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RESEARCH ARTICLE

A research on determining the senior level managerial competencies for container ports in Türkiye

Esra Baran Kasapoğlu[1*] • Mustafa Serdar Ayan[2]

[1] *Dokuz Eylül University, Maritime Faculty Maritime Business Administration, 35390, İzmir, Türkiye*

[2] *Dokuz Eylül University, Maritime Faculty Maritime Business Administration, 35390, İzmir, Türkiye*

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ABSTRACT

As essential and significant interfaces in the maritime transportation chain, ports operate in a dynamic and competitive environment. Port managers' competencies are critical intellectual capital for ports to react to the demands of this changing environment. This research aims to identify the critical managerial competencies of container port senior managers in strategically managing the container port in a dynamic and competitive environment. The study was carried out in two steps, and structured interview and Delphi methods were used. As a result, 26 critical managerial competencies for senior managers of container ports are determined in this study, including technical and operational, human and social, cognitive and conceptual competencies. The outcomes of this study are expected to contribute to the relevant literature and provide useful insights to practitioners in designing and implementing human resource development strategies in port management.

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Introduction

The earlier study of McClelland (1973) originated the idea of competence, which was further popularized by Boyatzis (1982) and Spencer & Spencer studies (1993). Competencies are "the underlying characteristics of a person that lead to or cause effective and outstanding performance," according to Boyatzis (1982). In addition, it was defined by Spencer & Spencer (1993) as "an underlying characteristic of an individual that is casually related to criterion-referenced effective and/or superior performance in a job or situation". Even though competencies have been described from various viewpoints, three key aspects are common: appreciable performance, the quality of the consequence of the individual's performance, and the fundamental characteristics of an individual (Hoffman, 1999).

* Corresponding author
E-mail address: esra.baran@deu.edu.tr (E. Baran Kasapoğlu)

Organizations are altering their management practices promptly as the business environment is becoming more complicated, unpredictable, and risky. For managerial tasks to be accomplished successfully, new requirements emerge. In the current global environment, managers who can successfully manage people and physical assets in the twenty-first century are essential for enterprises (Nekoranec, 2013). Intangible resources such as human capital play a pivotal role in port performance in managing the difficulties of the contemporary era. Consequently, port managers need to have the essential skills, expertise, and talents to be efficient and successful in their managerial role, as well as be completely competent to overcome the difficulties that ports experience in their highly competitive environment (Thai et al., 2015).

As senior managers are critical decision makers and important intellectual capital in port management, it was considered important to investigate their competencies. Yet, despite the importance of managerial competencies and extensive literature on managerial competencies, research on the competencies of port managers is very limited. After a detailed literature review, it has been determined that there is a research gap in Türkiye related to managerial competencies in the port sector. To the best of the authors' knowledge, no study has been reached in the literature regarding the senior-level managerial competencies of container ports. Thus, this study aimed to contribute to the literature by conducting research on the critical competencies for senior managers of Turkish container ports. Therefore, the main research questions of this study are: (i) Which managerial competencies are critical for senior managers in container ports? (ii) What are senior managers' critical technical, human, and conceptual competencies in container ports? The study is structured as follows: the literature on general managerial competencies and managerial competencies in ports are reviewed, and the content analysis of the competencies is presented in the next section. The material and methods section details the research method consisting of two steps. Then the results section presents the findings from the interviews and the Delphi method. The results are compared with the previous studies in the conclusion section, the study's limitations are expressed, and further research directions are proposed.

Literature Review

While the competencies are discussed from the organizational perspective by some scholars (Prahalad and Hamel, 1990), other researchers (Boyatzis, 1982; Burgoyne, 1989; Collin, 1989) examined employees' competencies. Core competencies of employees are sometimes referred to as personal competencies. For example, the "managerial competencies" are widely used to describe the competencies of effective managers (Abraham et al., 2001). A description of managerial competency that emphasizes the significance of abilities, expertise, and personal attributes was proposed by Quinn et al. (1996). They stated that competency term means both the ability to behave properly and the existence of knowledge (Wadongo et al. 2011).

