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Identifying and explaining the antecedents of customer experience management in the maritime transportation industry: A mixed-methods approach

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Abstract

This research aims to identify and explain the components and antecedents of customer experience management in the maritime transport industry based on the customer journey approach. To this end, considering the theoretical gap in the research topic, a qualitative approach of grounded theory was employed. Sampling was conducted purposefully and theoretically. Data was collected through in-depth semi-structured interviews with executives of manufacturing, trading, and forwarding companies that use the container line of the Islamic Republic of Iran Shipping Lines for export and import shipments. After conducting 22 interviews, theoretical adequacy was achieved. To assess the research's trustworthiness, the criteria of credibility, dependability, confirmability, and transferability were used. Based on the results of data coding and analysis, the antecedents of customer experience management in maritime transport were identified and analyzed in the form of causal conditions (brand position, maritime transport quality, and container terminal performance quality), intervening conditions (organizational factors, agency performance, information technology characteristics, and competitiveness), and contextual conditions (political and economic environment). In the quantitative phase, data were collected through a questionnaire and analyzed using confirmatory factor analysis and structural equation modelling with SmartPLS3 software. The obtained results confirmed the concepts and categories identified in the proposed research model. Furthermore, the goodness-of-fit indices indicated that the data and the structure of the research model had a good fit and were supported.

Keywords: customer experience management, B2B market, service experience, customer journey, sea transportation
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1 Introduction

The maritime transport industry is one of the economic infrastructures of every country and plays a major role in the expansion and facilitation of world trade. In the domestic field, it acts as the link between industries and consumers. In the field of foreign trade, it is the link between the domestic economy and the global economy [17]. For this reason, transportation systems that connect global supply chains are considered the driving force of economic growth and prosperity. Currently, an increasing share of goods is transported by sea in the form of container cargo,

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with container transportation being the dominant axis of globalized supply chains. Therefore, the quality of maritime transportation services plays a key role in influencing the performance of the global supply chain [13]. The success rate of managing the flow of goods, services, and information in all transportation processes and how to satisfy customer requests shows the value created in this cycle. The Marketing Science Institute (MSI) introduced customer experience management (CEM) as one of its research priorities in 2020. However, most customer experience studies have focused on the field of consumer behavior, and research in the B2B field is very limited [6]. Container shipping is a B2B service market, and shipping lines must prioritize customer-centricity in order to succeed in this market. However, so far, no research in this field has focused on the customer experience approach. Considering the existing theoretical gap, it is necessary to conduct more research in this field [15].

In the field of international trade, one of the challenges facing shipping companies is understanding what strategies to adopt to gain a competitive advantage and prevent customers from moving towards competitors and foreign shipping lines. One of the new approaches in response to this challenge is Customer Experience Management (CEM) [3]. Researchers believe that creating a meaningful experience for the customer will play a decisive role in the continuity of communication and the level of customer loyalty to the organization, ultimately leading to a competitive advantage. Considering that recognizing customer experience and providing value to them through service delivery channels and during customer journeys will improve customer experience and loyalty [12], this research investigates the category of customer experience management in B2B markets. To solve existing challenges and improve customer experience, the antecedents of customer experience management in the maritime transportation industry need to be identified and explained. Based on this, the main question of the current research is "What are the components and antecedents of customer experience management in the maritime transport industry?". In the quantitative stage, the impact of each component on the customer experience is evaluated. The following sections will review the theoretical foundations and background of the research, propose the research implementation method, present qualitative and quantitative findings, and finally discuss and review the research results.

2 Research literature

2.1 Customer experience

Customer experience is a dynamic phenomenon with an interactive and multi-dimensional nature. It consists of multiple touchpoints at different stages of the customer journey process, including the pre-purchase stage (awareness, need detection, search and comparison), the purchase stage, and the stage of using the services. Customer experience can be defined as a multifaceted structure that captures the cognitive, emotional, and social reactions of customers to the actions of an organization, ultimately leading to customer satisfaction and loyalty or dissatisfaction [2]. Researchers emphasize that the points of contact between the customer and the organization, along with the so-called "real moments" or critical incidents in various stages of service provision, together with the physical environment, all shape the customer experience [15]. By focusing on customer experience management, organizations can develop and improve their services in line with their central strategy, capacities, and capabilities. This involves designing service provision dimensions to create positive experiences for customers [12]. While there are various definitions, experts generally introduce customer experience management as a strategic management process for the complete customer journey, with a strong emphasis on value creation [8].

2.2 Customer journey

The concept of customer journey originates from customer experience management (CEM) [4]. The customer journey in a service organization includes events and stages experienced by customers in their interaction and communication with service providers [7]. The journey that the customer takes on the way to experience is made up of a set of touch points. In other words, the touch points represent the points of interaction and confrontation of the customer with a brand, organization, service, or product in three stages: pre-core service encounter, core service encounter, and post-core service encounter. This helps businesses develop a complete understanding of the customer experience through which they can nurture relationships with their valued customers. Thus, with a nourished customer relationship, the company can increase its customer retention, positive WOM, and profitability [25]. The importance of touch points in the formation of customer experience is undeniable. Because without interactions, there will be no experience. Therefore, by recording and analyzing the touch points, one can gain the necessary understanding to evaluate the customer experience [1]. Based on the stage of the customer journey, it requires different channels of communication and interaction between service providers and customers, which can be virtual, physical, or a combination of both [22].

