

Developing a Supply Chain Model Based on an Effective Marketing-Mix Approach to Consumer Behavior in the Automotive Industry: A Qualitative Thematic Analysis

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ABSTRACT

This study aimed to develop an integrated supply-chain model based on an effective marketing-mix approach to explain consumer behavior in the automotive industry. This applied qualitative study constituted the exploratory phase of a mixed-methods research project. Data were collected through semi-structured interviews with 12 experts in automotive supply-chain management, marketing, production, distribution, logistics, and after-sales services in Iran. Participants were selected through purposive and criterion-based sampling, and interviews continued until data saturation was reached. The interview transcripts were imported into MAXQDA 2020 and analyzed using thematic network analysis. Meaning units were identified, coded, compared, and organized into basic, organizing, and global themes. Credibility was enhanced through repeated review of the transcripts, expert consultation, constant comparison, analytical memoing, and maintenance of an audit trail. The analysis generated four interconnected supply-chain blocks: suppliers, manufacturers, distributors, and logistics and support services. In the supplier block, the principal themes were quality, price, timely delivery of parts, innovation, and communication. The manufacturer block comprised quality, timely delivery, price, innovation, and collaboration. The distributor block included after-sales services, a strong distribution network, collaboration with manufacturers, and experience and expertise. The logistics and support block consisted of experience and training, effective communication, coordination capability, technology use, and compliance with standards. The findings indicated that consumer behavior is influenced by the combined effects of product quality, price fairness, delivery reliability, innovation, information transparency, distribution accessibility, technical support, and after-sales service. The themes also showed that weaknesses in one supply-chain block can reduce the effectiveness of the entire marketing mix and negatively affect perceived value, satisfaction, purchasing intention, and customer loyalty. Effective management of consumer behavior in the automotive industry requires the strategic integration of marketing-mix decisions with coordinated supplier, manufacturing, distribution, logistics, technological, and service capabilities.

Keywords: Supply chain management; marketing mix; consumer behavior; automotive industry; thematic analysis; qualitative research; after-sales service; supply-chain integration.

Introduction

The automotive industry is among the most complex and strategically important manufacturing sectors because it depends on extensive networks of suppliers, manufacturers, distributors, logistics providers, service centers,



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technology partners, and end consumers. The performance of an automotive company is therefore not determined solely by its internal production capabilities but also by the quality, speed, adaptability, transparency, and coordination of its entire supply chain. Automotive supply chains must simultaneously manage thousands of components, multiple supplier tiers, fluctuating raw-material prices, changing customer preferences, regulatory requirements, technological transitions, and increasing competitive pressure. These conditions have transformed supply-chain management from a predominantly operational function into a strategic capability that directly affects market performance, brand reputation, customer satisfaction, and consumer purchasing behavior (1-3). In this context, supply-chain decisions and marketing decisions can no longer be treated as independent organizational domains because product availability, delivery reliability, price, quality, innovation, after-sales support, and communication are jointly produced through the interaction of supply-chain and marketing activities.

The growing interdependence between supply-chain management and marketing is particularly evident in industries characterized by multichannel distribution, complex products, and long-term customer relationships. Marketing seeks to identify, create, communicate, and deliver value to customers, whereas supply-chain management ensures that the promised value can be operationally produced and delivered at the required cost, quality, place, and time. Research on multichannel supply chains has shown that marketing-mix variables, including product, price, promotion, and distribution, influence not only customer demand but also channel coordination, inventory decisions, pricing structures, and the allocation of resources across the supply network (3). Consequently, an effective marketing mix must be supported by a supply chain capable of responding to demand signals, maintaining product availability, coordinating physical and digital channels, and ensuring consistency between marketing promises and actual customer experiences.

Consumer behavior in the automotive industry is influenced by a combination of economic, functional, psychological, technological, and relational factors. Consumers evaluate automobiles according to product quality, safety, technical performance, design, fuel efficiency, environmental impact, price, financing conditions, availability, delivery time, warranty coverage, spare-part accessibility, and after-sales service. These evaluations are also shaped by previous experiences, brand image, social influence, promotional communication, perceived risk, and expectations regarding resale value and long-term maintenance. Because many of these factors are generated or constrained by supply-chain processes, weaknesses in sourcing, production, distribution, logistics, or customer service may directly reduce consumer satisfaction and purchase intention. Evidence from marketing research indicates that service quality and the marketing mix significantly influence customer satisfaction and repurchase intention, suggesting that organizations must manage the entire customer value-delivery process rather than concentrating only on promotional activities (2).

The concept of the marketing mix has itself evolved as markets have become more digital, data-intensive, and customer-centered. Although the traditional marketing mix remains a useful framework, its implementation increasingly depends on digital technologies, integrated information systems, analytics, platform-based interactions, and real-time coordination across the supply chain. The digital transformation of the marketing mix can alter how products are designed, priced, promoted, and distributed, while also changing the relationships among firms, intermediaries, and consumers (4). In the automotive sector, digital platforms, online configurators, customer relationship management systems, predictive analytics, connected-vehicle technologies, and omnichannel dealerships generate extensive data that can be used to understand consumer preferences and adapt supply-chain

decisions accordingly. This transformation makes it necessary to develop models that integrate the marketing mix with operational capabilities rather than examining marketing variables in isolation.

Supply-chain data analytics is particularly important for establishing this integration. By combining transactional, operational, customer, and market data, organizations can identify demand patterns, evaluate customer segments, forecast purchasing behavior, improve inventory allocation, and design more relevant marketing strategies. The integration of supply-chain analytics with marketing strategies can produce more accurate customer insights and allow firms to align production, distribution, and promotional decisions with actual market needs (5). In the automotive industry, such integration can help manufacturers and distributors anticipate shifts in demand, determine which vehicle attributes are most valued, optimize regional inventory, reduce delivery delays, and personalize communications. Nevertheless, the availability of data alone does not guarantee improved performance; firms also require analytical capabilities, organizational coordination, and decision-making processes that convert information into operational and marketing actions.

