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The Impact of Marketing Mix on Indigenous Business Development in Uzbekistan: A Regression Analysis

Yulchieva Khilola and Abdul Bashiru Jibril *

School of Business and Economics, Westminster International University, Tashkent 100050, Uzbekistan

* Correspondence: mallambash13@gmail.com

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Abstract: This study proposes a marketing strategy framework tailored to address the challenges faced by small and medium-sized enterprises (SMEs) in Uzbekistan. Amidst a fiercely competitive business landscape, SMEs encounter obstacles in establishing brand awareness, attracting customers, and optimizing financial performance. To address these challenges and sustain growth, SMEs can leverage the extended marketing mix, encompassing product, price, place, promotion, people, process, and physical evidence. Employing a combination of descriptive and exploratory research methodologies, this study utilizes quantitative data-gathering techniques, including a survey of entrepreneurs' perspectives on the implementation of marketing mix strategies by SMEs. Regression analysis, facilitated by STATA software, examines the correlation between marketing mix variables and SME development. Key findings underscore the importance of integrating marketing mix elements to enhance SME marketing efforts, cultivate brand loyalty, and gain a competitive advantage. These findings contribute to a deeper understanding of marketing strategies for SMEs in developing economies like Uzbekistan, offering actionable insights for policymakers and entrepreneurs alike to foster SME growth and economic development.

Keywords: SMEs growth; marketing mix; strategy business growth; service industry; Uzbekistan

1. Introduction

Small and medium-sized enterprises (SMEs) play a pivotal role in driving economic growth and fostering socio-economic development, particularly in emerging economies like Uzbekistan. With over 96% of total firms in Asia and contributing two-thirds of private-sector employment, the importance of SMEs cannot be overstated [1]. Hence, the Asian nation's economic prosperity relies on the implementation of comprehensive support measures for SMEs, as stated in a study by the Asian Development Bank [1]. Small firms play a significant role in the economy. They play a significant role in fostering job creation, promoting innovation, and driving economic growth, facilitating local community development, mitigating income disparity, enhancing resilience, and fostering regional development. Fostering and bolstering the expansion of small enterprises is vital for long-term and equitable economic progress.

According to Azra and Salfiya, these SMEs are considered essential and fundamental to the progress of both advanced and emerging countries [2]. This is particularly crucial for emerging nations, where poverty and unemployment endure as significant challenges in their economies. Recognizing this reality, consecutive administrations in Uzbekistan have implemented a range of measures periodically to foster the growth of SMEs.

SMEs' growth is essential for the attainment of their long-term objectives. Entrepreneurial conduct and marketing strategies influence the development and expansion of SMEs [3]. Organizations are required to formulate approaches and marketing strategies [4,5]. An organization or an individual's strategy refers to an intended strategy, method, technique, or blueprint that it employs to attain success in the marketplace or society

at large. Achumba and Gleuck identify strategy as an all-encompassing, unitary, and unified plan that establishes a connection between the firm's competitive advantage and the environmental challenges it faces [6]. Their studies suggested that to enhance marketing effectiveness and efficacy, organizations must acquire the knowledge and skills necessary to develop and refine a successful marketing plan. Recognizing this, successive administrations in Uzbekistan have implemented measures to support SME growth. However, despite their significant contribution, SMEs face numerous challenges, including limited resources, access to markets, and effective marketing strategies.

Marketing strategies are fundamental to the growth and sustainability of SMEs [7]. They enable businesses to differentiate themselves, attract customers, and maintain a competitive edge in the marketplace [3]. Central to effective marketing strategies is the concept of the marketing mix, encompassing the elements of product, price, place, promotion, people, process, and physical evidence (7Ps framework) [8]. While the importance of marketing strategies for SMEs is well-established, there remains a notable gap in the literature concerning the application of the 7Ps framework specifically tailored to the socio-economic and cultural context of Uzbekistan. Existing research often overlooks the nuanced factors shaping the business environment in the region, thus failing to provide comprehensive insights into how SMEs can strategically leverage the 7Ps framework for growth.

This study aims to bridge this gap by conducting a comprehensive exploration of the 7Ps framework in the context of SMEs in Uzbekistan. By analyzing how each element of the marketing mix contributes to SME growth within the unique socio-economic and cultural landscape of Uzbekistan, this research seeks to provide actionable insights for marketers, business owners, and policymakers. Specifically, the study aims to:

- a) *Identify the specific challenges faced by SMEs in Uzbekistan regarding marketing strategies.*
- b) *Provide practical recommendations for enhancing marketing strategies and supporting SME growth in Uzbekistan.*

Hence, by elucidating the strategic application of the 7Ps framework in the context of Uzbekistan's SMEs, this research aims to offer valuable insights that can inform decision-making and advance the effectiveness of marketing practices in both Uzbekistan and analogous developing economies. By elucidating the strategic application of the 7Ps framework in the context of Uzbekistan's SMEs, this research aims to offer valuable insights that can inform decision-making and advance the effectiveness of marketing practices in both Uzbekistan and analogous developing economies.

The implications of this study extend beyond academic contributions, offering practical insights for marketers, business owners, and policymakers. By elucidating the strategic application of the 7Ps framework in the context of Uzbekistan's SMEs, this research equips practitioners with actionable knowledge to enhance their marketing strategies, fostering sustainable growth. Additionally, policymakers can leverage these findings to formulate targeted initiatives supporting SMEs and promoting economic development. The study's implications thus resonate with the broader objective of facilitating informed decision-making and advancing the effectiveness of marketing practices in both the Uzbekistan context and analogous developing economies. In Uzbekistan, for the advancement of this industry, nascent business owners must be well-informed regarding these problems, obstacles, and strategic alternatives.

This study stands out due to its distinct emphasis on marketing methods tailored for small and medium-sized firms (SMEs) in Uzbekistan. The study's consequences are beyond mere scholarly contributions. This resource provides valuable insights for marketers, company owners, and policymakers in Uzbekistan, enabling them to acquire practical knowledge that can be utilized to improve marketing strategies, facilitate sustainable growth, and stimulate economic development. The research's emphasis on the distinct circumstances of Uzbekistan and its examination of intricate elements influencing the commercial landscape render it highly pertinent and advantageous for both indigenous participants and analogous emerging economies.

The study paper aims to examine the development of a marketing strategy framework tailored for small and medium-sized firms (SMEs) in Uzbekistan. The objective of this study is to gain insight into the integration of many components of the marketing mix, namely product, price, place, promotion, people, process, and physical evidence, to foster the growth of small and medium-sized enterprises (SMEs) within the distinctive socio-economic and cultural environment of Uzbekistan.