2.3 Customer experience management in industrial markets

Customer experience management is a strategy to shape customer experience, which in addition to interacting with customers and managing customer affairs by creating differentiation and value creation at every touch point and influencing customer attitudes, provides them with loyalty [5]. The customer experience management literature expresses two general views: research that has been conducted with the B2C approach and research that has considered the B2B approach. Customer service experience is not only limited to consumer markets but is also important and applicable in B2B markets [20]. In industrial markets, customer experience results from direct and indirect interactions between suppliers, customers, and end users, as well as other stakeholders involved in customer interaction [9]. In the B2B field, customer interactions are not limited to a brand, these interactions include company partners, customers' social spheres [15], industry experts, and communications in the customer's organization. The term engagement encompasses all possible ways of brand exposure, such as advertising and communication with service staff, mostly face-to-face and electronic communications. In these markets, sales cycles are often longer and multiple decision-making units have distinct roles, plans and goals, therefore, compared to consumer markets, service provision in these markets has a more complex nature [7]. Therefore, the success and effectiveness of customer experience management in a business organization lies in the ability to create effective business relationships with customers and business partners. Customer experience management needs to be implemented throughout the organization [15]. Each of the subcategories of an organization, from information technology and operations to logistics and marketing and even external partners, plays a role in creating a favourable customer experience. In industrial markets, one of the important features of customer experience management is the management of moments of confrontation and customer interaction with the organization in a network of market participants [16]. Therefore, Customer experience is a multifaceted and dynamic phenomenon [15] which is not just individual perception and includes customer responses to all interactions with a company, interaction between actors in a wider network such as other clients, different stakeholders and intermediaries [12]. Researchers explained the benefits and necessity of using customer experience management in the field of B2B interactions and emphasized that in B2B and B2C markets, interactions shape the experience between service providers and customers [27].

2.4 The difference between service experience and service quality in industrial markets

In B2B markets, service experience is different from service quality in certain dimensions, these are:

1. Consumers' cognitive evaluation of the service characteristics that are under the control of the service provider indicates the service quality [2, 20]. While the service experience is a kind of psychological outcome that is formed through the emotional responses of consumers that include their social and psychological benefits [23, 24].

2. Measuring service quality is about the specific and objective features of the service; its benefits are often practical and are evaluated quantitatively through parameters such as time and cost savings. On the other hand, the evaluation of service experience is a subjective measure with a wide and general scope, and its benefits are experimental and symbolic [6] and can be measured based on qualitative parameters such as the level of comfort and peace of mind while doing work. Checking the service quality is done during the encounter with the service or only after receiving the service, if the service experience also includes the stage before the service is provided [25].

3. After the end of the exchanges, the service quality evaluation will not have a lasting effect on the customer's mind and may not have long-term benefits for the service provider [10]. But considering that the service experience includes all customer interactions with the organization and brings the customer's cognitive, emotional, social and psychological responses [21]. It has more lasting effects and leads to the consolidation of the relationship between customers and service organizations in the long run. Therefore, the service experience is beyond the service quality, the service provider can improve the customer experience by identifying and understanding the customer's expectations at the customer's touch points with the organization and by creating differentiation and value creation at each touch point and influencing the customers' attitudes. and lead to the development of long-term relationships and customer loyalty [20].

3 Research methodology

The purpose of the current research is to identify and explain the antecedents of customer experience management in the maritime transportation industry and to provide a model for customer experience management in this field.

Therefore, based on purpose, this research is categorized into the basic-applied research group, and in terms of data collection method, it is included in the non-experimental descriptive research group. In terms of the type of research, it is mixed (qualitative and quantitative). In the first stage, to solve the research problem and formulate a model for customer experience management in the B2B and maritime transport industry, due to the novelty of the subject, especially in the maritime transport industry, the researcher's theoretical sensitivity, and the inadequacy of existing theory, to address theoretical gaps a grounded qualitative data method was used. At this stage, maritime transport and shipping industry experts and executive directors of manufacturing, trading, and freight forwarding companies in Iran who use shipping services to transport their cargo for export or import are considered as the sample frame. For this purpose, the interview protocol was prepared according to the purpose and questions of the research and based on the steps of the customer's journey in using shipping services. The validity of the questions was confirmed by using the opinions of maritime transport and shipping industry experts, and their feedback was received. The data was collected by conducting in-depth semi-structured interviews with executive managers and logistics managers of manufacturing, trading, and forwarding companies that use shipping container lines for the transportation of export and import cargoes. Participants were selected using a purposive and theoretical sampling method. After conducting 22 interviews, theoretical adequacy was achieved.

In the qualitative phase, to assess the research trustworthiness, the criteria of credibility, dependability, confirmability, and transferability were used. To evaluate the credibility and dependability criteria, the research findings were shared with 5 experts and research participants, and their confirmatory opinions on the data accuracy were collected. The confirmability criterion was achieved through the continuous engagement of the researcher with the research context, data review and reflection, and feedback from experts during the data collection process. In terms of transferability, the differences and similarities with similar theories were examined, and the opinions of experts in the maritime transportation industry were utilized. The feedback indicated that the research findings, in addition to contributing to the existing knowledge, have the potential for application and use in this field. To quantitatively examine the research reliability in the qualitative phase, the inter-coder reliability method was used, and the intra-topic agreement index was calculated as 87%, which indicates an appropriate level of reliability.