Digital capability is therefore a critical antecedent of both supply-chain and marketing agility. Firms with stronger digital capabilities are generally better positioned to explore new opportunities, exploit existing resources, respond to market changes, and coordinate internal and external activities. Research has demonstrated that digital capability can influence business performance through supply-chain agility, operational agility, and marketing agility (6). These capabilities are highly relevant to the automotive industry, where companies must adjust to rapidly changing technologies, regulatory standards, consumer expectations, and competitive conditions. Marketing agility enables firms to revise pricing, promotion, segmentation, and customer-engagement strategies, whereas supply-chain agility enables them to modify sourcing, production, logistics, and distribution arrangements. Their combined effect can strengthen the firm's ability to deliver an appropriate value proposition under uncertain market conditions.

Supply-chain agility itself is rooted in organizational competencies and dynamic capabilities that enable firms to sense changes, respond rapidly, and reconfigure resources. It has been conceptualized as a mechanism linking organizational competence to operational and market performance (7). In automotive supply chains, agility may include the ability to change production volumes, introduce modified vehicle features, switch suppliers, accelerate distribution, respond to component shortages, and adapt to variations in regional demand. These abilities can influence consumer behavior because customers are more likely to respond favorably when desired products are available, delivery schedules are reliable, and manufacturers can offer updated designs and technologies. Conversely, rigid supply chains may create shortages, long waiting periods, limited product variety, and inconsistent service, all of which can negatively affect customer trust and purchase decisions.

Beyond agility, resilience and viability have become central considerations in contemporary supply-chain management. Automotive supply chains are vulnerable to disruptions caused by geopolitical instability, natural disasters, pandemics, transportation interruptions, cyber incidents, supplier failures, and shortages of critical materials and electronic components. Supply-chain resilience refers to the capacity to prepare for, respond to, recover from, and adapt to disruptions, whereas viability emphasizes the ability of a supply chain to survive and continue functioning over the long term. Studies across the automotive and other industries have identified resilience capabilities such as visibility, flexibility, collaboration, redundancy, risk awareness, and rapid response as essential for maintaining continuity (1). Supply-chain viability has also been associated with improved supply-chain performance and marketing performance in large manufacturing organizations (8). These findings indicate

that resilient and viable supply chains do more than protect operations; they preserve product availability, service continuity, customer confidence, and brand credibility during periods of uncertainty.

Industry 4.0 technologies can substantially strengthen these capabilities. Technologies such as the Internet of Things, artificial intelligence, cloud computing, advanced robotics, digital twins, blockchain, and big-data analytics can improve visibility, traceability, automation, forecasting, and coordination. The implementation of Industry 4.0 technologies has been linked to supply-chain resilience through enhanced visibility, particularly in dynamic environments (9). A grounded model for deploying Industry 4.0 technologies in supply chains similarly emphasizes the importance of organizational readiness, technological infrastructure, managerial support, interorganizational integration, and employee competence (10). In the automotive sector, real-time monitoring of suppliers, production lines, inventories, transport operations, and customer demand can reduce uncertainty and enable faster corrective action. However, successful implementation requires more than technology acquisition; it requires strategic alignment among supply-chain objectives, marketing goals, human resources, and consumer-value priorities.

Artificial intelligence represents another important mechanism linking supply-chain operations with marketing outcomes. Artificial intelligence can improve demand forecasting, production scheduling, quality inspection, pricing, customer segmentation, recommendation systems, and digital communication. Research examining inventory competition, artificial intelligence, quality improvement, and digital marketing suggests that these factors interact in shaping supply-chain decisions and competitive outcomes (11). In the automotive industry, artificial intelligence can be used to predict demand for specific models, optimize dealer inventory, detect quality problems, personalize promotional offers, and improve customer-support services. When implemented effectively, these applications can reduce operational inefficiencies while increasing the relevance and responsiveness of the marketing mix. At the same time, their effectiveness depends on data quality, system integration, managerial capability, and cooperation among supply-chain members.

Big-data-based innovation also contributes to the development of more responsive supply-chain models. Demand analysis supported by large datasets can help firms identify emerging needs, forecast product trends, and develop innovations that are more closely aligned with market expectations (12). In automotive markets, consumer data may reveal preferences regarding design, safety, digital features, energy efficiency, financing, and after-sales support. These insights can guide product development and supply-chain configuration, allowing manufacturers to coordinate suppliers, technologies, and production systems around the characteristics consumers value most. The relationship between supply-chain intelligence and innovation is therefore crucial, as market information must be converted into product and process improvements before it can affect consumer behavior.

Marketing intelligence provides a related strategic capability by enabling organizations to systematically collect, interpret, and distribute information about customers, competitors, market trends, and environmental changes. Marketing intelligence can influence supply-chain performance through product innovation because firms that understand market expectations are better able to coordinate sourcing, production, and distribution around relevant value propositions (13). In the automotive industry, effective marketing intelligence can help identify changing consumer attitudes toward electric vehicles, connected technologies, safety features, environmental sustainability, pricing, and service quality. However, this intelligence must be shared across organizational boundaries. If customer information remains confined to the marketing department, suppliers and production units may not be able to adjust their decisions in a timely manner. A comprehensive model must therefore account for information sharing and cross-functional integration.