2. Theoretical Background

2.1. Contribution of SMEs in Internationally

SMEs constitute the majority of enterprises on a global scale and play a crucial role in fostering employment opportunities and advancing the global economy. Globally, they comprise over 50% of employment and approximately 90% of enterprises [9]. The contribution of SMEs to the economic expansion of any nation is substantial. For instance, despite the attention being directed towards the largest corporations in the country, the U.S. Small Business Administration asserts that the overwhelming majority of enterprises operate within the country as small businesses. Indeed, an extraordinary 33.2 million small enterprises (nearly 99 percent) exist throughout the United States [10].

The role of SMEs in modern economies is crucial, and their contribution to economic progress is widely acknowledged. The recognition of the social and economic functions of SMEs has resulted in the identification of the SME sector as a crucial component of the economy [11]. The G20's objective of achieving 2% growth by 2018 will only be realized if governments are committed to promoting private sector-led growth and entrepreneurship. Economic policies that bolster the competitiveness of economies to promote robust, sustainable, and equitable growth. Such regulations are crucial for organizations of all sizes, especially for the numerous SMEs operating in global markets. Participating in global value chains is crucial for promoting international commerce and investment and enhancing productivity and innovation capabilities.

Nair asserts that small enterprises play a crucial role in effectively reducing poverty. It improves job prospects in many emerging economies. A significant number of academics have discovered that most small-scale firms have generated job prospects and opportunities for self-employment. Small firms have a crucial role in promoting economic growth, rural economic activity, poverty reduction, and social justice. SMEs are defined as businesses with a limited number of workers and operate on a modest scale. A multitude of experts have discovered that small businesses have bolstered the country's gross domestic product (GDP) rate, with Small and Medium Enterprises making a significant contribution to the GDP. Small enterprises play a crucial role in fostering national economic progress. Furthermore, it offers employment prospects for individuals who are now jobless in the growing economy [12].

SMEs play a crucial role in driving Asia's economic and social progress. They contribute to employment, entrepreneurship, innovation, economic growth, poverty reduction, cultural preservation, and sustainable development. Facilitating and encouraging the development of small enterprises is essential for promoting inclusive and robust economies in Asia [1]. For instance, SMEs are playing a substantial part in the economic advancement of Pakistan, as highlighted by Syed et al. [13]. UNIDO data reveals that the SME sector comprises 90 percent of enterprises globally and accounts for over 60 percent of global employment [14]. SMEs are crucial contributors to economies and are seen as the foundation of economic growth in both emerging and developed countries. Pakistan's economy, like other developing nations, relies heavily on SMEs [15].

Small businesses in Uzbekistan have a critical role in stimulating economic growth and boosting the country's GDP. They also serve as a key solution to pressing social issues like unemployment and poverty, particularly among women and young people. Seven The contribution of SMEs to the country's GDP increased from 38.2% in 2005 to 54.9% in 2017. According to Magendzo, they provide more than 80% of the total employment, over 50% of the added value to the economy, and a substantial rise in total investments [16]. These factors serve as indicators of innovation activity. In Uzbekistan, SMEs play a crucial role in maintaining a robust and expanding economy. However, these SMEs encounter several obstacles that need proactive government action to enhance the business climate and streamline their operations. When considering entrepreneurship in Uzbekistan, it is important to focus on four key policy areas: (1) tax policy, (2) regulation, (3) access to financial markets, and (4) legal protection, property rights, and economic freedom [16].

2.2. SMEs Growth

The existing body of empirical research indicates that the growth and development of SMEs have made substantial contributions to industrialized economies globally. This growth and development have been

identified as a crucial factor in the emancipation and development of any economy [17]. The vitality and significance of SMEs in any economy can be limited by macroeconomic policy. Therefore, the extent to which an economy optimizes these factors will dictate the longevity and competitiveness of SMEs.

SMEs constitute 50% of the total number of firms in Uzbekistan [18]. Empirical data indicates that, on average, 50% of SMEs that are initiated ultimately fail because of issues such as violations of their legal requirements. As a result, there was a prevailing belief that SMEs needed assistance primarily for social reasons rather than for their potential economic influence [19]. The limited viewpoint gradually transformed as an increasing number of individuals directed their attention toward job creation and the establishment of multiple start-ups that had a substantial role in fostering economic expansion [20,21]. The government's implementation of improved measures to help SMEs is aimed at fostering their growth and advancement [22]. Considering this current account, it is undeniable that SMEs serve as spurs for entrepreneurship, enhancing job prospects and fostering consistent economic expansion. Furthermore, Chima argues that the geographical distribution of these entities helps to reduce rural-urban migration and optimize resource utilization. SMEs play a substantial role in industrial distribution networks through their production of intermediate goods. SMEs play a crucial role in the growth of the economy of every country.

SMEs can be assessed using multiple metrics to monitor their growth. Growth is commonly assessed in government policy studies, as well as in various management and economics sources, by quantifying the rise in job opportunities for SMEs. The metric in question holds significant relevance for numerous government policymakers due to the recognition of SME growth as a crucial means of mitigating unemployment [23].

2.3. Marketing Strategy

Marketing in small firms is focused primarily on short-term objectives, with limited emphasis placed on long-term plans, strategies, and analysis. This is in contrast to the formal, well-organized, and structured approach to marketing observed in large corporations. Companies that allocate more resources toward advertising experience positive cash flows in the following years [24]. SMEs frequently design individual advertisements in isolation and are less likely to develop a unified, well-planned advertising campaign. It has been noted by Dutta and Vorhies and Morgan that the financial performance of an organization is impacted subsequently by its marketing capability [25,26]. Furthermore, Kochhar and David posit those investors form judgments regarding an organization on the grounds of its marketing capabilities, performance, and strategies [27].

Within the realm of marketing concepts, services encompass an extensive array of endeavors, professions, and activities. Kotler defines a service as follows: "A service is any event, activity, or benefit that one party can provide to the other that is primarily intangible and does not result in the acquisition of any tangible goods or services." The correlation between the provision of services and the tangible product is debatable.