Table 1: Reliability results between two coders

The title of the interview	Total number of data	Number of agreements	Number of disagreements	Retest reliability percentage
First	39	19	6	0.97
Third	42	18	5	0.85
the fifth	43	17	8	0.79
Average	124	54	19	0.87

In order to evaluate the research model, the quantitative phase used the confirmatory factor analysis (CFA) and structural equation modeling (SEM) methods with the help of PLS software.

Considering the B2B nature of the research, the statistical population in this phase included legal customers of the Islamic Republic of Iran Shipping Company, managers of manufacturing, trading, and freight forwarding companies that have had exports or imports in the past 5 years. According to the database statistics, their number is more than ten thousand companies. Therefore, referring to the Morgan table and to prevent any statistical errors, a sample size of 384 was considered. The data collection tool in this phase was a researcher-made questionnaire based on the extracted categories from the qualitative section. The validity of the questionnaire was confirmed using content validity, face validity, and construct validity indices. The reliability of the questionnaire was assessed by calculating the Cronbach's alpha coefficient. Since the Cronbach's alpha coefficient for the research constructs was calculated to be more than 0.7, the questionnaire had good reliability.

4 Research findings

4.1 Findings of the qualitative part of the research

In the present study, in order to analyze the data, after conducting the interviews, the audio files of the interviews were transcribed. Then, the transcripts were read and re-read line by line. In addition to manual coding, the data from the interviews were implemented in the MAXQDA software. The results of the data coding led to the identification of 76 concepts, which were categorized into 10 main categories and 22 subcategories.

1. Open and axial coding

Table 2: Cronbach's alpha coefficient of the research constructs

Structure	Cronbach's alpha
brand value	0.854
Brand credibility	0.823
Brand trust	0.933
Provision and timely allocation of containers	0.975
Customer experience	0.960
Customer experience during sea transport	0.758
Customer experience pre sea transport	0.940
Customer experience post-sea transport	0.971
Brand position	0.890
Competitiveness	0.892
Economic environment conditions	0.820
The conditions of the political environment	0.837
Terminal performance in ports	0.897
IT performance	0.891
Terminal operation	0.760
Internal factors	0.823
Quality of sea transportation	0.977
The quality of the agents' performance	0.865

In the open coding stage, the codes obtained from the interviews were identified and compared with each other, and the data were categorized into concepts related to customer experience. In the central coding stage, the level of abstraction increases. In this stage, the concepts and categories obtained from open coding were revised and organized, and the themes of the same family were placed next to each other in meaningful clusters, and the relationships between them, especially the relationship between the central phenomenon and other categories. It was found.

2. A central phenomenon

The central phenomenon or the central category is the phenomenon that is the main focus and theme of the research. The results of the research show that the customer's experience in sea transportation, according to the nature of the sea transportation process, includes three stages pre sea transport during sea transport , and post sea transport. The results of open and central coding of customer experience during these steps are presented in Table 3.

3. Causal conditions

The causal conditions are those events that affect the phenomena, the analysis of the interviewees' answers and the extraction of codes showed that in the shipping container line, the three main categories of the company's brand position, the quality of sea transportation and the quality of the terminal's performance affect the customer experience. They say that each one has different dimensions. Table 3 shows the results of open and central coding of the causal conditions affecting the customer's experience in using sea transportation and shipping services.

4. Brand position

The analysis of the data obtained from the interviews indicates that the categories of perceived value of the brand, trust in the brand and credibility of the brand show the perception and perception of the customer about the brand of the organization and show the importance of the position of the brand of the organization from the point of view of the respondents.

5. Quality of sea transportation

The analysis of the data of the respondents shows that the most important challenges faced by the customers are the regular voyage schedule, cargo transit time, unloading and loading on time loading and discharging, safe and according to the announced schedule. Also, the number and capacity of ships, routes and sequence of ship trips are other factors that are important for customers.

6. Container terminal performance quality

One of the basic pillars of container shipping is container inventory and its timely supply and allocation. In this regard, one of the main requests of customers is the timely allocation of containers in the type and size according to customer demand. The performance of the terminal in handing over the containers and their delivery expresses the procedures and processes that customers must go through for the delivery and return of the container. The next category is the type of equipment used in terminals to move containers, such as cranes and forklifts, etc., in addition to that, the number of warehouses, warehouse capacity and storage services is another category that is related to the number of export and import containers. It is important in the premises of commercial ports and plays an important

role in the operational efficiency of the terminal.

Intervening conditions are structural conditions that act as facilitators and limiters and facilitate or make difficult the effects of causal and contextual conditions. The review and analysis of the data obtained from the interviews shows that the organizational factors, information technology features, the performance of the company's internal and external agencies, and the competitiveness approach are the final codes that are effective on the formation of customer experience. Table 3 shows the results of open and central coding of the intervening conditions affecting the customer's experience in using sea transportation and shipping services.

8. Contextual conditions

These conditions are a set of exogenous factors that are not under the control of the company; But they affect the central phenomenon. In terms of contextual conditions, most of the respondents mentioned political factors such as sanctions and economic factors such as banking laws and currency allocation conditions, customs laws and foreign trade laws such as product priorities in the order registration system. Sanctions have specifically targeted the activity of Iranian ports and state shipping lines. International shipping companies have also been banned from entering Iranian ports due to sanctions, which has limited Iran's maritime trade. In addition, during the embargo, it is not possible for domestic ships to travel in some foreign ports. Table 3 shows the results of open and central coding of the contextual conditions affecting the customer's experience in using sea transportation and shipping services.

