remainder. The most common age group was 40–49 years (35.68%), followed by 18–30 years (32.81%).

Table 2. Demographic Profile of Respondents (N = 384)

Variable	Category	Frequency	Percentage (%)
Gender	Male	214	55.73
	Female	170	44.27
Position	Management personnel	42	10.94
	Purchasing staff	180	46.88
	Technical staff	162	42.19

Length of collaboration	1–3 years	122	31.77
	4–5 years	108	28.13
	6–10 years	125	32.55
	More than 10 years	29	7.55
Age	18–30 years	126	32.81
	31–39 years	110	28.65
	40–49 years	137	35.68
	50–59 years	10	2.60
Education	60 years and above	1	0.26
	High school and below	23	5.99
	Diploma	42	10.94
	Bachelor's degree	281	73.18
Annual income (RMB)	Master's degree and above	38	9.89
	≤40,000	64	16.67
	40,001–80,000	205	53.39
	80,001–120,000	79	20.57
	>120,000	36	9.38

4.2 Measurement Model Assessment

4.2.1 Model Fit Assessment

The study conducted confirmatory factor analysis (CFA) in AMOS to examine the measurement structure of consumption factors (CF), perceived value (PV), and customer satisfaction (CSF). The initial consumption factors model showed poor fit ($\chi^2/df = 6.444$; RMSEA = 0.119), to remove problematic indicators. The final structural equation model, as shown in Table 3, demonstrated good fit, with a χ^2/df ratio of 2.003 and GFI (0.912), AGFI (0.891), CFI (0.955), TLI (0.949), NFI (0.914), and IFI (0.955) all meeting accepted standards. The RMSEA value of 0.051 further indicated satisfactory model fit. These results suggest that the final model is appropriate for examining the proposed relationships.

Table 3. Goodness-of-Fit Indices of the Final SEM Model

Fit index	Recommended criterion	Obtained value	Assessment
χ^2/df	≤ 3.00	2.003	Acceptable
GFI	≥ 0.90	0.912	Acceptable
AGFI	≥ 0.85	0.891	Acceptable
CFI	≥ 0.90	0.955	Good
TLI	≥ 0.90	0.949	Acceptable
NFI	≥ 0.90	0.914	Acceptable
IFI	≥ 0.90	0.955	Good
RMSEA	≤ 0.08	0.051	Good

4.2.2 Reliability and Convergent Validity

Table 4 indicates that the final measurement model demonstrated strong reliability and convergent validity. Composite reliability (CR) values ranged from 0.852 to 0.908, exceeding the recommended threshold of 0.70. Average variance extracted (AVE) values ranged from 0.591 to 0.711, surpassing the minimum criterion of 0.50. Most standardized factor loadings exceeded 0.70, except for the willingness-to-repurchase indicator (WRP), which had a lower loading of 0.608. Despite this, customer satisfaction exhibited robust reliability (CR = 0.877) and convergent validity (AVE = 0.591).

Collectively, these findings confirm the internal consistency and convergent validity of the six measured dimensions and constructs, thereby supporting subsequent structural model analysis.

Table 4. Reliability and Convergent Validity of the Final Measurement Model

Construct / dimension	Retained items	Loading range	CR	AVE	$\sqrt{AVE}$
Customer needs (C1)	3	0.763–0.868	0.856	0.664	0.815
Cost (C2)	4	0.826–0.865	0.908	0.711	0.843
Convenience (C3)	4	0.712–0.834	0.852	0.591	0.768
Communication (C4)	4	0.807–0.831	0.890	0.669	0.818
Perceived value (PV)	3	0.803–0.862	0.868	0.687	0.829
Customer satisfaction (CSF)	5	0.608–0.865	0.877	0.591	0.769

4.3 Assessment of the Structural Model and Hypothesis Testing

Structural equation modeling (SEM) was employed to examine the hypothesized relationships among consumption factors (CF), perceived value (PV), and customer satisfaction (CSF). As presented in Table 5, all three direct relationships were positive and statistically significant. Consumption factors were positively associated with customer satisfaction ($\beta = 0.292$, $p < 0.001$), supporting H1. Similarly, consumption factors demonstrated a significant positive association with perceived value ($\beta = 0.478$, $p < 0.001$), supporting H2. Perceived value was also positively associated with customer satisfaction ($\beta = 0.389$, $p < 0.001$), supporting H3.

Among the three direct relationships, the strongest standardized path coefficient was observed between consumption factors and perceived value ($\beta = 0.478$), followed by perceived value and customer satisfaction ($\beta = 0.389$), and consumption factors and customer satisfaction ($\beta = 0.292$). Figure 2 illustrates the final structural model and its standardized path coefficients. Overall, these findings support H1, H2, and H3, providing empirical evidence of the relationships proposed within the 4Cs Marketing Theory framework. The significant direct relationships also provide a basis for examining the indirect association between consumption factors and customer satisfaction through perceived value.