To ensure an efficient marketing strategy in a small service-oriented organization located in Uzbekistan, the manager must formulate three strategies that target the aforementioned three connections [28]:

- a) *The "consumer-organization" bond is the focus of traditional marketing strategy, which is concerned with pricing, communications, and distribution channel concerns.*
- b) *Staff motivation is associated with the "organization-personnel" relation that is the focus of the internal marketing strategy.*
- c) *The approach of interactive marketing—centered on the connection between "personnel" and "consumer"—is linked to the assurance of service quality.*

2.4. Marketing Mix Strategy (P. Kotler's Framework)

As stated by Lee and Kotler, the marketing mix comprises the firm's ability to exert an impact on the reaction of the customers through the use of controllable variables [29]. In this context, the controllable variables are denoted by the four "P's": product, price, place (distribution), and promotion. Every organization makes an effort to assemble a set of four "P" elements that will simultaneously generate the highest level of customer satisfaction and accomplish its organizational goals. Furthermore, Moor and Maidenhead define the marketing mix as follows: "The marketing mix refers to the assortment of strategies implemented by an organization to successfully market its offerings to a specific demographic to accomplish its goals" [30]. It is additionally known as the "7 Ps" (Product, Place, Promotion, and Price), which comprises the "4 Ps" plus People,

Process, and Physical Evidence. These four or seven “P” components, which are also known as marketing elements, comprise the marketing mix. Because a decision in one area influences outcomes in others, they are all interconnected.

Based on the above definition, it becomes evident that the marketing mix in Uzbekistan primarily entails the identification of consumers’ needs and the provision of diverse services to fulfill those needs. Thus, proprietors of SMEs must manufacture or produce goods according to consumer demands, ensure that they are priced affordably and in a manner that is convenient for consumers to access, distribute the product through various channels that consumers can access conveniently, and educate consumers about the product’s attributes via the media at their disposal [30]. By implementing the marketing mix, small enterprises can strategically position their services within the Uzbek market.

2.5. The Variables of Marketing Mix Strategy

Product—As defined by Kotler, a product is any item that can be made available to a market to attract attention, attract purchases, facilitate usage, or satisfy needs and desires. Additionally, they define a consumer product as something that is purchased for individual use by the final consumer. Consumers frequently make purchases, employing strategic planning and brand comparisons to evaluate attributes such as price, quality, and style. Mohammad further asserts that the product encompasses its packaging, labeling, and tangible appearance [31]. Information may also impact whether or not consumers scrutinize, observe, and purchase a product in-store. SMEs in Uzbekistan may establish a distinct brand identity using a combination of product attributes, quality, design, and packaging, which helps to differentiate them from their competitors. A favorable brand perception and increased consumer loyalty may ensue in the Uzbek market. In this light, we hypothesize that:

H1: The product attributes significantly influence the growth of SMEs in the service industry.

Price—Kotler defined price as the expenditure incurred by an organization to manufacture, distribute, and advertise the product that is to be exchanged. According to Zeithaml, monetary cost is a determinant of how consumers perceive the value of a product. Price can be defined as the tangible or comprehensive rated worth of a product that is being exchanged; an investigation conducted by Owomoyela establishes a noteworthy correlation between price and company success [32]. The pricing strategy you implement for your service or product has a substantial impact on its marketability. By utilizing the marketing mix, one can implement effective pricing strategies in Uzbekistan, taking into consideration variables such as consumer purchasing power, competition, and market demand. Uzbek SMEs can maximize profits and attract consumers by establishing prices that are perceived as reasonable and provide value for money. In this light, we hypothesize that:

H2: The price of providing service has a positive relationship with SME growth.

Promotion—Promoting a product involves devising an effective combination of communication strategies to convey the product’s brand and message from the manufacturer to the customer. Small enterprises that comprehend the integration of promotions into their overall marketing strategy acknowledge the significance of this. Integrated marketing is the coordinated linking of advertising, public relations, direct marketing, and other marketing strategies. Similarly, Gbolagade defines promotion as a targeted initiative aimed at motivating consumers to share information about their sundries with others. The positive impact of advertising on the development of a positive brand image has been substantiated by numerous scholars and practitioners [33]. The marketing mix provides a framework for creating successful promotional campaigns in Uzbekistan. Through the strategic implementation of digital marketing, public relations, advertising, and sales promotions, organizations can generate interest, create awareness, and stimulate demand for their offerings. It may result in increased consumer engagement and brand visibility.

H3: The marketing mix element of promotion significantly impacts the growth and success of SMEs in the service industry.

Place—According to Jones, “place” encompasses any means by which a consumer can acquire a product or service. Additionally, Bowersox and Closs refer to distribution as “place” [34]. As per their assertion, it constitutes the other component of the marketing mix and comprises all strategies and instruments associated with the provision of products and services to consumers. Place or distribution is defined by Kotler and Armstrong as a collection of interdependent organizations that collaborate to ensure that a product is accessible to consumers for use or consumption. Successful distribution of products through marketing channels, including wholesalers and retailers, is the essence of place strategy. In Uzbekistan, the marketing mix assists small companies in optimizing their distribution channels. SMEs can increase consumer contentment and convenience by determining the optimal channels through which to reach their target market and by ensuring proficient product availability and delivery. It may lead to enhanced customer loyalty and increased sales. In the light of this, we hypothesized that:

H4: The place of service has a positive influence on SME’s growth.

People—According to Muala and Qurneh, pertains to the personnel responsible for both the provision and execution of the service [35]. Constantly incorporating personal interactions between clients and site personnel, numerous services have an impact on purchasers’ evaluations of service quality. Personnel are essential to the provision of consumer service. Individuals residing in Uzbekistan hold a pivotal position in the realm of marketing due to their direct consumer interaction and provision of the brand experience. They are frequently regarded as the most valuable and influential element of the marketing blend in the Uzbek market due to their ability to substantially affect consumer satisfaction, brand perception, and overall business success. From this review, we hypothesized that:

H5: The marketing mix element of people, referring to the employees or service providers within SMEs, is a critical factor in the service industry.

Process—The process is generally defined by Muala and Qurneh as the execution of an action and function that increases the value of goods at a low cost and to the customer’s great advantage; it is more crucial for services than for products [35]. The level of transparency regarding the service providers’ proficiency and the rate at which the process is completed are both aspects that significantly influence the customer’s contentment with the purchase. Consequently, process management guarantees quality consistency and availability. Due to the concurrent consumption and production of process management, it is exceedingly challenging to balance service demand and supply. The development and distribution of a product is significantly influenced by the design and execution of its components. In Uzbekistan, the process is a vital component of the marketing mix, as it facilitates the delivery of value to consumers, the improvement of operational efficiency, the establishment of brand image, the encouragement of innovation, and the measurement and evaluation of marketing efforts. SMEs can achieve sustained business success and a competitive edge in the Uzbek market by emphasizing the process component. Against this background, the study hypothesizes that:

H6: The process has a significant impact on the growth of SMEs in the service industry.