Table 3: Results of open and axial coding, components and antecedents of customer experience management in the shipping industry.

concepts	Subcategories	Main categories	Categorical cluster
A central phenomenon	Customer experience	Customer experience pre sea transport	Freight rates and fares
			The contract of carriage and its validity period
			The number of days allowed to have the container at the origin and destination
			Receive the shipping contract on time
			The process of obtaining a container reservation, the speed of issuing a reservation number
			Timely issuance of shipping documents, timely allocation of containers
		Customer experience during sea transport	Ability to track the status of the container
			Notifications
			Notice of ship arrival
		Customer experience post-sea transport	Additional services of changes in the contents of shipping documents
			The process of getting a license, appointment
			Invoicing and payment method
			How to interact and respond to customer service staff
			Cooperation and companionship with customers
			Dealing with customer requests and complaints
	Brand position	Brand credibility	National fleet, domestic and Iranian line, national spirit
		Perceived value of the brand	International transport network, geographic coverage and number of routes, exemption from tolls of the Ministry of Roads, Rial stop fee, suitable freight rates compared to foreign lines, convenience and accessibility, head office in Tehran
		Brand trust	Security of mind, certainty, reliability, stability.
	Quality of sea transportation	Regular voyge schedule	Timely loading and unloading, exact ship departure time, permission to berth the ship in ports, ship arrival time
		Transit time	The duration of cargo transfer from the port of origin to the port of destination
		Number and capacity of ships	The number of ships and feeders with suitable capacity in the ports
	The quality of container terminal performance in ports	Providing and allocating containers on time	Container inventory, container variety and size (normal, large, refrigerated, roofless and flat...)
		Terminal operational efficiency	Safety of equipment and port operations in terminals, convenience of delivery and return of containers for export and import cargo
		Availability of storage and storage services	The number of warehouses, warehouse space and storage costs in ports and other cities.
Intervening conditions	The quality of the agents' performance	Network of agents	The number and extent of agencies
		Limits of agency powers	The degree of coordination and integration with the central organization

		How agents work	Expertise, working knowledge, costs, ease and way of providing services
	IT performance	System access level of clients	Ability to upload documents and receive documents and reports
			Possibility of payments
		Notifications	Container status tracking
			Rates, ship itinerary schedule, ship arrival announcement
		Website features	Site speed
			up to date
			Being user-friendly
	Organizational factors	The complexity of the administrative system	Integration and coordination
			Bureaucracy
			Pyramidal structure, legality, decision-making focus
	Competitiveness	The performance of external lines and other internal lines	Creating differentiation in the way of service delivery
			Making a difference in the speed of service delivery
			Providing competitive rates
Contextual factors	The conditions of the political environment	Sanction conditions	Sanction and its consequences in shipping
			Problems in transferring funds in international payments
			Impossibility of traffic and berthing of ships in some ports
	Economic conditions	Domestic and foreign market conditions	Banking rules and currency allocation conditions
			Iran's customs laws and foreign trade laws
			Regional and global rates and economic crises

4.2 Findings of the quantitative part of the research

After identifying the antecedents of customer experience management in the maritime transportation industry, in order to ensure the coding done in the studied community and after collecting the questionnaire data, using the structural equation modeling method with Smart PLS3 software, the research assumptions have been evaluated.

Convergent validity: The average variance extracted AVE criterion is used to measure convergent validity and a value greater than 0.5 indicates acceptable validity.

Composite reliability: If the composite reliability value for each construct is greater than 0.7, it indicates good internal consistency. In Table 4, the results of convergent validity and composite reliability are presented.

Table 4: Composite reliability and convergent validity

Structure	**AVE**	**CR**
brand value	0.774	0.911
Brand credibility	0.738	0.894
Brand trust	0.883	0.958
Provision and timely allocation of containers	0.952	0.984
Customer experience	0.572	0.962
Customer experience during sea transport	0.673	0.86
Customer experience pre sea transport	0.771	0.953
Customer experience post-sea transport	0.876	0.977
Brand position	0.534	0.911
Competitiveness	0.823	0.933
Economic environment conditions	0.737	0.893
The conditions of the political environment	0.743	0.894
Terminal performance in ports	0.716	0.926
IT performance	0.817	0.931
Terminal operation	0.671	0.856
Internal factors	0.745	0.897
Quality of sea transportation	0.956	0.985
The quality of the agents' performance	0.788	0.918

Divergent validity: the results of divergent validity based on the Fornell and Larcker index are presented in Table 5, the calculated values indicate the optimal fit of the external model.

1. Coefficient of determination (R^2 value)

The coefficient of determination (R^2 value) is used to evaluate the structural model and it shows the measurement of the prediction accuracy of the model and is equal to the square power of the correlation between the actual and predicted values of an endogenous structure.