Katz (1955) stated that the three managerial competencies are necessary for successful management: technical, human, and conceptual. Additionally, other various classifications of managerial competencies have been suggested in the literature. For instance, affective, perceptual, symbolic, and behavioral competencies were the categories proposed by Kolb et al. (1986). A total of 21 competencies were categorized as consummate and threshold competencies in conceptual research by Boyatzis (1982). According to Mintzberg (1990), there are ten fundamental roles of managers, which are grouped as interpersonal, informational, and decisional. Competencies are divided into two groups by Spencer & Spencer (1993): visible competencies (knowledge and skill) and hidden competencies (self-concept, trait, motive). Eight managerial roles, including 24 managerial competencies, were proposed by Quinn et al. (1996). Cameron (1997's Management Development Questionnaire grouped 20 competencies into five categories: "managing change," "planning and organizing," "interpersonal skills," "result orientation," and "leadership." Kurz & Bartram (2002) defined the "Big Eight" competency factors, which are leading & deciding, supporting & co-operating, interacting & presenting, analyzing & interpreting, creating & conceptualizing, organizing & executing, adapting & coping, enterprising & performing. The Holistic Competence Model, developed by Le Deist and Winterton in 2005, includes cognitive, functional, social, and meta-competence. Viitala (2005) proposed a hierarchical model of management competencies including six clusters, namely technical, business, knowledge management, leadership, social and intrapersonal competencies. Chong (2008) used the Managerial Assessment of Proficiency instrument, which has four groups (administrative, communication, supervisory, and cognitive) and a total of 12 competencies. The managerial competencies scale elements were divided into five categories (focus, leadership, management skills, purpose and action, and human resources) by Çetinkaya & Özutku (2010, 2012). Agnihotri & Misra (2022) proposed a framework for managerial

competency development and classified managerial skills as intrapersonal, interpersonal, business and leadership.

Reichel (1996) investigated the aspects and features of a competent manager in Israel, and the findings emphasized behavioral skills and features. The findings also pointed out that efficiency, adaptability to various circumstances, and interpersonal skills were among the most important. Professional knowledge and problem-identification skill competencies have the lowest value. Abraham et al. (2001) examined the critical competencies to managerial success. Their survey research from various industries revealed that 6 out of 23 competencies are the most critical ones. These are leadership skills, customer focus, result orientation, problem solver, communication skills, and teamwork. Sangka et al. (2019) prioritized managerial competencies of the Indonesian third-party logistics (3PL) sector with the AHP method. They proposed a conceptual framework including 15 competencies under four categories: "management," "logistics," "business," and "information and communication" technologies. While the logistics competency category was identified as most important, the management and business competency categories were perceived as moderately important. Although the competencies from the information and communication technology category were perceived as the least important, they will have a significant role in the future. Bondarenko et al. (2021) provided an investigation of how the managerial competencies has changed as a result of the transformative shifts in the global environment. Analyses are included the forecasts and changes in the fundamental managerial skills for the year 2025 and intercultural and digital competencies are categorised as theoretically new skills needed by a contemporary manager.

Shet & Pereira (2021) focused on identifying the managerial competencies required for an Industry 4.0 environment to succeed and outlined 14 managerial competencies as being essential. Sukalova (2022)'s research is aimed to identify managers' competencies in the context of management diversity throughout the globalization era. And it is stated global thinking, worldwide experience, and strong technical and strategic abilities are often required of managers working in a global context.