Physical Evidence—According to Muala and Qurneh, pertains to the setting in which the service and any tangible products that aid in its communication and execution are provided [35]. This aspect is of significant significance as it is customary for customers to evaluate the caliber of service rendered based on tangible evidence. Furthermore, this factor pertains to the surroundings in which the provision of services takes place.

Physical evidence should be a considerable consideration for Uzbekistan-based businesses when formulating their marketing mix strategies. Through strategic investments in the physical components of their products or services, enterprises can establish a positive brand reputation, foster customer confidence, and ultimately stimulate sales and expansion within the Uzbek market. Given this review, the present study hypothesized that:

H7: The physical evidence significantly influences the growth of SMEs in the service industry.

2.6. Conceptual Framework and Hypotheses Development

The proposed conceptual framework proposes to examine SME marketing mix strategy development in a structured approach. As shown in Figure 1, the variables of the marketing mix strategy that impact SME growth are presented. Thus, Figure 1 presents the network and visual representations of the proposed constructs.

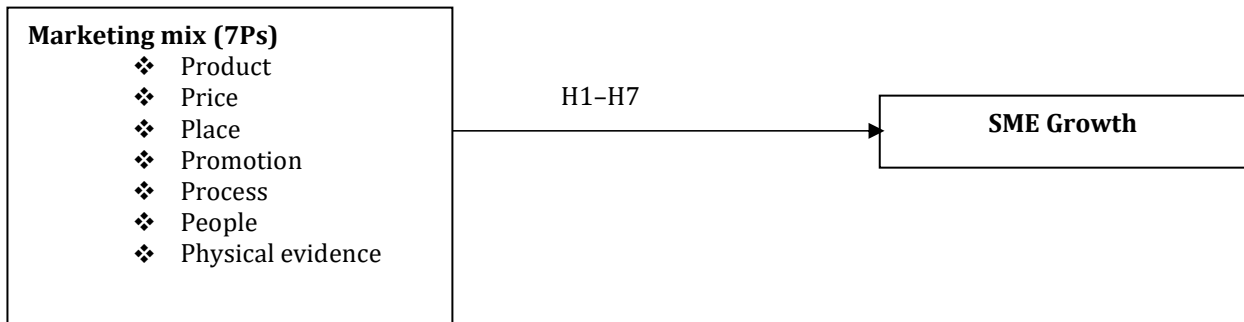


Figure 1. A framework marketing mix (7Ps) impact on SMEs growth.

3. Methodology

3.1. Research Method and Design

This study employed a combination of descriptive and exploratory research methodologies, integrating both quantitative approaches. The research adopted a more exploratory and descriptive approach due to the lack of prior investigation on the chosen topic and the recent emergence of a framework for marketing strategy for SMEs establishments in Uzbekistan. The primary phase of the research design was surveyed. The purpose of the survey was to gather insights from entrepreneurs in Uzbekistan concerning the execution of marketing mix strategies within SMEs.

3.2. Data Collection Tool

To collect quantitative data, a survey questionnaire was designed. Concerning the execution of marketing mix strategies within SMEs, the survey inquired about the following aspects: product, price, place, promotion, personnel, process, and tangible evidence. A purposive sampling technique was employed to select a sample of entrepreneurs in Uzbekistan from which the survey was subsequently disseminated. The participants were requested to indicate their level of agreement or disagreement with a range of statements by employing Likert scale ratings. The questionnaire used for the survey is shown in Appendix A.

3.3. Data Analytical Techniques

Analysis of Survey Data: Statistical software, specifically STATA regression analysis, was employed to examine the survey data. Analyses were conducted on the correlation between marketing mix variables and the growth of SMEs. Utilizing statistical analysis, the importance of integrating marketing mix components for SME marketing efforts to cultivate brand loyalty, improve performance, and obtain a competitive advantage was determined.

4. Results

4.1. Descriptive Analysis

The summary of respondents' socio-demographic profile data illustrates the age distribution of the 100 participants in this survey. Overall, 50% of the participants fell within the age range of 30 to 40 years, 37% were between the ages of 20 and 30, and 13% were aged 40 years or older.

Moreover, it is worth noting that among the entire sample, 57% of the respondents possessed a Bachelor's degree, 8% held a secondary degree, 7% held a PhD, and 28% had a Master's degree. Moreover, 98% of the participants had acquired market research experience during their business careers in the service industry.

It further depicts data on the employment status of respondents in enterprises of medium, small, and micro sizes in the service industry. It has been shown that nearly all types of firms have obtained market research. Out of the participants, 8 percent are employed as executive staff, 62 are managers, and 30 have roles as Owners and CEOs. In addition, the study identified 24 participants from medium-sized enterprises, 16 from micro-sized organizations, and 60 from small companies.

4.2. Skewness and Kurtosis

Table 1 presents an analysis of the skewness and kurtosis of several variables. The column labeled "Pr (Skewness)" presents the skewness values corresponding to each variable. Anomalies in the distribution of the variable are indicated by these values. The table exhibits skewness values of 0.0000, indicating that the variables possess a symmetrical distribution. Additionally, the column labeled "Pr (Kurtosis)" presents the kurtosis values corresponding to each variable. The aforementioned values quantify the degree of peakedness, or flatness exhibited by the distribution. The kurtosis values exhibit variability among the variables, encompassing a range of values including 0.0001, 0.0106, 0.1821, 0.2836, and so forth. The values serve as indicators of varying degrees of peakedness or flatness within the distributions.

Table 1. Skewness and Kurtosis analysis.

Variables	Obs	Pr (Skewness)	Pr (Kurtosis)	Adj Chi-Square	Prob > Chi Square
PR1	100	0.0000	0.0001	40.41	0.0000
PR2	100	0.0000	0.0106	31.01	0.0000
PR3	100	0.0000	0.0106	31.01	0.0000
PRI1	100	0.0000	0.1821	16.56	0.0003
PRI2	100	0.0000	0.2836	21.72	0.0000
PRI3	100	0.0000	0.0013	36.97	0.0000
PLC1	100	0.0000	0.4385	15.00	0.0006
PLC2	100	0.0000	0.0279	23.19	0.0000
PLC3	100	0.0000	0.6405	15.25	0.0005
PROM1	100	0.0000	0.0513	17.00	0.0002
PROM2	100	0.0012	0.0000	55.88	0.0000

Source: Authors' processing from STATA software.