Table 5: Divergent validity by Fornell and Larcker method

	brand value	Brand credibility	Brand trust	Provision and timely allocation of containers	Customer experience	Customer experience during sea transport	Customer experience pre sea transport	Customer experience post-sea transport	Brand position	Competitiveness	Economic environment conditions	The conditions of the political environment	Terminal performance in ports	IT performance	Terminal operation	Internal factors	Quality of sea transportation	The quality of the agents' performance
brand value	0.880																	
Brand credibility	0.614	0.859																
Brand trust	0.390	0.539	0.939															
Provision and timely allocation of containers	0.286	0.189	0.491	0.976														
Customer experience	0.589	0.626	0.711	0.480	0.756													
Customer experience during sea transport	0.348	0.272	0.515	0.169	0.714	0.820												
Customer experience pre sea transport	0.335	0.374	0.198	0.300	0.637	0.325	0.878											
Customer experience post-sea transport	0.304	0.435	0.504	0.178	0.782	0.549	0.428	0.936										
Brand position	0.792	0.866	0.807	0.403	0.790	0.472	0.366	0.515	0.731									
Competitiveness	0.491	0.538	0.546	0.252	0.656	0.442	0.227	0.430	0.643	0.907								
Economic environment conditions	0.338	0.128	0.104	0.140	0.144	0.116	0.105	0.081	0.224	0.071	0.859							
The conditions of the political environment	0.217	0.036	-0.126	-0.099	-0.016	-0.034	0.100	0.023	0.038	-0.155	0.495	0.862						
Terminal performance in ports	0.342	0.265	0.583	0.934	0.603	0.291	0.394	0.287	0.496	0.265	0.149	-0.039	0.846					
IT performance	0.329	0.267	0.384	0.203	0.540	0.434	0.188	0.284	0.402	0.437	-0.050	0.038	0.283	0.904				
Terminal operation	0.307	0.294	0.523	0.510	0.619	0.381	0.447	0.377	0.468	0.222	0.112	0.058	0.778	0.330	0.819			
Internal factors	0.476	0.487	0.559	0.381	0.810	0.603	0.449	0.520	0.624	0.420	0.159	-0.036	0.494	0.498	0.532	0.863		
Quality of sea transportation	0.231	0.330	0.422	0.324	0.642	0.571	0.267	0.355	0.408	0.487	0.016	-0.100	0.341	0.428	0.280	0.604	0.978	
The quality of the agents' performance	0.571	0.423	0.550	0.470	0.876	0.592	0.512	0.653	0.630	0.591	0.050	-0.102	0.547	0.476	0.503	0.728	0.559	0.888

Table 6: Coefficient of determining the endogenous structure of the research model

Structure	R Square	R Square Adjusted
brand value	0.627	0.626
Brand credibility	0.751	0.750
Brand trust	0.651	0.650
Provision and timely allocation of containers	0.872	0.871
Customer experience	0.911	0.908
Customer experience during sea transport	0.510	0.509
Customer experience pre-sea transport	0.406	0.404
Customer experience post-sea transport	0.612	0.611
Terminal operation	0.605	0.604

2. Q^2 forecasting criterion and predictor fit

The value of Q^2 represents the fit of the model predictor. If the value of Q^2 in the case of an endogenous construct is 0.02, 0.15 and 0.35, it indicates the weak, medium and strong predictive power of the construct with related exogenous constructs, respectively. The results of the following table 7 show the appropriate predictive power of the model

regarding the endogenous constructs of the research and confirm the fit of the structural model.

Table 7: Q2 benchmark results for endogenous constructs.

Structure	SSO	SSE	Q^2 (=1-SSE/SSO)
brand value	1,152.000	636.720	0.447
Brand credibility	1,152.000	547.819	0.524
Brand trust	1,152.000	527.676	0.542
Provision and timely allocation of containers	1,152.000	248.936	0.784
Customer experience	17,280.000	11,761.510	0.319
Customer experience during sea transport	1,152.000	783.094	0.320
Customer experience pre-sea transport	2,304.000	1,648.709	0.284
Customer experience post-sea transport	2,304.000	1,158.136	0.497
Brand position	3,456.000	3,456.000	
Competitiveness	1,152.000	1,152.000	
Economic environment conditions	1,152.000	1,152.000	
The conditions of the political environment	1,152.000	1,152.000	
Terminal performance in ports	1,920.000	1,920.000	
IT performance	1,152.000	1,152.000	
Terminal operation	1,152.000	722.635	0.373
Internal factors	1,152.000	1,152.000	
Quality of sea transportation	1,152.000	1,152.000	
The quality of the agents' performance	1,152.000	1,152.000	

3. Quantitative evaluation of the formulated model

In order to fit the whole model using the third version of PLS software, the SRMR index should be less than 0.08. This index shows the degree of coordination of the conceptual model with the experimental data. In the current research, the data fit criterion is equal to 0.057 and is lower than the value of 0.08; Therefore, the current research model has a suitable fit. Table 8 shows the path coefficients and significance values of the paradigmatic model. As presented in the table, the research hypotheses were confirmed.

Table 8: Path coefficients and corresponding t values

Row	hypothesis	Path coefficients	SD	T Students	P Value	Result
1	Customer experience -> Customer experience during sea transport	0.714	0.025	28.597	0	confirmation
2	Customer experience -> Customer experience pre sea transport	0.637	0.035	18.139	0	confirmation
3	Customer experience -> Customer experience post-sea transport	0.782	0.019	41.377	0	confirmation
4	Brand position -> brand value	0.792	0.025	31.173	0	confirmation
5	Brand position -> brand credibility	0.866	0.016	55.452	0	confirmation
6	Brand position -> brand trust	0.807	0.023	35.621	0	confirmation
7	Brand Position -> Customer Experience	0.252	0.035	7.157	0	confirmation
8	Shipping Quality -> Customer Experience	0.113	0.027	4.19	0	confirmation
9	Terminal performance at ports -> timely supply and allocation of containers	0.934	0.007	141.954	0	confirmation
10	Terminal performance at ports -> Customer experience	0.098	0.026	3.733	0	confirmation
11	Terminal operation in ports -> Terminal operation	0.778	0.027	28.459	0	confirmation
12	Economic environment conditions -> customer experience	-0.014	0.021	33.273	0	confirmation
13	Political environment conditions -> customer experience	0.057	0.034	23.381	0	confirmation
14	Competitiveness -> Customer Experience	0.094	0.031	2.983	0	confirmation
15	IT Performance -> Customer Experience	0.033	0.033	21.121	0	confirmation
16	Internal factors -> customer experience	0.201	0.035	5.743	0	confirmation
17	quality of the agents' performance -> customer experience	0.389	0.03	12.765	0	confirmation

Validity of the construct: If the standardized coefficients are greater than 0.4 and in the case of significance, the value of the t statistic is greater than 1.96, the validity of that construct is acceptable. The PLS model is presented in the form of standard coefficients and significant coefficients in figures 1 and 2.