Innovation is also influenced by the degree of openness in interorganizational relationships. Open innovation allows firms to draw on knowledge, technologies, and ideas from suppliers, customers, research institutions, technology companies, and other external actors. Research on empowering Iranian brands through open innovation highlights the importance of collaboration, knowledge exchange, technological capability, and brand-oriented innovation (14). These considerations are applicable to automotive companies seeking to strengthen consumer trust and differentiate their offerings. Suppliers can contribute new materials and components, distributors can communicate customer feedback, technology firms can provide digital solutions, and consumers can reveal unmet needs. When this network is effectively managed, innovation can enhance product quality, perceived value, brand image, and consumer loyalty.

Blockchain technology may further support interorganizational integration by improving transparency, traceability, security, and trust. The acceptance of blockchain in supply chains depends on technical, organizational, relational, and environmental factors and must be understood from an inter-firm perspective (15). In automotive supply chains, blockchain can potentially support the verification of component origins, maintenance histories, warranties, financial transactions, and compliance records. Such transparency may influence consumer perceptions of authenticity, safety, and reliability. Blockchain-embedded supply-chain finance can also improve access to financial resources, particularly for smaller suppliers, by reducing information asymmetry and strengthening transaction credibility (16). This is relevant because financially constrained suppliers may struggle to maintain quality, invest in innovation, or meet delivery schedules, thereby creating risks that eventually affect vehicle availability and consumer satisfaction.

Supply-chain finance more broadly can improve the stability of supplier networks and support continuous production. Financial technology companies can act as signaling intermediaries by reducing information gaps, facilitating financing, and increasing confidence among supply-chain participants (17). Automotive supply chains often include numerous small and medium-sized suppliers whose financial condition can influence the continuity of component supply. The integration of financial information, production data, and contractual records may enable more accurate risk assessment and better access to working capital. These mechanisms can indirectly influence consumers by reducing production interruptions, preventing shortages, and supporting consistent product quality.

Pricing is another critical area in which supply-chain and marketing decisions intersect. Automotive pricing reflects not only marketing positioning but also raw-material costs, production efficiency, transportation expenses, financing conditions, channel margins, environmental investments, and promotional strategies. In dual-channel supply chains, pricing and promotional effort may be affected by platform financing, channel competition, and free-riding behavior (18). These issues are increasingly important as automotive firms combine traditional dealership networks with online sales channels. Price inconsistencies, channel conflict, and unclear financing arrangements can undermine consumer trust, whereas coordinated pricing and promotional strategies can improve perceived fairness and purchase intention. An integrated model should therefore consider how supply-chain structures influence the implementation and effectiveness of price and promotion decisions.

The growing emphasis on environmental and social responsibility also requires supply chains to incorporate sustainability into the marketing mix. Sustainable supply-chain models increasingly include circular-economy principles, resource efficiency, waste reduction, recycling, reverse logistics, and stakeholder collaboration (19). In the automotive industry, these principles are relevant to material selection, battery recovery, remanufacturing, emissions reduction, energy use, and end-of-life vehicle management. Sustainability can influence consumer

behavior when customers perceive environmental practices as credible, valuable, and consistent with brand communication. However, unsupported environmental claims may create skepticism. Therefore, green marketing must be connected to verifiable supply-chain practices and transparent operational evidence.

Sustainable operational excellence also depends on the alignment of supply-chain standards, risk-management strategies, and customer expectations. Research on specialized supply chains has shown that operational excellence can be strengthened through integrated sustainability practices and mitigation strategies (20). Although sectoral contexts differ, the underlying principle is relevant to the automotive industry: supply-chain performance is enhanced when operational controls, quality standards, resilience measures, and market promises are mutually reinforcing. This alignment can increase consumer confidence because customers experience a consistent relationship between brand claims and actual product or service outcomes.

Digital marketing adds another dimension to this relationship by accelerating information exchange between firms and consumers. Digital marketing strategies can support supply-chain resilience by improving demand visibility, customer communication, market responsiveness, and coordination with sales channels (21). In automotive markets, digital campaigns, social media, online reviews, customer portals, and virtual showrooms provide immediate signals about consumer interests and concerns. These signals can inform inventory decisions, product modifications, service improvements, and regional distribution. Nevertheless, digital marketing may also create demand volatility if promotional activity is not coordinated with available capacity. Therefore, firms must synchronize digital demand-generation activities with production and logistics capabilities.

Taken together, the reviewed literature demonstrates that supply-chain performance, marketing-mix effectiveness, technological capability, resilience, innovation, sustainability, financial stability, and consumer behavior are deeply interconnected. Existing studies have examined individual relationships among these constructs, including digital transformation, agility, resilience, artificial intelligence, blockchain, supply-chain finance, sustainability, and marketing performance. However, there remains a need for an integrated, context-sensitive model that explains how the main actors and capabilities of the automotive supply chain interact with the marketing mix to shape consumer behavior. This need is especially important in the Iranian automotive industry, where market structure, supplier dependencies, technological constraints, pricing conditions, distribution challenges, regulatory influences, and consumer expectations create a distinctive operating environment. A qualitative approach based on expert knowledge can reveal the underlying mechanisms, relationships, and contextual factors that may not be adequately captured through predetermined quantitative variables.

Accordingly, the aim of this study was to develop a qualitative supply-chain model based on an effective marketing-mix approach to consumer behavior in the automotive industry.

Methods and Materials

This applied study employed a qualitative research design based on thematic analysis to develop a supply chain model incorporating an effective marketing-mix approach to consumer behavior in the automotive industry. The study constituted the qualitative phase of an exploratory mixed-methods project and was conducted cross-sectionally. The qualitative approach was selected because the relationships among automotive supply-chain practices, marketing-mix components, and consumer behavior are multidimensional and context-dependent and therefore require an in-depth examination of experts' experiences, interpretations, and professional judgments. During the preliminary phase, the researchers reviewed academic books, peer-reviewed articles, organizational

reports, consulting documents, specialized databases, official websites of internationally recognized organizations, and relevant studies on automotive supply chains, consumer behavior, integrated marketing, and LARG supply-chain practices. LARG refers to the integration of lean, agile, resilient, and green supply-chain principles. This preliminary review provided the conceptual sensitivity required to formulate the interview questions and identify the initial domains associated with the proposed model.