Some of the research in the literature examined competencies according to managerial levels. For instance, Labbaf et al. (1996) conducted research about senior managers in the Iranian steel industry and categorized the managerial skills as "analytical and self-related," "people-related," and "task-related." Their findings demonstrated that the improved effectiveness of the senior manager is based on people and analytical & self-related skills rather than task-related skills. Siu (1998) conducted a survey study investigating middle managers' competencies in the Hong Kong hotel sector. A total of eleven competencies were evaluated according to their perceived importance. Communication, customer concern, leadership, planning, and team-building competencies were perceived top 5 crucial competencies for the hotel sector in Hong Kong. Qiao & Wang (2009) used focus group, critical incidence interview, and survey methods to identify managerial competencies necessary for middle managers in China. Team building, communication, coordination, execution, and continual learning were identified as critical competencies for successful middle managers. Furthermore, their research supported those middle managers need a different set of abilities compared to senior managers. For instance, vision and strategic thinking competencies were mentioned less frequently as crucial. Fang et al. (2010) detected a competency model of middle managers in the Taiwanese healthcare sector with the AHP method. In order of importance, the competency groups were determined as personality, managing, planning, professional, and interpersonal.

Mbokazi et al. (2004) investigated the differences in competency importance among hierarchical managerial levels. Their findings showed that senior-level managers perceive interpersonal competence as more critical than middle managers, and first-line managers perceived operational competence as more crucial than middle managers. However, no differences have been found in the perceptions of managers at different levels about the leadership, analytical, and business awareness competencies. Çetinkaya & Özutku (2012) conducted empirical research in the Turkish Automotive sector and evaluated managerial competencies for all management levels. The most important managerial competencies for senior management include reliability, regular, planned and quality work, success orientation, self-confidence, teamwork and collaboration, being an investigator and innovative, customer focus, assisting staff development, good interpersonal relationship skill, and decisiveness. While the managerial competencies considered most important for middle-level management are the same as those considered important for senior-level management, time management competency was emphasized.

Table 1 lays out the many managerial competencies that have been gathered from previous research and are displayed

Table 1. Content analysis of managerial competencies in the literature

Author/s	Effective Communication	Analytical Thinking	Developing others/employees	Teamwork and Cooperation	Managing team / Team Leadership	Achievement & Result Orientation	Planning	Decision making	Managing time and stress	Adaptability and Flexibility	Conflict management	Goal orientation / Goal setting	Information Management	Initiative / Taking initiative	Problem Identification and solving	Interpersonal skills / Relationship	Creative thinking / Imaginative	Customer focus/ orientation	Leadership	Motivation / Motivating others
Boyatzis (1982)	✓		✓		✓					✓						✓				
Parry (1992)		✓	✓				✓		✓		✓	✓	✓		✓					
Spencer & Spencer (1993)		✓	✓	✓	✓	✓							✓	✓		✓				
Quinn et al. (1996)	✓	✓	✓		✓		✓	✓	✓		✓	✓	✓	✓			✓			✓
Cameron (1997)	✓	✓	✓	✓		✓	✓	✓		✓				✓		✓		✓		✓
McClelland (1998)		✓	✓		✓	✓				✓			✓	✓		✓				
Siu (1998)	✓			✓	✓	✓	✓	✓										✓	✓	✓
Robertson et al. (1999)	✓						✓			✓					✓		✓		✓	✓
McCredie & Shackleton (2000)						✓				✓				✓		✓				
Abraham et al. (2001)	✓		✓	✓		✓			✓	✓		✓			✓	✓	✓	✓	✓	
Anderson & Pulich (2002)	✓			✓	✓		✓	✓			✓	✓							✓	
Agut et al. (2003)	✓				✓	✓		✓	✓	✓	✓	✓		✓	✓	✓				
Mbokazi et al. (2004)	✓	✓	✓	✓				✓	✓	✓		✓	✓	✓	✓	✓		✓	✓	✓
Chong (2008)		✓	✓				✓		✓		✓	✓	✓		✓					
Qiao & Wang (2009)	✓		✓		✓						✓				✓	✓				✓
Wickramasinghe & De Zoyza (2009)	✓			✓		✓	✓		✓	✓	✓	✓					✓	✓		
Fang et al. (2010)		✓	✓	✓			✓			✓				✓		✓		✓	✓	
Bakanauskienė & Martinkienė (2011)	✓	✓				✓			✓		✓		✓					✓		
Wadongo et al. (2011)	✓	✓	✓		✓		✓	✓	✓		✓	✓	✓	✓			✓			✓
Çetinkaya & Özutku (2010, 2012)		✓	✓	✓		✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓
Martina et al. (2012)	✓	✓						✓	✓			✓					✓		✓	