4.3. Reliability Analysis

The principal aim of the objective is to analyze the key components comprising a marketing mix strategy that applies to the formation of companies in Uzbekistan. Participants were instructed to assess the seven marketing mix strategies, namely product, price, promotion, place, process, people, and physical evidence, as elucidated in the literature review. These 7P indicators were analyzed together to define the relationship between them towards SMEs growth. The data presented in Table 1 indicates that the variables with the highest mean scores were product and process, with values of 4.84 and 4.83, respectively. Conversely, the physical evidence of SMEs in Uzbekistan was identified as the second most relevant variable, with a mean value of 4.81.

Furthermore, the reliability of the 7P's of the marketing mix strategy employed in the dissertation was assessed using Cronbach's Alpha test, as illustrated in Table 2. As a result, the average alpha score of the independent variables was determined to be 0.82. This value indicates that the variables used in examining the model are reasonably reliable on average. Moreover, according to Kline, Yang & Green, Cronbach's alpha

coefficients typically fall within the range of 0 to 1, where higher values signify enhanced internal consistency or reliability. The acceptable score for the Cronbach's Alpha test is typically between 0.7 and 0.8.

It can be inferred that the marketing mix variables exhibit moderate to high degrees of internal consistency, as indicated by the coefficients which span from 0.7652 to 0.8650. Based on these coefficients, it can be determined that the items comprising each variable are reasonably reliable in measuring the same underlying construct.

The Variance Inflation Factor (VIF) test quantifies the extent of multicollinearity by assigning a numerical value to each predictor variable. The Variance Inflation Factor (VIF) quantifies the extent to which the estimate of the regression coefficient for a specific variable is influenced by the inclusion of additional predictor variables that are linked with it. When analyzing the VIF values, it can be observed that greater values are indicative of a more pronounced level of multicollinearity. In the present scenario, it is observed that physical evidence and process exhibit comparatively elevated VIF values, suggesting a heightened degree of multicollinearity. However, it is worth noting that the variables promotion and product exhibit lower VIF values, suggesting a reduced level of multicollinearity.

Table 2. Alpha test for reliability obtained from STATA.

Variables of Marketing Mix	Mean Values	VIF	Reliability Coefficient (Cronbach Alpha)
Product	4.83	6.24	0.8524
Price	4.80	5.49	0.8212
Place	4.68	4.48	0.7652
Promotion	4.80	3.83	0.8266
Physical evidence	4.81	3.00	0.8450
People	4.80	2.02	0.8241
Process	4.84	1.84	0.8650
SME growth	4.80	3.84	0.8969

Source: Authors' processing from STATA software.

A regression analysis using the STATA software was conducted to determine the influence of the independent variables (7Ps of Marketing mix strategy) on the dependent variable (SME growth) and to quantify the extent to which changes in one variable can affect changes in another. Regression analysis is a statistical method used to determine the connection between the dependent and independent variables. It facilitates comprehension of how alterations in the independent variables (7Ps) impact the dependent variable (SME growth) and the characteristics and direction of that correlation. Table 3 shows the indices of model fit.

Table 3. Model fit test obtained from STATA.

Source	Std deviation	df	Mean	Number of obs = 100 F (7,95) = 23.39
Model	97.0969819	7	13.8709974	Prob > F = 0.0000
Residual	56.3399113	93	0.593051698	R-squared = 0.6328
Total	153.436893	100	1.50428327	Adj R-squared = 0.6058 Root MSE = 0.7701

Source: Authors' processing from STATA software.

Consequently, it has been demonstrated that there is a statistically significant relationship between independent variables (physical evidence, people, and process) and the establishment of SMEs in Uzbekistan. This conclusion is supported by the fact that the P-values for these variables (0.052, 0.014, and 0.008) are all less than the significance level of 0.05, as shown in Table 4. Moreover, it is statistically essential to claim that other independent variables (product, price, place, and promotion) that were defined as the explanatory variables do not affect the dependent variable due to a high p-value exceeding the significant level at ($p < 0.05$).

5. General Discussion and Research Implication

The implementation of a marketing mix plan allows small firms and startups to distinguish themselves from their competition. Businesses may differentiate themselves in the market and draw customers away from competitors by providing distinctive product characteristics, competitive pricing, streamlined distribution networks, and impactful promotional efforts. Furthermore, a marketing mix plan offers a structured approach to establishing a robust brand identity. Small firms and startups may generate a favorable brand perception, earn client trust, and create long-term brand loyalty by creating an appealing product or service, determining the appropriate pricing, selecting proper distribution channels, and performing effective promotional efforts. Furthermore, the marketing mix enables organizations to precisely target certain customer categories. Small firms and startups may customize their marketing strategies by comprehending the requirements, preferences, and actions of their intended audience. Implementing this focused strategy results in elevated conversion rates, enhanced consumer involvement, and an enhanced return on investment (ROI) for marketing endeavors.

Table 4. Hypothesis testing-multiple regression.

Hypothesis	Coef.	Std. Err.	T-Values (t > 1.96)	P-Values (<0.05)	Decision
H1: The product attributes significantly influence the growth of SMEs in the service industry.	0.177	0.109	1.630	0.107	Rejected
H2: The price of providing service has a positive relationship with SME growth.	0.226	0.133	1.712	0.091	Rejected
H3: The marketing mix element of promotion significantly impacts the growth and success of SMEs in the service industry.	0.150	0.112	1.340	0.185	Rejected
H4: The place of providing service has a positive relationship with SME growth.	0.099	0.743	1.330	0.188	Rejected
H5: The marketing mix element of people, referring to the employees or service providers within SMEs, is a critical factor in the service industry.	-0.347	0.176	-1.971	0.052	Accepted
H6: The process has a significant impact on the growth of SMEs in the service industry.	0.363	0.146	2.49	0.014	Accepted
H7: The physical evidence significantly influences the growth of SMEs in the service industry.	0.493	0.181	2.73	0.008	Accepted

5.1. Theoretical Implications

This study holds significant theoretical implications for the field of marketing in both the Uzbekistan context and other developing economies. By focusing on the application of the 7Ps framework within the specific socio-economic and cultural milieu of Uzbekistan, the research contributes to the advancement of localized marketing theories. Scholars such as Kotler and Armstrong emphasize the importance of tailoring marketing strategies to the unique characteristics of each market [36]. This study builds upon their insights by providing a nuanced understanding of how the 7Ps framework can be adapted to foster SME growth in a developing economy like Uzbekistan. The theoretical framework developed in this research serves as a foundation for future studies exploring the applicability and adaptability of marketing concepts in diverse emerging markets.