The study population consisted of academics, senior managers, consultants, and industry specialists with substantial knowledge of supply-chain management, automotive marketing, consumer behavior, procurement, production, distribution, or after-sales services in the Iranian automotive industry. Participants were selected through purposive and criterion-based sampling. Eligibility criteria included possessing relevant academic or professional expertise, having several years of experience in the automotive or supply-chain sector, being familiar with the structure and challenges of the Iranian automotive market, and being willing to participate in an in-depth interview. Where necessary, snowball sampling was used to identify additional information-rich experts recommended by the initial participants. A total of 12 experts participated in the study. Recruitment and interviewing continued until theoretical and data saturation was achieved, meaning that subsequent interviews no longer produced substantially new concepts, codes, or thematic categories. Participation was voluntary, and the participants were informed about the study objectives, the interview procedure, confidentiality protections, and their right to withdraw from the research at any stage. Their informed consent was obtained before each interview, and identifying information was removed during transcription and analysis.

Data were collected primarily through in-depth, semi-structured interviews. An interview guide was developed on the basis of the preliminary literature review and consultations with organizational, executive, and consulting experts. The guide included open-ended questions concerning the principal components of an effective automotive supply chain, the role of lean, agile, resilient, and green practices, the influence of product, price, distribution, and promotional strategies, and the mechanisms through which supply-chain and marketing decisions shape consumers' purchasing intentions, satisfaction, loyalty, perceived value, and post-purchase behavior. Participants were also invited to discuss structural barriers, market uncertainties, technological developments, environmental considerations, customer expectations, and the particular conditions of the Iranian automotive industry.

The interviews were conducted individually in an environment appropriate for open and uninterrupted discussion. At the beginning of each session, the researcher introduced the general topic without imposing a predetermined conceptual framework on the participant. Probing questions were subsequently used to clarify responses, obtain examples, explore causal relationships, and encourage participants to articulate their concerns and implicit professional knowledge. The interviewer provided limited prompts regarding potentially influential supply-chain and marketing factors when further elaboration was required, while avoiding leading questions. At the end of each interview, participants were asked whether they wished to add any overlooked issue relevant to the development of the model. With permission, the interviews were audio-recorded and subsequently transcribed verbatim. Field notes were also prepared to document contextual observations, emphases, pauses, and analytical reflections. Data collection continued alongside preliminary analysis, allowing emerging concepts to inform later interviews and facilitating the assessment of data saturation.

The interview transcripts were analyzed using thematic network analysis. All 12 transcripts were imported as textual files into MAXQDA 2020, which was used to organize the data, manage codes, retrieve relevant segments, compare participants' views, and construct thematic relationships. Analysis began with repeated and careful reading

of each transcript to achieve immersion in the data. Meaningful statements, sentences, and paragraphs related to supply-chain capabilities, marketing-mix strategies, and consumer responses were identified as units of meaning. These units were condensed where necessary without altering their essential meaning and were assigned initial descriptive and interpretive codes.

The coding process was iterative and comparative. Similar codes were grouped together, overlapping codes were merged, and ambiguous codes were revised through continual comparison between the transcripts, research objectives, and emerging conceptual patterns. Basic themes were then developed from coherent clusters of codes. Related basic themes were integrated into organizing themes representing broader dimensions of the proposed model, and the organizing themes were subsequently synthesized into overarching global themes. Particular attention was paid to relationships among supply-chain characteristics, marketing-mix decisions, market conditions, and behavioral outcomes among automobile consumers. Divergent or contradictory expert opinions were retained and examined rather than being eliminated, because they provided insight into contextual conditions and alternative causal mechanisms.

Several procedures were applied to enhance the trustworthiness of the findings. The researchers maintained an audit trail of coding decisions, theme revisions, analytical memos, and model development. Emerging themes were repeatedly checked against the original interview data to ensure that interpretations remained grounded in participants' accounts. Comparisons among expert opinions were used to refine theme boundaries and improve analytical consistency. Selected interpretations were reviewed through consultation with knowledgeable specialists, and necessary revisions were made to strengthen the credibility and conceptual validity of the thematic network. The final analytical process produced a structured set of basic, organizing, and global themes that formed the foundation of the proposed supply-chain model based on an effective marketing-mix approach to consumer behavior in the automotive industry.

Findings and Results

The thematic analysis of the 12 expert interviews resulted in a comprehensive set of themes describing the principal components of the automotive supply chain and their potential influence on consumer behavior. The coding and theme-development process was conducted across four interconnected supply-chain blocks: suppliers, manufacturers, distributors, and logistics and support services. Within each block, the initial codes were compared, refined, and grouped into basic and organizing themes according to their conceptual similarity and functional role in the automotive supply chain. The findings indicated that an effective automotive supply chain is not determined by production capacity alone but depends on the coordinated management of quality, price, innovation, communication, delivery performance, distribution capabilities, after-sales services, technological infrastructure, and adherence to operational standards. Table 1 presents the integrated main and subthemes extracted from all four supply-chain blocks.