Author/s	Organizing	Delegation / Empowerment	Self-Confidence	Expertise / Specialized knowledge	Risk taking and management	Strategic awareness / orientation / thinking	Learning orientation	Negotiating ability	Change management / Managing change	Impact and Influence	Innovation	Listening	Use of power & Authority	Business awareness / sense	Controlling	Having a Vision	Presentation ability	Productivity and efficiency orientation	Reliability Confidential / Integrity	Resilience and Stamina
Boyatzis (1982)			✓	✓									✓				✓	✓		✓
Parry (1992)	✓	✓			✓							✓								
Spencer & Spencer (1993)			✓	✓						✓										
Quinn et al. (1996)	✓	✓						✓	✓				✓		✓		✓	✓		
Cameron (1997)					✓		✓				✓		✓	✓						✓
McClelland (1998)			✓							✓				✓						
Siu (1998)																		✓		
Robertson et al. (1999)	✓			✓		✓					✓									✓
McCredie & Shackleton (2000)			✓									✓			✓				✓	✓
Abraham et al. (2001)				✓	✓									✓					✓	
Anderson & Pulich (2002)	✓	✓													✓					
Agut et al. (2003)	✓		✓								✓	✓				✓		✓		
Mbokazi et al. (2004)		✓	✓	✓		✓				✓	✓			✓	✓				✓	
Chong (2008)	✓	✓			✓							✓								
Qiao & Wang (2009)				✓			✓													
Wickramasinghe & De Zoyza (2009)		✓		✓	✓	✓	✓	✓	✓			✓				✓				✓
Fang et al. (2010)	✓			✓							✓									
Bakanauskienė & Martinkienė (2011)			✓				✓					✓								
Wadongo et al. (2011)	✓	✓						✓	✓				✓		✓		✓	✓		
Çetinkaya & Özutku (2010, 2012)	✓		✓			✓			✓	✓	✓		✓		✓	✓			✓	
Martina et al. (2012)			✓				✓	✓									✓		✓	

Author/s	Self- management	Quality focus/ orientation	Accountability / Responsibility	Commercial awareness/ concern	Ethical concern	Persuasiveness	Sensitivity	Conceptualization / Conceptual thinking	Empathy with people	Self-control	Cultural awareness	Counseling & coaching	Performance Appraising	Proactivity	Self-development	Understanding self & others	Discipline	Fairness	Loyalty	Objectivity	Self-assessment	Judgment
Boyatzis (1982)								✓		✓				✓						✓	✓	
Parry (1992)												✓	✓				✓					
Spencer & Spencer (1993)								✓														
Quinn et al. (1996)																✓						
Cameron (1997)		✓					✓															
McClelland (1998)								✓														
Siu (1998)				✓																		
Robertson et al. (1999)		✓		✓		✓	✓															
McCredie & Shackleton (2000)																						
Abraham et al. (2001)		✓																				
Anderson & Pulich (2002)																						
Agut et al. (2003)		✓	✓	✓	✓					✓										✓		
Mbokazi et al. (2004)				✓		✓	✓				✓				✓							✓
Chong (2008)												✓	✓				✓					
Qiao & Wang (2009)			✓																			
Wickramasinghe & De Zoyza (2009)		✓		✓	✓				✓			✓										
Fang et al. (2010)	✓																					
Bakanauskienė & Martinkienė (2011)	✓		✓		✓	✓				✓					✓	✓		✓	✓			
Wadongo et al. (2011)																✓						
Çetinkaya & Özutku (2010, 2012)								✓	✓												✓	
Martina et al. (2012)			✓											✓					✓			

Table 1 (continued)