5.2. Managerial Implications

The managerial implications of this research extend to practitioners, policymakers, and business owners operating in Uzbekistan and similar developing economies. The findings offer actionable insights into crafting effective marketing strategies for SMEs, aligning with the country's specific cultural, economic, and regulatory context. For instance, as highlighted by Porter, understanding the competitive forces in a market is crucial for strategic management [37]. In the Uzbekistan context, where the business landscape is shaped by unique factors, implementing the insights derived from this study can aid managers in formulating strategies that address the distinct challenges faced by SMEs. Policymakers can leverage these findings to design initiatives that support SMEs in aligning their marketing efforts with the 7Ps framework, fostering sustainable growth and contributing to the overall economic development of the country. This research thus serves as a practical guide for stakeholders seeking to navigate and excel in the marketing landscape of developing economies.

6. Conclusions

In conclusion, this research delves into the intricate framework of marketing strategy tailored for small and medium-sized enterprises (SMEs) operating in Uzbekistan. It underscores the pivotal role SMEs play in fueling economic growth, generating employment opportunities, and driving innovation within the country. Recognizing this importance, there is a clear call for robust support measures to ensure the sustainable and equitable advancement of SMEs in Uzbekistan's economic landscape. The study employed a combination of descriptive and exploratory methodologies, integrating quantitative techniques to analyze the intricate relationship between marketing mix elements and SME growth. The primary aim was to develop a comprehensive and impactful marketing strategy tailored to the unique needs and challenges faced by SMEs in Uzbekistan.

The findings highlight the potential for SMEs to enhance their marketing endeavors, cultivate customer loyalty, and gain a competitive advantage by strategically integrating the seven components of the marketing mix: product, pricing, place, promotion, people, process, and physical proof. This study culminates in the development of a Marketing Mix Strategy utilizing these seven Ps, specifically tailored for startups in Uzbekistan. Furthermore, this research underscores the global significance of SMEs and their crucial role in fostering job creation and economic prosperity. The insights and recommendations derived from this study offer valuable guidance to entrepreneurs, policymakers, and stakeholders in formulating and executing effective marketing strategies conducive to the growth and prosperity of SMEs, particularly in the service sector. Ultimately, SMEs in Uzbekistan stand to significantly contribute to the country's economic growth by implementing comprehensive marketing mix strategies. Such strategies enable SMEs to navigate challenges, enhance brand visibility, attract clientele, and ultimately bolster their financial viability and sustainability in the marketplace.

Limitations and Future Research

While this study has provided valuable insights into the marketing strategies employed by SMEs in Uzbekistan, it is essential to acknowledge the limitations encountered during the research process. Firstly, the focus was primarily on the service sector, indicating a need for future studies to explore a broader range of industries to offer a comprehensive understanding of marketing techniques across various sectors.

Additionally, the study's sample size was limited, warranting future investigations to include a more diverse and extensive pool of entrepreneurs to enhance the generalizability of the findings. Moreover, reliance on self-reported data from participants may have introduced response bias, suggesting a need for empirical assessments and longitudinal analyses in subsequent research endeavors to validate the results.

Furthermore, while this study delved into the execution of the marketing mix plan, there remains an opportunity for future research to delve deeper into individual elements of the marketing mix, such as pricing tactics, distribution routes, and digital marketing methods. This specialized exploration could provide SMEs in Uzbekistan with more precise and tailored guidance to enhance their marketing effectiveness.

In conclusion, this study contributes to the understanding of marketing strategies for SMEs in Uzbekistan and offers valuable insights into their growth and competitiveness. By implementing a well-executed marketing mix plan, SMEs can not only achieve growth and foster brand loyalty but also gain a competitive edge in the market. The recommendations put forth aim to support the growth and prosperity of SMEs not only in

Uzbekistan but also in other developing countries, thereby making a significant contribution to the economic advancement of nations.

Author Contributions

Conceptualization, Y.K. and A.B.J.; methodology, Y.K. and A.B.J.; software, Y.K.; validation, Y.K., and A.B.J. formal analysis, Y.K. and A.B.J.; investigation, Y.K.; resources, Y.K.; data curation, Y.K.; writing—original draft preparation, Y.K.; writing—review and editing, Y.K. and A.B.J.; visualization, A.B.J.; supervision, A.B.J.; project administration, A.B.J. All authors have read and agreed to the published version of the manuscript.

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Institutional Review Board Statement

The study was conducted by the Declaration of Helsinki and approved by the Institutional Review Board (or Ethics Committee) of Westminster International University in Tashkent (protocol code MAIBM/0001294/2023-2024 and date of approval was 8th January 2024).

Informed Consent Statement

Informed consent was obtained from all subjects involved in the study.

Increasingly, ethical considerations influenced each stage of the research procedure. Participants' informed consent was obtained before the commencement of the survey. To guarantee confidentiality and anonymity, any personally identifiable information was eliminated from the data. The study adhered to ethical principles and safeguarded the confidentiality and rights of the participants.

Data Availability Statement

Data is available upon reasonable request.

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Conflicts of Interest

The authors declare no conflict of interest.

Appendix A

Survey questions:

Socio-demographic information

1. How old are you?

Below 20 years

20–30

30–40

40–50

50 and above

2. What is your highest education level?

Secondary

Secondary Special
Bachelor's degree
Masters' degree
PhD
None

3. Which of the following best describes your position at the company you operate?

Owner and CEO
Manager
Executive Staff

4. How will you classify your company/organization in terms of its size?

Micro (Employees: Less than 10)
Small (Employees: 10 to 49)
Medium (Employees: 50 to 249)

5. Is your company/organization a family business?

Yes
No
Don't know

6. Does your company conduct some marketing research?

Yes
No
Prefer not to say

7. What is the principal role that marketing serves within your organization?

Market Research
Marketing Strategy
Branding and Positioning
Advertising and Promotion
All

8. Which marketing strategy do you employ to promote the establishment of SMEs?

Digital Marketing
Marketing Mix Strategy
Referral Marketing
Search Engine Optimization
All

9. What Drives the Adoption of the Marketing Mix by SMEs?

Customer Preferences
Competitive Landscape
Technological Advancements
Economic Conditions
All

Hypothesis testing

Please rate your assessment of the following based on the level of agreement and disagreement:

Product (PRO)-Mix

10. I believe my new product development process is satisfactory.

Strongly Disagree
Disagree
Neutral
Agree
Strongly Agree

11. The present approach to product development results in financial gain

Strongly Disagree
Disagree
Neutral
Agree
Strongly Agree

12. I find my method of product production is satisfactory.

Strongly Disagree
Disagree
Neutral
Agree
Strongly Agree

Please rate your assessment of the following based on the level of important and unimportant:

PRICE (PRI)-Mix

13. How important do you consider the marketing mix of price for your SME's success?

Strongly Unimportant
Unimportant
Neutral
Important
Strongly Important

14. How significant of the price of your product/service for your organization?

Strongly Unimportant
Unimportant
Neutral
Important
Strongly Important

15. How important pricing strategies are for maintaining market competitiveness?

Strongly Unimportant
Unimportant
Neutral
Important
Strongly Important

Please rate your assessment of the following based on the level of importance with satisfaction:

Place (PLC)-Mix

16. How important do you consider the marketing mix of place (distribution) for your SME's success?

Strongly Unimportant
Unimportant
Neutral
Important

Strongly Important

17. How important do you consider your current distribution channels in your business?

Strongly Unimportant

Unimportant

Neutral

Important

Strongly Important

18. I find my current distribution channel for the product is satisfactory.

Strongly Disagree

Disagree

Neutral

Agree

Strongly Agree

Please rate your assessment of the following based on the level of satisfaction:

Promotion (PROM)-Mix

Indicate the level of satisfaction of using the following promotional strategy in your service:

19. Discounted prices offered

Strongly Dissatisfied

Dissatisfied

Neutral

Satisfied

Strongly Satisfied

20. Social media campaign used

Strongly Dissatisfied

Dissatisfied

Neutral

Satisfied

Strongly Satisfied

Please rate your assessment of the following based on the level of agreement:

21. I believe, Advertising has a direct effect on my service

Strongly Disagree

Disagree

Neutral

Agree

Strongly Agree

22. Personal selling has a direct effect on my service.

Strongly Disagree

Disagree

Neutral

Agree

Strongly Agree

Please rate your assessment of the following based on the level of agreement and importance:

Physical Evidence (EVI)-Mix

23. I am familiar with the phrase “physical evidence” as it pertains to the field of marketing.

Strongly Disagree

Disagree

Neutral

Agree

Strongly Agree

24. How significant do you consider physical evidence to be as a component of the overall marketing mix for SMEs?

Strongly Unimportant

Unimportant

Neutral

Important

Strongly Important

25. The physical evidence of a business, including its branding and design, communicates its identity and values effectively.

Strongly Disagree

Disagree

Neutral

Agree

Strongly Agree

Please rate your assessment of the following based on the level of importance and agreement:

People (PEOP)-Mix

26. How significant do you consider people (employees) to be as a component of the overall marketing mix for SMEs?

Strongly Unimportant

Unimportant

Neutral

Important

Strongly Important

27. The company values its customers and provides excellent customer service.

Strongly Disagree

Disagree

Neutral

Agree

Strongly Agree

28. My company trains employees to deliver a positive customer experience.

Strongly Disagree

Disagree

Neutral

Agree

Strongly Agree

Please rate your assessment of the following based on the level of importance and agreement:

Process (PRO)-Mix

29. The marketing processes in an organization should be clearly defined

Strongly Disagree
Disagree
Neutral
Agree
Strongly Agree

30. I consider the marketing process important as a component of the overall marketing mix for SMEs

Strongly Disagree
Disagree
Neutral
Agree
Strongly Agree

31. I believe regular monitoring and evaluation of marketing processes are necessary for identifying areas of improvement.

Strongly Disagree
Disagree
Neutral
Agree
Strongly Agree

Please rate your assessment of the following based on the level of freedom, receptiveness, and flexibility:
SME establishment (SME)

32. To what extent are you receptive to implementing novel marketing strategies or instruments in order to enhance the marketing endeavors of your SME?

Extremely Unreceptive
unreceptive
Neutral
Receptive
Extremely receptive

33. How much flexibility does your SME establishment have in adjusting its product or service offerings based on market demands?

Extremely Inflexible
Inflexible
Neutral
Flexible
Extremely Flexible

34. How much freedom does your SME establishment have in choosing its business location or premises?

Extremely Unfree
Unfree
Neutral
Free
Extremely Free

References

1. Small and Medium-Sized Enterprise Finance in Uzbekistan: Challenges and Opportunities, Asian Development Bank. Available online: <https://www.adb.org/sites/default/files/publication/524081/adbi-wp997.pdf> (accessed on 9 October 2023).
2. Impact of Entrepreneurs' Behaviour on Growth of Small and Medium Enterprises (Smes): Special Reference to Udunuwara Division. Available online: <https://api.semanticscholar.org/CorpusID:209007971> (accessed on 9 October 2023).