Table 1. Main and Subthemes Extracted from the Automotive Supply-Chain Blocks

Supply-Chain Block	Main Theme	Subthemes
Suppliers	Quality	Quality of raw materials; use of appropriate technologies and equipment; employee training and empowerment; human resource management; compliance with quality standards
Suppliers	Price	Production costs; demand and supply; market competition; geographical location; production technology; added value

Suppliers	Timely Delivery of Parts	Production capability; effective communication; commitment to contractual obligations; inventory management; innovation and improvement; financial stability
Suppliers	Innovation	Close relationships with automobile manufacturers; research and development capability; cooperation and coordination capability; use of advanced technologies; competition with other suppliers; financial capability
Suppliers	Communication	Flexibility; security; transparency
Manufacturers	Quality	Technical characteristics; product performance and safety; product testing and evaluation; research and development; compliance with quality standards
Manufacturers	Timely Delivery	Precise planning; quality control; strong communication; monitoring and control of activities; inventory management
Manufacturers	Price	Raw-material prices; production costs; research and development costs; marketing costs
Manufacturers	Innovation	Research and development; collaboration with suppliers; supply-chain management; production processes; flexibility; competitiveness
Manufacturers	Collaboration	Effective communication; information sharing and transparency; reliability
Distributors	After-Sales Services	Product-related training and knowledge; access to spare parts; technical support; speed and accuracy of delivery; ability to communicate with customers
Distributors	Strong Distribution Network	Selection and management of distributors; speed and reliability of distribution; inventory-management capability; information technology; flexibility
Distributors	Collaboration with Manufacturers	Effective communication; coordination of demand and supply; knowledge and information sharing; trust; determination of common objectives
Distributors	Experience and Expertise	Training and preparation; close relationships with manufacturers; use of technology; networking; customer feedback; collaboration with other distributors
Logistics and Support	Experience and Training	Technical-skills training; use of management software; provision of training courses; interaction with manufacturing companies; organizational culture
Logistics and Support	Effective Communication	Daily communication; division of responsibilities; use of project-management software; provision of feedback; encouragement of cooperation
Logistics and Support	Coordination Capability	Coordination in planning; use of technology; training and development; coordination in production processes
Logistics and Support	Use of Technology	Training and awareness; modern equipment and software; organization of processes; effective cooperation and communication; technical support
Logistics and Support	Compliance with Standards	Training and awareness; strong leadership; organizational culture; equipment and technology; evaluation and feedback; coordination and cooperation

As shown in Table 1, the supplier block comprised five main themes: quality, price, timely delivery of parts, innovation, and communication. Quality was identified as a multidimensional requirement involving not only the quality of raw materials but also the use of appropriate production technologies, the competence of employees, effective human resource management, and adherence to recognized quality standards. The experts emphasized that deficiencies in the quality of supplied components could affect the entire production process and ultimately influence consumers' perceptions of vehicle reliability, safety, and value. Price was likewise regarded as a complex construct influenced by production costs, market supply and demand, competitive conditions, geographical location, production technology, and the extent of value added by the supplier. Consequently, supplier pricing was not interpreted merely as the monetary cost of parts but as the outcome of interconnected operational and market factors.

Timely delivery of parts emerged as another critical supplier-related theme. This theme included production capability, effective communication, contractual commitment, inventory management, continuous improvement, and financial stability. The experts explained that the late delivery of components could disrupt production schedules, increase operating costs, delay the market release of vehicles, and reduce consumers' trust in automobile manufacturers. Financially stable suppliers with sufficient production capacity were considered more capable of fulfilling contractual obligations and responding to fluctuations in demand. Innovation within the supplier block involved close relationships with automobile manufacturers, research and development capabilities, interorganizational coordination, advanced technologies, competitive pressure, and financial resources. Communication was represented by flexibility, security, and transparency, indicating that supplier relationships

should allow rapid adjustment to changing requirements while protecting commercially sensitive information and maintaining openness in operational exchanges.

The manufacturer block also contained five principal themes: quality, timely delivery, price, innovation, and collaboration. Manufacturer quality was associated with the technical characteristics of automobiles, product performance, safety, systematic testing, research and development, and conformity with quality standards. These findings demonstrated that consumers' evaluations of an automobile are strongly shaped by observable product attributes as well as by the manufacturer's ability to ensure safety and consistent performance. Timely delivery at the manufacturer level depended on accurate production planning, effective quality control, strong internal and external communication, continuous monitoring, and appropriate inventory management. These components enabled manufacturers to synchronize the availability of materials, production operations, and market demand.

Price within the manufacturer block was influenced by raw-material prices, manufacturing expenses, research and development expenditures, and marketing costs. The experts indicated that inefficient management of these costs could result in higher final prices and reduce the perceived affordability and competitiveness of automobiles. Innovation was linked to research and development, collaboration with suppliers, integrated supply-chain management, improved production processes, flexibility, and competitiveness. The participants viewed innovation as essential for adapting vehicle characteristics to changing consumer preferences, technological developments, and environmental expectations. Collaboration, which incorporated effective communication, information transparency, and reliability, was considered necessary for reducing uncertainty and ensuring that manufacturers could coordinate decisions with other supply-chain members.

The distributor block consisted of four main themes: after-sales services, a strong distribution network, collaboration with manufacturers, and experience and expertise. After-sales services included personnel knowledge of products, access to spare parts, technical support, delivery speed and accuracy, and communication with customers. The prominence of this theme indicated that consumer behavior in the automotive industry continues to be influenced after the initial purchase. Consumers may assess the value of an automobile according to the availability of repair services, spare parts, warranty support, and the responsiveness of dealers and service centers. Inadequate after-sales support may therefore weaken customer satisfaction and loyalty even when the technical quality of the vehicle is acceptable.