Author/s	Mohd Shamsudin, & Chuttipattana (2012)	Arditi et al. (2013)	Bhardwaj & Punia (2013)	Bucur (2013)	Chong (2013)	Shang & Yu (2013)	Hawi et al. (2015)	Paulienė (2017)	Veliu & Manhari (2017)	Sangka et al. (2019)
Effective Communication	✓	✓	✓		✓	✓			✓	✓
Analytical Thinking		✓			✓	✓			✓	✓
Developing others/employees		✓			✓	✓		✓		
Teamwork and Cooperation	✓	✓	✓	✓				✓	✓	✓
Managing team / Team Leadership				✓		✓	✓	✓		
Achievement & Result Orientation		✓	✓	✓	✓			✓	✓	
Planning		✓			✓	✓			✓	
Decision making		✓	✓		✓	✓	✓			
Managing time and stress					✓	✓			✓	
Adaptability and Flexibility		✓			✓				✓	
Conflict management	✓					✓			✓	
Goal orientation / Goal setting						✓			✓	
Information Management	✓				✓	✓			✓	✓
Initiative / Taking initiative		✓			✓	✓		✓		
Problem Identification and solving					✓		✓	✓	✓	
Interpersonal skills / Relationship		✓							✓	
Creative thinking / Imaginative			✓		✓	✓			✓	
Customer focus/ orientation		✓					✓		✓	
Leadership	✓			✓						✓
Motivation / Motivating others		✓			✓	✓				
Organizing					✓	✓				
Delegation / Empowerment					✓	✓			✓	
Self-Confidence								✓	✓	
Expertise / Specialized knowledge										✓
Risk taking and management		✓	✓		✓				✓	
Strategic awareness / orientation / thinking			✓	✓	✓		✓		✓	
Learning orientation		✓		✓					✓	
Negotiating ability					✓	✓			✓	✓
Change management / Managing change						✓			✓	✓
Impact and Influence				✓	✓			✓		
Innovation		✓								
Listening					✓				✓	
Use of power & Authority		✓				✓				
Business awareness / sense		✓			✓					
Controlling						✓				
Having a Vision	✓		✓			✓				
Presentation ability					✓	✓				
Productivity and efficiency orientation						✓				
Reliability Confidential / Integrity					✓				✓	
Resilience and Stamina		✓			✓					
Self- management			✓		✓			✓	✓	
Quality focus/ orientation		✓								
Accountability / Responsibility									✓	
Commercial awareness/ concern										
Ethical concern									✓	✓
Persuasiveness					✓				✓	
Sensitivity		✓			✓					
Conceptualization / Conceptual thinking										
Empathy with people								✓	✓	
Self-control								✓		
Cultural awareness									✓	✓
Counseling & coaching										
Performance Appraising					✓					
Proactivity			✓							
Self-development									✓	
Understanding self & others						✓				
Discipline										
Fairness									✓	
Loyalty										
Objectivity										
Self-assessment										
Judgment					✓					

as a result of conducting content analysis. Hardworking, safety-conscious, foreign language, independence, tenacity, detail consciousness, energy, process-oriented, ambition, spontaneity, action orientation, and concern for excellence are additional competencies that cannot be listed in the table.

There has been limited research on the port manager and employee competencies (see Table 2). Ahn & McLeanN (2008) conducted an expert interview and categorized 16 competencies under six clusters: policy, system management, service, product development and promotion, information, and globalization. A 65-item competency framework was constructed by Thai (2012), Thai & Lirn (2012), and Thai et al. (2015). Tezcan & Kuleyin (2019a, 2019b) examined the operational managers' competencies in relation to the environmental sustainability practices of container ports. They categorized competencies as technical, job, knowledge management, leadership, and social. As is seen, except for the foreign researchers proposing a general competency list in the port and logistics sectors, and researchers conducting a specific study on operations managers in Türkiye, the field of research on managerial competencies in the port sector is quite limited. The literature review has shown that there is no study on the competencies of senior managers who are decision-makers in the strategic management processes of container ports in Türkiye. Therefore, with this study, it is thought that it will be beneficial for the literature to reveal the critical competencies of senior managers in container ports in Türkiye.