- 2023)
3. Ardjouman, D.; Asma, B. Marketing management strategies affecting performance of small and medium enterprises (SMEs) in Cote d'Ivoire. *Int. J. Bus. Soc. Sci.* **2015**, *6*, 141–150. [CrossRef]
4. Dobbs, M.; Hamilton, R.T. Small business growth: Recent evidence and new directions. *Int. J. Entrepreneurial Behav. Res.* **2007**, *13*, 296–322. [CrossRef]
5. Batrancea, L.M. Determinants of economic growth across the European Union: A panel data analysis on small and medium enterprises. *Sustainability* **2022**, *14*, 4797. [CrossRef]
6. Achumba, I.C. *Strategic Marketing Management in the 21st Century*. Mac-Williams and Capital Publishers Inc: New York, USA, 2010.
7. Costa, A.; Crupi, A.; De Marco, C.E.; Di Minin, A. SMEs and open innovation: Challenges and costs of engagement. *Technol. Forecast. Soc. Ch.* **2023**, *194*, 122731. [CrossRef]
8. Adewale, A.G.; Adesola M.A.; Oyewale I. Impact of marketing strategy on business performance: A study of selected small and medium enterprises (Smes) in Oluyole local government, Ibadan, Nigeria. *IOSR J. Bus. Manag.* **2013**, *11*, 59–66. [CrossRef]
9. Small and Medium Enterprises (SMEs) Finance. Available online: <https://www.worldbank.org/en/topic/sme/finance> (accessed on 9 October 2023).
10. Small Business Statistics of 2024. Available online: https://www.forbes.com/advisor/business/small-business-statistics/#small_business_employment_statistics_section (accessed on 9 October 2023).
11. Algan, N. The importance of SMEs on world economies. In Proceedings of International Conference on Eurasian Economies, Turkish Republic of Northern Cyprus, 12 June 2019.
12. Jasra, J.; Hunjra, A.I.; Rehman, A.U.; Azam, R.I.; Khan, M.A. Determinants of business success of small and medium enterprises. *Int. J. Bus. Soc. Sci.* **2011**, *2*. [CrossRef]
13. Syed, A.A.S.G.; Ahmadani, M.M.; Shaikh, N.; Shaikh, F.M. Impact analysis of SMEs sector in economic development of Pakistan: A case of Sindh. *J. Asian Bus. Strategy* **2012**, *2*, 44–53. [CrossRef]
14. Khan, N.R.; Awang, M.; Zulkifi, C.M. Small and medium enterprises and human resources practices in Pakistan. *Int. J. Asian Soc. Sci.* **2013**, *3*, 460–471. [CrossRef]
15. Khalique, M.; Isa, A.H.Md.; Shaari, J.A.N. Challenges for Pakistani SMES in a knowledge-based economy. *Indus J. Manag. Soc. Sci.* **2011**, *5*, 74–80. [CrossRef]
16. The Entrepreneurship Ecosystem in Uzbekistan—IFIT. Available online: <https://www.ifit-transitions.org/wp-content/uploads/2022/11/IFIT-Uzbekistan-BT-Entrenpreneurial-Ecosystem-in-Uzbekistan.pdf> (accessed on 9 October 2023).
17. Lawal, F.A.; Worlu, R.E.; Ayoade, O.E. Critical success factors for sustainable entrepreneurship in SMEs. *Mediterranean J. Soc. Sci.* **2016**, *7*, 338–346. [CrossRef]
18. Small Businesses Contribute 50% to Uzbekistan's GDP, Daryo.Uz. Available online: [https://daryo.uz/en/2023/12/26/small-businesses-contribute-50-to-uzbekistans-gdp#:~:text=In%20many%20developing%20countries%2C%20including,GDP%20of%20most%20developing%20eco](https://daryo.uz/en/2023/12/26/small-businesses-contribute-50-to-uzbekistans-gdp#:~:text=In%20many%20developing%20countries%2C%20including,GDP%20of%20most%20developing%20economies) nomies (accessed on 9 October 2023).
19. Oramah, I.T.; Richards, J.P.; Summers, R.; Garvin, T.; McGee, T. Artisanal and small-scale mining in Nigeria: Experiences from Niger, Nasarawa and Plateau states. *Extr. Ind. Soc.* **2015**, *2*, 694–703. [CrossRef]
20. Fowosire, R.A.; Idris, O.Y.; Opoola, E. Technopreneurship: A View of Technology, Innovations and Entrepreneurship. *Glob. J. Res. Eng.* **2017**, *17*, 41–46. [CrossRef]
21. Akerejola, W.O.; Okpara, E.U.; Ohikhe, P.; Emenike, P.O. Availability of Infrastructure and Adoption of Point of Sales of Selected Small and Medium Enterprises (SMEs) in Lagos State, Nigeria. *Int. J. Acad. Res. Bus. Soc. Sci.* **2019**, *9*, 137–150. [CrossRef]
22. Akinbola, O.A.; Abiola, O.O.; Ajonbadi, H.A. Causes and Symptoms of Small and Medium Enterprises (SMEs) Business Failure in Nigeria. *Rev. Manag. Econ. Eng.* **2014**, *13*, 263–282. [CrossRef]
23. Robson, P.J.; Bennett, R.J. SME growth: The relationship with business advice and external collaboration. *Small Bus. Econ.* **2000**, *15*, 193–208. [CrossRef]
24. Chan Louis K.C.; Lakonishok J.; Sougiannis T. The stock market valuation of research and development expenditure. *J. Finance* **2000**, *56*, 2431–2456. [CrossRef]
25. Padulosi, S.; Mal, B.; Ravi, S.; Gowda, J.; Gowda, K.; Shanthakumar, G.; Yenagi, N.; Dutta, M. Food security and climate change: role of plant genetic resources of minor millets. *Ind. J. Plant Genet. Res.* **2009**, *22*, 1–16. [CrossRef]
26. Vorhies, D.W.; Morgan, N.A. Benchmarking marketing capabilities for sustained competitive advantage. *J. Marketing* **2005**, *69*, 80–94. [CrossRef]
27. David, P.; Kochhar, R. Barriers to effective corporate governance by institutional investors: Implications for theory and practice. *Eur. Manag. J.* **1996**, *14*, 457–466. [CrossRef]

28. Ziyayeva, M.M. Peculiarities of formation of marketing strategy in the sphere of services of the Republic of Uzbekistan. *RUDN J. Econ.* **2018**, *26*, 186–195. [[CrossRef](#)]
29. Lee, N.R.; Kotler, P. 2011. *Social Marketing: Influencing Behaviors for Good*. Sage: Newcastle upon Tyne, UK, 2011.
30. McColl, J.; Moore, C. An exploration of fashion retailer own brand strategies. *J. Fash. Marketing Manag.: An Int. J.* **2011**, *15*, 91–107. [[CrossRef](#)]
31. Mohammad, A.A.F. Sizing up Malaysia's manufacturing SMEs-definitional implications. *J. Stats. Mod. Anal.* **2012**, *3*, 37–45. [[CrossRef](#)]
32. Owomoyela, S.K.; Oyeniyi, K.O.; Ola, O.S. Investigating the impact of marketing mix elements on consumer loyalty: An empirical study on Nigerian Breweries Plc. *Interdisciplinary J. Contemporary Res. Bus.* **2013**, *4*, 485–496. [[CrossRef](#)]
33. Martin-Consuegra, D.; Molina, A.; Esteban, A. An integrated model of price, satisfaction and loyalty: An empirical analysis in the service sector. *J. Prod. Brand Manag.* **2007**, *16*, 459–468. [[CrossRef](#)]
34. Bowersox, D.; Closs, D.J. *Logistic Management: An Integrated Supply Chain Process*. McGraw-Hill: New York, USA; 1996.
35. Muala, A.A.I.; Qurneh, M.A.I. Assessing the relationship between marketing mix and loyalty through tourists satisfaction in Jordan curative tourism. *Am. Academic Sch. Res. J.* **2012**, *4*, 7–23. [[CrossRef](#)]
36. Kotler, P.; Armstrong, G. *Principles Marketing*. Pearson: London, UK; 2018.
37. Porter, M.E. *Competitive Strategy: Techniques for Analyzing Industries and Competitors*. Free Press: New York, USA, 1980.



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