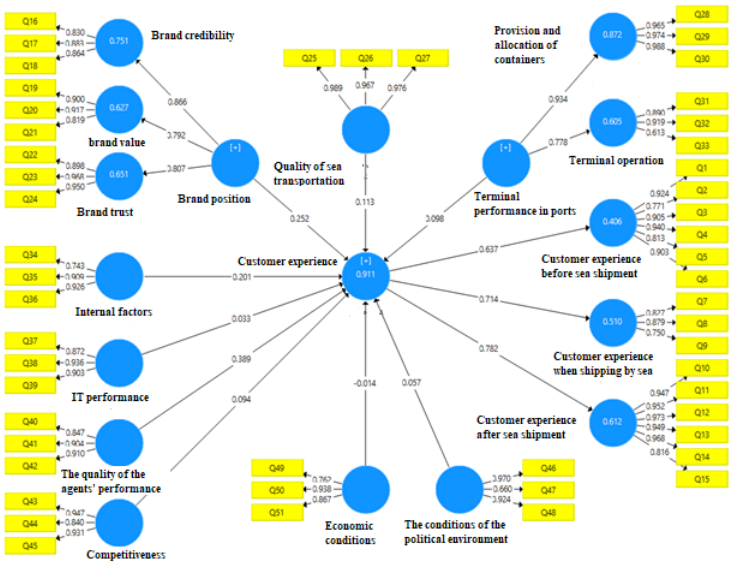


Figure 1: Research model with path coefficients and external loads

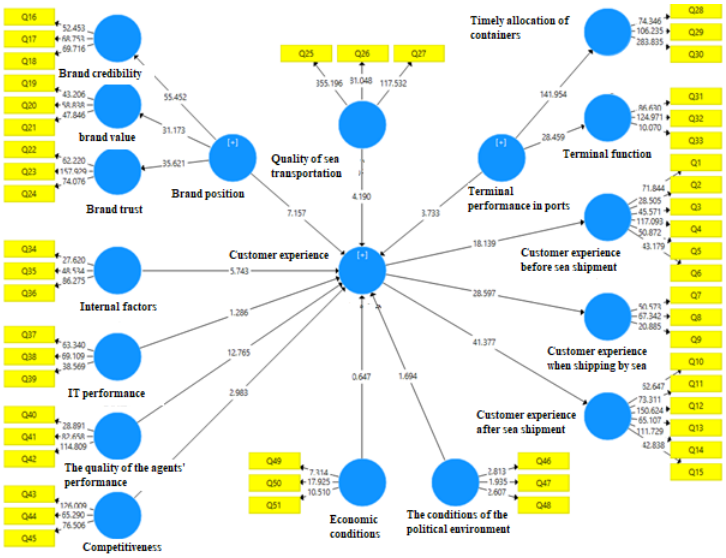
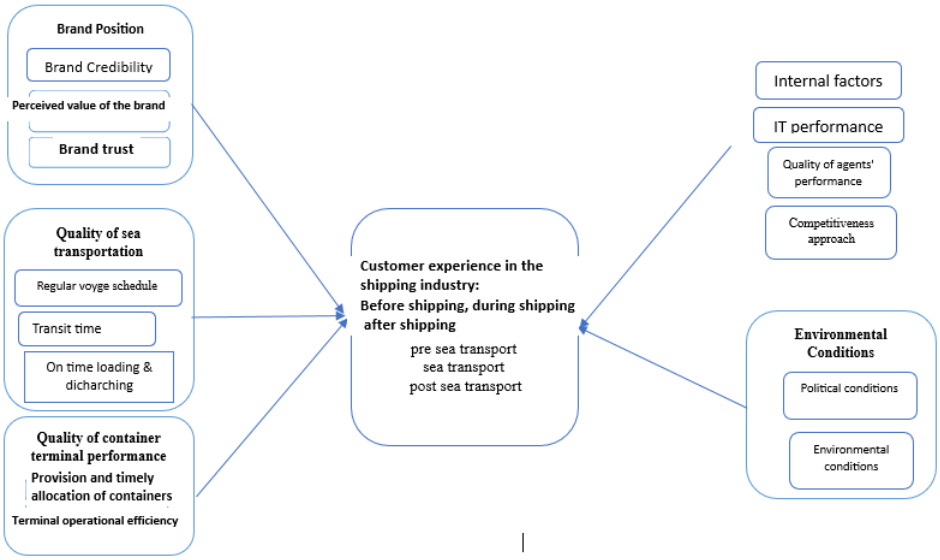