A strong distribution network was characterized by the effective selection and management of distributors, distribution speed and reliability, inventory-management capability, the application of information technology, and operational flexibility. The experts emphasized that an automobile must be available at the correct location and time and must be supported by accurate information regarding delivery, pricing, and product specifications. Collaboration with manufacturers included communication, coordination between demand and supply, knowledge sharing, trust, and common objectives. Such collaboration enabled distributors to transfer customer and market information to manufacturers and helped manufacturers align production decisions with actual demand. Experience and expertise involved training, close manufacturer relationships, technological competence, professional networking, customer feedback, and cooperation among distributors. These subthemes reflected the intermediary role of distributors in connecting manufacturers to consumers and translating market feedback into supply-chain decisions.

The logistics and support block contained five main themes: experience and training, effective communication, coordination capability, use of technology, and compliance with standards. Experience and training included the development of technical skills, the use of management software, formal training programs, interaction with

manufacturing companies, and the establishment of a supportive organizational culture. The participants indicated that logistics personnel must possess both technical knowledge and the ability to work within integrated organizational systems. Effective communication was reflected in daily interaction, clear division of responsibilities, use of project-management systems, regular feedback, and encouragement of cooperation. These practices reduced ambiguity and facilitated the timely resolution of operational problems.

Coordination capability involved integrated planning, technological support, employee development, and coordination throughout production processes. This theme demonstrated that logistics activities should not be treated as isolated transportation or warehousing functions but as integrated elements of manufacturing and distribution. The use of technology included employee awareness, modern equipment and software, process organization, interdepartmental communication, and technical support. Finally, compliance with standards incorporated training, leadership, organizational culture, appropriate technology, performance evaluation, feedback, and cooperation. The experts considered adherence to standards essential for ensuring consistency, safety, traceability, and service quality across the automotive supply chain.

Overall, the findings demonstrated that the four supply-chain blocks were strongly interdependent. Supplier quality and delivery performance affected manufacturer efficiency; manufacturer decisions influenced vehicle price and market availability; distributor capabilities shaped customer access and after-sales experiences; and logistics and support systems connected all supply-chain activities. The extracted themes therefore suggest that consumer behavior in the automotive industry is influenced both directly and indirectly by the performance of the entire supply chain. Product quality, price fairness, timely availability, service reliability, technological innovation, transparent communication, and responsive after-sales support jointly contribute to consumers' perceived value, satisfaction, purchasing decisions, and loyalty.

Discussion and Conclusion

The present study sought to develop a qualitative supply-chain model based on an effective marketing-mix approach to consumer behavior in the automotive industry. The thematic analysis identified four interrelated blocks within the automotive supply chain: suppliers, manufacturers, distributors, and logistics and support services. Across these blocks, the principal themes included quality, price, timely delivery, innovation, communication, collaboration, after-sales services, distribution-network strength, experience and expertise, coordination capability, technology use, and compliance with standards. These findings indicate that consumer behavior in the automotive market is not shaped exclusively by promotional activities or the visible characteristics of the final product. Rather, it emerges from the cumulative performance of the entire value-delivery system. The quality of supplied components, production efficiency, inventory coordination, technological capability, delivery reliability, dealer performance, service accessibility, and organizational communication collectively determine whether the marketing promises made by an automotive firm are translated into a credible and satisfactory customer experience.

The supplier block revealed that quality, price, timely delivery of parts, innovation, and communication constitute the primary foundations of supply-chain effectiveness. Quality was reflected in the use of high-quality raw materials, suitable equipment, employee empowerment, human resource management, and compliance with standards. These findings suggest that the perceived quality of an automobile begins well before the final assembly stage. Defects or inconsistencies in raw materials and components can reduce vehicle safety, durability, and functional performance, thereby weakening consumer trust. This interpretation is consistent with research emphasizing that

quality-improvement decisions are closely linked to inventory competition, artificial intelligence, and digital marketing within supply chains (11). When quality information is integrated with operational and market data, firms are better able to identify defects, control process variability, and protect the customer value proposition.

The importance of supplier quality also supports the broader argument that supply-chain viability and performance influence marketing performance. A viable supply chain must maintain not only operational continuity but also sufficient quality, responsiveness, and adaptability to preserve market confidence. Previous evidence indicates that supply-chain viability positively affects both supply-chain and marketing performance in large manufacturing organizations (8). In the automotive industry, this relationship is particularly important because component failures can create recalls, service costs, reputational damage, and adverse word of mouth. Therefore, supplier selection should be based not merely on low cost but also on technical capability, financial stability, quality assurance, and long-term reliability.

Price emerged as another major supplier-related theme and included production costs, supply and demand, competition, geographical location, production technology, and added value. This finding demonstrates that automotive pricing is generated through a chain of operational decisions rather than being determined solely by the marketing department. The cost of components, supplier efficiency, transportation distances, technology investments, and competitive market conditions all affect the final price offered to consumers. This result aligns with the view that marketing-mix decisions and supply-chain decisions are structurally interdependent, particularly in multichannel systems where pricing, distribution, promotion, and inventory decisions influence one another (3). It also corresponds with research showing that pricing and green-promotion strategies in dual-channel supply chains are affected by financing arrangements, channel interactions, and free-riding behavior (18). Accordingly, perceived price fairness in the automotive market depends on whether consumers believe that the final price is justified by product quality, technological features, availability, services, and long-term value.

Timely delivery of parts was associated with production capability, effective communication, contractual commitment, inventory management, innovation, continuous improvement, and financial stability. This finding is significant because late component delivery can interrupt production, increase costs, reduce inventory availability, and extend customer waiting times. Supply-chain agility provides an explanatory framework for this result. Agile supply chains are able to detect changes, reconfigure resources, and respond rapidly to fluctuations in demand or supply conditions (7). In the automotive context, agility allows suppliers to modify production schedules, substitute materials, accelerate replenishment, and communicate disruptions before they affect final delivery. Similarly, resilience capabilities such as visibility, flexibility, collaboration, and risk preparedness enable automotive firms to maintain operational continuity under uncertain conditions (1). Thus, timely delivery should be regarded as a multidimensional capability rather than a narrow logistical indicator.