Table 5. Structural Path Coefficients and Hypothesis Testing

Hypothesis	Structural Relationship	β	B	S.E.	C.R.	p-value	Decision
H1	CF $\rightarrow$ CSF	0.292	0.274	0.076	3.615	< 0.001	Supported
H2	CF $\rightarrow$ PV	0.478	0.507	0.078	6.522	< 0.001	Supported
H3	PV $\rightarrow$ CSF	0.389	0.344	0.061	5.650	< 0.001	Supported

Note: β = standardized path coefficient; B = unstandardized path coefficient; S.E. = standard error; C.R. = critical ratio (B/S.E.); CF = consumption factors; PV = perceived value; CSF = customer satisfaction. Reported values are retained pending verification against unrounded AMOS output.

Figure 2 presents these relationships and their standardized path coefficients. Collectively, these findings support the proposed direct relationships in the 4Cs Marketing Theory and provide a foundation for further investigation into the mediating role of perceived value.

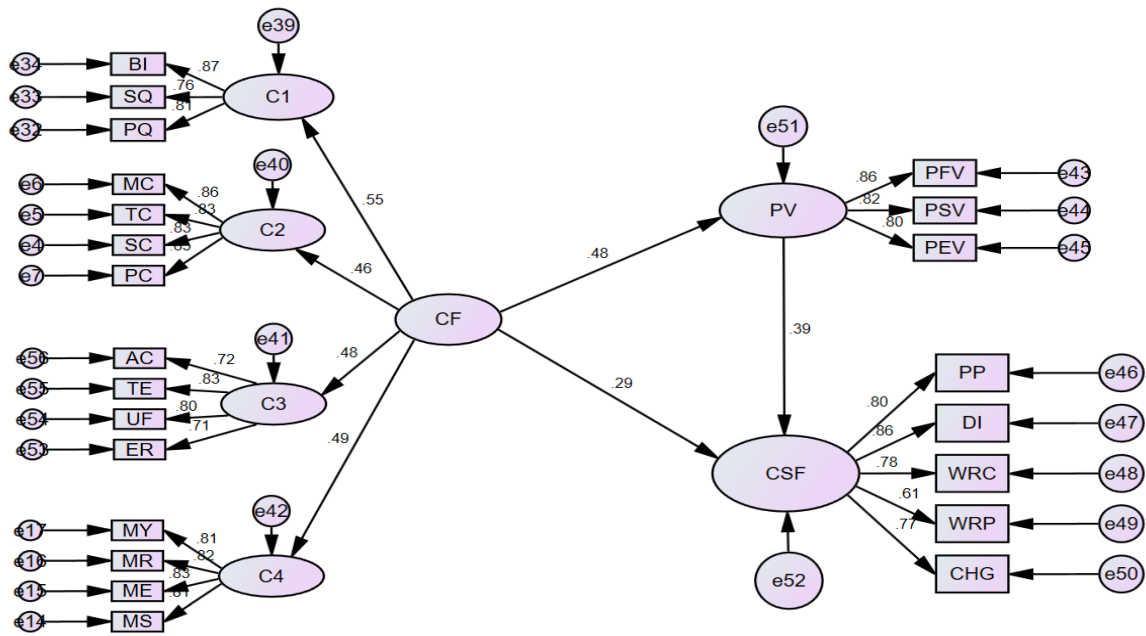


Figure 2. Final Structural Equation Model with Standardized Path Coefficients

4.4 Mediation Analysis

This study used structural equation modeling (SEM) was employed to examine the mediating role of perceived value (PV) in the relationship between consumption factors (CF) and customer satisfaction (CSF). As presented in Table 6, the standardized direct effect of consumption factors on customer satisfaction was positive and statistically significant ($\beta = 0.292$, $p < 0.001$). The estimated indirect effect through perceived value was 0.186, resulting in a total standardized effect of 0.478. The indirect effect accounted for approximately 38.91% of the total effect, suggesting a potential partial mediation mechanism. Although the direct relationship remained statistically significant after including perceived value, confirmation of the indirect effect requires a bootstrap confidence interval excluding zero. Therefore, the mediation hypothesis (H4) remains provisional pending verification of the bootstrapping results.