Figure 2: Research model with t-value

The final designed model is presented in the figure below

5 Conclusion

The purpose of this research was to identify and explain the antecedents of customer experience management in the marine transportation industry. For this purpose, a qualitative and quantitative mixed method has been used. In the qualitative phase of the research, the findings were collected through interviews with business customers and based on the stages of the customer's journey, and the data analysis was done using the qualitative approach of the foundation's data theory, and in the quantitative phase, confirmatory factor analysis and structural equations were used with PLS3 software. According to the researcher's studies and the review of articles published in Scopus publications since 2010, customer experience in the shipping and marine transportation industry has not been investigated, and the researches conducted are mainly about service quality and satisfaction. has been customers. Therefore, it seems that there is a knowledge gap; Therefore, according to the multifaceted nature of customers in the B2B field, identifying some new components in explaining the nature and antecedents of customer experience management in the field of marine transportation services and in the shipping industry is one of the achievements of the present research. The results



of this study confirm the findings of previous research regarding the nature and dimensions of customer experience management. In this research, the customer's experience in sea transportation according to the nature of the sea transportation process consists of three stages pre sea transport, during sea transport, and post sea transport. Data analysis shows that the factors of Freight rate, timely response, regular voyage schedule, quality and speed of service delivery are among the most important factors that shape the customer's experience during the customer's journey. These findings converge with the results of the research conducted by Yuen & Thai [28]. According to the research of these researchers, the dimensions of responsiveness, speed, price and reliability are the factors that affect customer satisfaction in relation to the quality of service provided in a shipping line [26]. In the current research, brand position, sea transportation quality, and terminal performance quality have been identified as causal factors affecting customer experience, which confirms the results of previous research. In another study conducted in the field of customer experience in 2019, brand experience is recognized as one of the dimensions of customer experience management [11]. In addition, the results of this research are somewhat consistent and supported with the features identified in previous researches in the field of marine transportation services. Brand positioning is particularly important in container transportation, which is a competitive and capital-intensive industry, and is considered one of the valuable criteria for customers in shipping lines [14]. Brand positioning leads shipping lines to strengthen and maintain their relationships with other members of the supply chain [2]. A study conducted in 2021 indicates that the perception of service quality and the willingness to pay higher prices are very important in brand positioning in container transportation [26]. Also, the value perceived by the customer plays a prominent role in the development of the competitive advantage of shipping lines [27]. The quality of sea transportation and the performance of the terminal are among the new components identified in this research and indicate the causal factors affecting the customer experience, which is consistent with the results of previous research. Researches in the field of marine transportation services show that from the point of view of customers, ship voyage schedule is considered as one of the main components for choosing a shipping company [17].

A research that was recently conducted in 2021 indicates that transit time, transportation costs, cargo security and reliability are key factors influencing the choice of shipping line from the customers' point of view [13]. According to the mentioned cases, the findings of the present study are consistent and converging with the results of previous studies. In this research, one of the intervening factors affecting customer experience is organizational factors, which is in line with the results of previous research. Kandampully in his research in 2018, came to the conclusion that all departments and operational activities of an organization have a role in customer experience management, and the customer-centric strategy should be part of the strategic vision of the organization and all the activities of the organization should be in the same direction [14].

Information technology performance is one of the other intervening factors identified in this research, which is consistent with the results of previous research. Research shows that information technology has changed the way customers interact with suppliers and leads to the complexity of customer journeys [13]. Kandampully considers the role of information technology in creating new opportunities for organizations and creating Communication is essential in customer experience management [14]. A study conducted in 2021 indicates that the use of information technology

platforms for the integration of transportation operations, logistics operations, customs brokerage, warehousing and distribution will lead to the improvement of service quality in a shipping company [13]. The field identified in this research includes the conditions of the political environment and the economic environment, based on the service dominant logic theory, which indicates the impact of the service ecosystem on the customer experience [1]. which is consistent with previous research results. Identifying the components and antecedents of customer experience at the points of customer interaction and confrontation with the organization and evaluating customer experiences shows that strengthening customer relationships in order to understand customer expectations and develop customer interactions are essential measures to improve customer experiences and and will lead to their satisfaction and loyalty. Improving the quality of providing services at customer touch points, on time providing and allocating containers, upgrading and improving software infrastructure, integrating information technology systems and increasing the speed of providing services in branches are among the factors that provide competitiveness and improve the company's brand position. Bring [24] given that, in today's complex and competitive markets, a critical point of contact for business success is customer support [5]. Value creation strategy for customers, improving the quality of services and providing services according to the needs of customers in all stages of the customer's journey, as well as after receiving services, is necessary, and the implementation and implementation of this strategy will lead to a pleasant experience for customers. Due to the fact that little research has been done in the maritime transport industry in our country in the field of commercial customers' behavior, this research can be considered as a basis for conducting various researches in the future.

In the quantitative stage, in order to fit the whole model, the square root index of the SRMR approximation error variance has been used. This index shows the degree of coordination of the conceptual model with the experimental data. And considering that this criterion is equal to 0.057 and is less than 0.08, the research model has a good fit. At this stage, the conceptual model of the research was tested by conducting confirmatory factor analysis. A significant study of the path coefficients of the conceptual model using the t-test showed that the value of t for all the path coefficients is greater than 1.96 and is outside the critical area, which indicates the proof of the research hypotheses. In this way, the results obtained in the quantitative part of the research show the confirmation of the components of the conceptual model of the research.

References

[1] M.A. Akaka, S.L. Vargo, and H.J. Schau, *The context of experience*, J. Serv. Manag. **26** (2015), no. 2, 206–223.