Innovation was another prominent theme in the supplier block. It encompassed research and development, advanced technology, financial capacity, close relationships with manufacturers, and collaboration capability. The findings imply that suppliers are not merely providers of standardized inputs but active contributors to product and process innovation. This interpretation is consistent with open-innovation research emphasizing external collaboration, knowledge exchange, technological capability, and network relationships as mechanisms for strengthening brands and competitive performance (14). Supplier innovation can contribute to the development of safer components, lighter materials, digital systems, environmentally efficient technologies, and improved

manufacturing methods. These improvements can subsequently affect consumer perceptions of modernity, reliability, environmental responsibility, and value.

The manufacturer block included quality, timely delivery, price, innovation, and collaboration. Manufacturer quality was associated with technical features, product performance, safety, testing, research and development, and adherence to standards. This finding confirms that the final product remains the central manifestation of the automotive marketing mix. Product characteristics influence consumer attitudes, purchase intention, satisfaction, and brand loyalty. Nevertheless, the findings show that product quality is not limited to visible design or functional features; it also depends on systematic testing, compliance, and research capability. The use of Industry 4.0 technologies can strengthen these functions by enabling real-time monitoring, automated quality inspection, data integration, and process traceability. Research has shown that Industry 4.0 technologies enhance supply-chain resilience through supply-chain visibility, particularly under conditions of environmental dynamism (9). A grounded model for Industry 4.0 deployment similarly emphasizes technological infrastructure, organizational preparedness, leadership, and interorganizational integration (10). These findings reinforce the present study's emphasis on the integration of quality, technology, and management capability.

The manufacturer-related theme of timely delivery was explained through accurate planning, quality control, strong communication, monitoring, and inventory management. This result indicates that delivery performance is a consequence of internal integration and not merely the efficiency of transportation operations. Production plans must be aligned with supplier capacity, dealer demand, market forecasts, and promotional campaigns. The role of data analytics is particularly relevant in this regard. Integrating supply-chain data analytics with marketing strategies can improve customer insight, forecasting, inventory allocation, and responsiveness (5). Through such integration, manufacturers can reduce the mismatch between market demand and production output, thereby limiting shortages, excess inventory, and customer dissatisfaction.

The findings concerning price at the manufacturer level included raw-material expenses, production costs, research and development expenditures, and marketing costs. This result suggests that cost-management decisions directly affect consumer affordability and the competitive positioning of automotive products. However, excessive cost reduction may weaken quality, innovation, or after-sales support and thus undermine long-term customer value. An effective pricing strategy must therefore balance affordability with technical performance, service reliability, and brand credibility. The relationship between service quality, the marketing mix, satisfaction, and repurchase intention found in previous research supports this conclusion (2). Consumers are more likely to accept a price when they perceive consistency between the amount paid and the total value received.

Manufacturer innovation was linked to research and development, supplier collaboration, supply-chain management, production processes, flexibility, and competitiveness. This theme is consistent with evidence that marketing intelligence affects supply-chain performance through product-innovation performance (13). Market intelligence enables manufacturers to identify changing consumer expectations and convert them into product specifications, service improvements, and supply-chain adjustments. Big-data-based demand analysis can similarly support strategic innovation by revealing trends and patterns that are not visible through conventional market research (12). In the automotive industry, such data may guide decisions concerning vehicle design, energy efficiency, digital connectivity, safety technologies, financing options, and service packages.

Collaboration within the manufacturer block included effective communication, information transparency, and reliability. These findings indicate that automotive supply chains require a high degree of cross-functional and

interorganizational trust. Collaboration allows firms to share forecasts, coordinate production, resolve quality problems, and respond to market changes. Digital capability can strengthen this process by supporting information exchange and enabling supply-chain, operational, and marketing agility (6). Blockchain may also contribute by improving traceability, security, transparency, and trust among firms. Research on blockchain acceptance in inter-firm supply chains shows that technological, relational, organizational, and environmental factors jointly shape adoption (15). The value of blockchain is therefore likely to depend on whether automotive firms possess sufficient readiness, shared standards, and incentives for cooperation.

The distributor block highlighted after-sales service, distribution-network strength, collaboration with manufacturers, and experience and expertise. After-sales service included product knowledge, spare-parts availability, technical support, accurate delivery, and customer communication. This theme is particularly important because the automotive customer relationship continues for years after purchase. Consumers assess a brand not only on the basis of the vehicle itself but also through maintenance, warranty handling, repair speed, availability of parts, and dealer responsiveness. Consequently, after-sales service functions as an extension of both product and promotion. Positive service experiences reinforce satisfaction and loyalty, whereas repeated service failures can damage even a technically strong product.

A strong distribution network was characterized by effective distributor selection, speed, reliability, inventory capability, information technology, and flexibility. This finding supports the view that place within the marketing mix should be interpreted as a strategic system of accessibility, convenience, information, and service rather than merely a physical sales location. The digital transformation of the marketing mix has altered distribution by combining traditional channels with online platforms, digital communication, and data-based customer management (4). Automotive consumers increasingly expect accurate availability information, transparent delivery schedules, online comparison tools, and coordinated physical and digital services. Distribution networks that cannot meet these expectations may reduce customer confidence and encourage consumers to switch brands.

Collaboration between distributors and manufacturers involved communication, demand-and-supply coordination, information sharing, trust, and common objectives. This finding demonstrates that distributors act as market-sensing units within the supply chain. They possess direct knowledge of customer preferences, complaints, regional demand, price sensitivity, and competitor activity. Digital marketing can reinforce this information flow by generating timely signals from online interactions and customer responses. Previous research indicates that digital marketing strategies can support supply-chain resilience by improving visibility, responsiveness, and communication (21). However, promotional campaigns must be coordinated with actual inventory and production capacity; otherwise, they may generate expectations that the supply chain cannot fulfill.