Table 6. Mediation Analysis of Perceived Value

Effect	Structural path	Standardized effect (β)	Significance
Direct effect	CF $\rightarrow$ CSF	0.292	$p < 0.001$
Indirect effect	CF $\rightarrow$ PV $\rightarrow$ CSF	0.186	Bootstrap CI required
Total effect	CF $\rightarrow$ CSF (direct + indirect)	0.478	Not separately tested
Proportion mediated	Indirect / total	38.91%	Descriptive
Mediation type	Partial mediation pattern	—	Provisional

Note: Indirect effect = $0.478 \times 0.389 = 0.185942$; total effect = $0.292 + 0.185942 = 0.477942$. Values are rounded to three decimals. The mediation proportion is calculated using unrounded coefficients. CI = confidence interval.

4.5 Discussion

This study investigated the relationships among consumption factors, perceived value, and customer satisfaction in enterprise customers of Specialized and New SMEs in Shandong Province, China. The findings address the four research objectives and provide empirical support for applying the 4Cs Marketing Theory in business-to-business customer relationships. For the first objective, consumption factors showed a significant positive association with customer satisfaction ($\beta = 0.292$), supporting H1. This result aligns with Rahman et al. (2023), Ayinaddis et al. (2023), and Chong et al. (2023), who emphasized the importance of customer-focused practices and convenience in enhancing satisfaction. For the second objective, consumption factors exhibited an even stronger positive relationship with perceived value ($\beta = 0.478$), supporting H2. This finding aligns with Wang (2020) and Ghorbani et al. (2023), who observed that customer needs, cost, convenience, and communication influence perceived value. For the third objective, perceived value was positively associated with customer satisfaction ($\beta = 0.389$), supporting H3. This result is consistent with Chen et al. (2017) and García-Fernández et al. (2018), who identified perceived value as a key determinant of customer satisfaction. Regarding the fourth objective, the estimated indirect effect ($\beta \approx 0.186$) suggests partial mediation, with perceived value accounting for approximately 38.9% of the total standardized effect. This finding aligns with the mediation mechanisms described by Alkufahy et al. (2023), although statistical confirmation requires examining the bootstrap confidence interval. Collectively, these results support applying the 4Cs framework to Specialized and New SMEs, indicating that customer-centered marketing is associated with satisfaction both directly and through customers' perceptions of value.

5.0 CONCLUSION

This study examined the relationships among consumption factors, perceived value, and customer satisfaction among 384 enterprise customers of Specialized and New small and medium-sized enterprises (SMEs) in Shandong Province, China. The findings revealed significant positive associations between consumption factors and customer satisfaction ($\beta = 0.292$), consumption factors and perceived value ($\beta = 0.478$), and perceived value and customer satisfaction ($\beta = 0.389$). Furthermore, the estimated indirect effect through perceived value ($\beta = 0.186$) accounted for approximately 38.91% of the total standardized effect, suggesting a potential partial mediation mechanism, although statistical confirmation requires verification of the bootstrap confidence interval. These findings contribute to the 4Cs Marketing Theory by highlighting the importance of perceived value in explaining customer satisfaction within specialized SMEs. Accordingly, SMEs should prioritize customer needs, product and service quality, cost efficiency, purchasing convenience, and effective communication to enhance perceived value and customer satisfaction.

6.0 LIMITATIONS AND FUTURE RESEARCH

This study has several limitations. The cross-sectional design limits causal inference. The focus on enterprise customers of Specialized and New SMEs in Shandong Province, China, limits the generalizability of the findings to other industries and regions. Reliance on self-reported questionnaires may introduce common-method bias. Additionally, the proposed framework does not account for other potentially relevant factors, such as customer trust, engagement, experience, brand loyalty, and relationship quality. Future research should test the model in diverse industries, regions, and cultural contexts, employing longitudinal or mixed-methods approaches.

Further studies should examine additional mediating and moderating mechanisms to understand customer satisfaction better and broaden the applicability of the 4Cs Marketing Theory.

Declarations

Author Contributions: **Kun Xu:** Conceptualized the study, collected the data, conducted formal analysis, and drafted the manuscript. **Li Ma:** Contributed to data analysis and manuscript preparation. **Siti Zubaidah Mohd Ariffin:** Provided academic supervision and critically reviewed the manuscript. **Nor Sa'adah Jamaluddin:** Provided academic supervision and critically reviewed the manuscript.

Competing Interests: The authors declare no competing financial or non-financial interests.

Funding: This research received no external funding.

Ethical Statement: The study employed a bilingual (English–Chinese) questionnaire that informed participants of the research purpose and assured them that their information would remain confidential. Responses were collected for academic research and analyzed in aggregate to protect participants' privacy. The study sought to respect participants' confidentiality and ensure the responsible handling of survey information

Data Availability: Data supporting the findings are available from the corresponding author upon reasonable request.

Declaration of Generative AI: Generative AI tools were used solely for language and grammatical refinement; the authors independently verified all research, analysis, interpretation, and conclusions and take full responsibility for the manuscript's accuracy and integrity.

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