[2] M.C. Altunel and B. Erkurt, *Cultural tourism in Istanbul: The mediation effect of tourist experience and satisfaction on the relationship between involvement and recommendation intention*, J. Destin. Market. Manag. **4** (2015), no. 4, 213–221.

[3] L. Becker and E. Jaakkola, *Customer experience: fundamental premises and implications for research*, J. Acad. Market. Sci. **48** (2020), no. 4, 630–648.

[4] G. Biedenbach and A. Marell, *The impact of customer experience on brand equity in a business-to-business services setting*, J. Brand Manag. **17** (2010), 446–458.

[5] L.B. Ceesay, *Building a high customer experience management organization: Toward customer-centricity*, Jindal J. Bus. Res. **9** (2020), no. 2, 162-175.

[6] A. De Keyser, K. Verleye, K.N. Lemon, T.L. Keiningham, and P. Klaus, *Moving the customer experience field forward: introducing the touchpoints, context, qualities (TCQ) nomenclature*, J. Serv. Res. **23** (2020), no. 4, 433–455.

[7] A. Folstad and K. Kvale, *Customer journeys: a systematic literature review*, J. Serv. Theory Practice **28** (2018), no. 2, 196–227.

[8] R. Halvorsrud, K. Kvale, and A. Følstad, *Improving service quality through customer journey analysis*, J. Serv. Theory Practice **26** (2016), no. 6, 840–867.

[9] A. Helkkula, *Characterising the concept of service experience*, J. Serv. Manag. **22** (2011), no. 3, 367–389.

[10] A. Helkkula, C. Kelleher, and M. Pihlström, *Characterizing value as an experience: implications for service researchers and managers*, J. Serv. Res. **15** (2012), no. 1, 59–75.

[11] E. Heshmati, H. R. Saeednia, and A. Badie Zadeh, *Designing a model to manage the experience of banking service customers*, J. Bus. Admin. Res. **11** (2019), no. 21, 247–268.

[12] C. Homburg, D. Jozić, and C. Kuehnl, *Customer experience management: toward implementing an evolving marketing concept*, J. Acad. Market. Sci. **45** (2017), no. 3, 377–401.

[13] C.L. Hsu and T.C. Ho, *Evaluating Key Factors of Container Shipping Lines from the Perspective of High-Tech Industry Shippers*, J. Marine Sci. Technol. **29** (2021), no. 1, 29–41.

[14] J. Kandampully, T.C. Zhang, and E. Jaakkola, *Customer experience management in hospitality: A literature synthesis, new understanding and research agenda*, Int. J. Contemp. Hospital. Manag. **30** (2018), no. 1, 21–56.

[15] K.N. Lemon and P. C. Verhoef, *Understanding customer experience throughout the customer journey*, J. Market. **80** (2016), no. 6, 69–96.

[16] J.R. McColl-Kennedy, M. Zaki, K.N. Lemon, F. Urmetzer, and A. Neely, *Gaining customer experience insights that matter*, J. Serv. Res. **22** (2019), no. 1, 8-26.

[17] A.K. Ng and G. Wilmsmeier, *The geography of maritime transportation: space as a perspective in maritime transport research*, Maritime Policy Manag. **39** (2012), no. 2, 127-132.

[18] A.C. Paixao Casaca and P.B. Marlow, *The competitiveness of short sea shipping in multimodal logistics supply chains: Service attributes*, Maritime Policy Manag. **32** (2005), no. 4, 363–382.

[19] A. Palmer, *Customer experience management: A critical review of an emerging idea*, J. Serv. Market. **24** (2010), no. 3, 196–208.

[20] S. Roy, S. Sreejesh, and S. Bhatia, *Service quality versus service experience: An empirical examination of the consequential effects in B2B services*, Ind. Market. Manag. **82** (2019), 52–59.

[21] J. Schmitt, B. Josko, and L. Zarantonello, *From experiential psychology to consumer experience*, J. Consum. Psychol. **25** (2015), no. 1, 166–171.

[22] J. W. Schouten, J.H. McAlexander, and H.F. Koenig, *Transcendent customer experience and brand community*, J. Acad. Market. Sci. **35** (2007), 357–368.

[23] J. Sweeney and J. Swait, *The effect of brand credibility on customer loyalty*, J. Retail. Consum. Serv. **15** (2021), no. 3, 103–110.

[24] W. Ulaga, *The journey towards customer centricity and service growth in B2B: A commentary and research directions*, J. Acad. Market. Sci. **8** (2018), no. 1, 80–83.

[25] C.M. Voorhees, P.W. Fombelle, Y. Gregoire, S. Bone, A. Gustafsson, R. Sousa, and T. Walkowiak, *Service encounters, experiences and the customer journey: Defining the field and a call to expand our lens*, J. Bus. Res. **79** (2017), 269-280.

[26] C.A. Vural, S. Baştuğ, and S. Gülmez, *Sustainable brand positioning by container shipping firms: Evidence from social media communications*, Transport. Res. Part D: Transport Envir. **97** (2021), 102938.

[27] L. Witell, C. Kowalkowski, H. Perks, C. Raddats, M. Schwabe, O. Benedettini, and J. Burton, *Characterizing customer experience management in business markets*, J. Bus. Res. **116** (2020), 420-430.

[28] K.F. Yuen and V.V. Thai, *Service quality and customer satisfaction in liner shipping*, Int. J. Qual. Serv. Sci. **7** (2015), no. 2, 170–183.