The logistics and support block produced themes related to experience and training, effective communication, coordination, technology, and compliance with standards. The findings show that logistics capability is not limited to transportation and warehousing but includes organizational culture, technical competence, project-management systems, feedback mechanisms, and cross-functional coordination. This interpretation is consistent with the broader concept of sustainable operational excellence, which requires the alignment of operational systems, risk management, standards, and organizational capabilities (20). In automotive supply chains, trained logistics personnel and integrated software systems can improve traceability, reduce delays, coordinate production schedules, and support service responsiveness.

Technology use was repeatedly identified across all supply-chain blocks. This cross-cutting role of technology reflects the increasing importance of artificial intelligence, big data, blockchain, digital platforms, and integrated information systems. Financial technologies also contribute by reducing information asymmetry and supporting supplier stability. FinTech firms may operate as signaling intermediaries in supply-chain finance, increasing confidence and facilitating access to capital (17). Blockchain-based supply-chain finance can similarly improve transparency and financing access for smaller firms (16). These findings are relevant because financially unstable suppliers may be unable to maintain quality, invest in equipment, or deliver parts on time. Therefore, financial technology may indirectly influence consumer behavior by strengthening supply continuity and operational reliability.

Compliance with standards was another central logistics and support theme and included leadership, culture, technology, evaluation, feedback, and cooperation. Standards provide consistency across the supply chain and are especially important in the automotive sector because of safety, environmental, and quality requirements. They also support sustainability and circular-economy practices. Sustainable supply-chain models increasingly emphasize resource efficiency, reverse logistics, recycling, stakeholder cooperation, and closed-loop systems (19). As environmental awareness grows, consumers may evaluate automotive brands according to their environmental practices as well as product performance. However, credible green marketing depends on observable supply-chain actions rather than promotional claims alone.

Overall, the findings demonstrate that consumer behavior is influenced by an integrated combination of product, price, distribution, promotion, service, information, and operational performance. The four identified supply-chain blocks operate as a coordinated system in which failures in one block can reduce the effectiveness of the entire marketing mix. Supplier quality affects product reliability; manufacturer planning affects availability and price; distributor competence affects accessibility and service experience; and logistics and support systems affect continuity, communication, and delivery. The resulting model therefore extends the conventional marketing-mix perspective by showing that marketing effectiveness depends on supply-chain capabilities that create, support, and verify the promised customer value. An automotive firm may conduct effective promotional campaigns, but such campaigns will not produce sustained satisfaction or loyalty unless the supply chain can consistently provide quality vehicles, fair prices, timely delivery, responsive services, and trustworthy information.

This study had several limitations. First, the qualitative findings were based on interviews with 12 experts and therefore reflect the professional experiences and interpretations of a relatively small purposively selected group. Although data collection continued until saturation, the participants may not represent all viewpoints within the automotive industry, particularly those of consumers, frontline employees, small suppliers, independent dealers, and regulatory institutions. Second, the study was conducted within the context of the Iranian automotive industry, which has specific economic, technological, regulatory, and competitive characteristics; therefore, the transferability of the proposed themes to other national automotive markets should be approached cautiously. Third, the cross-sectional design captured expert perceptions at a single period and could not examine how the relative importance of the themes changes over time. Finally, thematic analysis involves researcher interpretation, and despite the use of repeated coding, expert review, and an audit trail, some degree of subjectivity may have influenced the organization and labeling of the themes.

Future studies should quantitatively test the proposed model using a large and diverse sample of automotive consumers, suppliers, manufacturers, distributors, and logistics professionals. Measurement scales can be

developed for the main and subthemes, and structural equation modeling may be used to examine direct, indirect, mediating, and moderating relationships among supply-chain capabilities, marketing-mix effectiveness, perceived value, satisfaction, purchase intention, and loyalty. Comparative studies across domestic and international automotive firms could determine whether the identified relationships vary according to market structure, brand type, vehicle category, or technological maturity. Longitudinal research would also help clarify how supply-chain disruptions, economic changes, digital transformation, and changes in consumer expectations alter the model over time. Future qualitative studies may include consumers and frontline service employees to complement the managerial perspective and identify additional experiential dimensions. Experimental and case-study research could further evaluate the effects of specific interventions, such as blockchain traceability, artificial-intelligence-based demand forecasting, integrated dealer platforms, or improved after-sales service systems.

Automotive firms should manage marketing and supply-chain activities as an integrated strategic system rather than as separate organizational functions. Managers should establish shared performance indicators linking supplier quality, production reliability, inventory availability, delivery speed, after-sales service, customer satisfaction, and market outcomes. Supplier evaluation should include technical capability, financial stability, innovation capacity, compliance, and communication quality in addition to price. Manufacturers should invest in real-time information systems, predictive demand analysis, employee training, and cross-functional planning. Distributors should be equipped to provide accurate product information, reliable delivery, accessible spare parts, and responsive technical support. Logistics and support units should adopt integrated software, clear responsibility structures, continuous feedback mechanisms, and standardized procedures. Most importantly, promotional claims concerning quality, innovation, availability, or sustainability should be supported by verifiable supply-chain capabilities so that the customer experience remains consistent with the brand promise.

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Authors' Contributions

All authors equally contributed to this study.

Declaration of Interest

The authors of this article declared no conflict of interest.

Ethical Considerations

All ethical principles were adhered in conducting and writing this article.

Transparency of Data

In accordance with the principles of transparency and open research, we declare that all data and materials used in this study are available upon request.

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