Table 2. Studies related to competencies of port employees and port managers

Author/s	Sample	Method	Findings (Competencies)
Ahn & McLeanN (2008)	Experts from the port and logistics sectors (Busan, Korea)	Expert interviews	Six competency groups 16 sub-competencies **Competency Groups:** Policy, System Management, Service, Product Development and Promotion, Information, Globalization
Thai (2012)	Port employees (Singapore and Vietnam)	In-depth interviews & survey	Port employees at the supervisory level and above should have a wide range of skills in three key areas: **business**, **port and logistics affairs**, and **management.** The most crucial ones are port related.
Thai & Lirn (2012) Thai et al. (2015)	Port executives in Vietnam and Taiwan (2012) Port executives in Vietnam and Korea (2015)	Survey	**Three key groups of competencies:** – Port and logistics affairs-related competencies – Business-related competencies – Management competencies Total 65 critical competencies were categorized.
Tezcan & Kuleyin (2019a)	3 Academicians 5 senior port managers	Structured Interview	– **Technical:** Emergency practices, Basic vocational knowledge, Cargo knowledge, Cargo stowage, Regulations procedures – **Job:** Field knowledge/ Expertise, Business understanding, Port and operation planning, Customer-oriented, Organization, Planning, Management skill – **Knowledge Management:** Analytical thinking, Problem-solving – **Leadership:** Action-oriented, Target-oriented, Decision making, Motivation, Coaching, Teamwork ability and management, Delegating – **Social:** Sensitivity
Tezcan & Kuleyin (2019b)	13 academicians	Delphi Technique	**15 competencies have received consensus.** (*Safety Management, Security Management, Emergency Practices, Decision Making, Regulations / Procedures, Problem Solving, Open-Minded, Analytical Thinking, Action-Oriented, Target-Oriented, Management Skill and Basic Vocational Knowledge, Field Knowledge/Expertise, Delegating*)

Material and Methods

In order to address the research questions of this study, the structured interview and Delphi methods were used (Figure 1). A prepared standardized question list is required for the structured interview procedure. This study's interview form is divided into three sections. The interview form's first section includes a list of general managerial competencies. A list of managerial competencies for the port business was included in the second section. For senior managers at container ports, the competencies were asked to be rated in accordance with their importance (5-point Likert Scale). The last section of the interview form included open-ended questions focused on Katz's (1955) three managerial competency groups.

The structured interview research sample includes respondents who occupied managerial positions in various departments at container ports in Türkiye. Interview questions were answered by e-mail or online question form in accordance with participants' preferences. 18 managers from nine distinct container ports participated in the study and responded to the interview questions. The profile information of the participants is presented in Table 3.

Participants of interviews were chosen from various departments at container ports. Seven participants hold master's degrees, two hold doctoral degrees, and nine participants hold bachelor's degrees. The participants' total experience in the port industry ranges from 1 year to 20 years.

Table 3. Profile information of participants in structured interviews

Age	**N**	**Managerial Experience in Port Sector (Year)**	**N**
Younger than 35	1	1-5 years	3
35-39 years old	5	6-10 years	9
40-44 years old	8	11-15 years	6
45-49 years old	3		
Older than 49	1		
Total Experience in Port Sector (Year)	**N**	**Total Work Experience (Year)**	**N**
1-5 years	1	7-11 years	2
6-10 years	6	12-16 years	5
11-15 years	9	17-21 years	6
16-20 years	2	22-26 years	4
		32 years	1
Departments	**N**	**Titles**	**N**
Commercial & Budget and Reporting	4	General Manager	1
Digital Products	1	Commercial Director	1
General Management	1	Budget and Business Controller Manager	1
Human Resources	3	Business Process Manager	1
HR and Corporate Communication	1		
Operation and Planning	5	HR Director & Manager	3
		HR and Corporate Communication Manager	1
Marketing and Sales	1	Digital Products Manager	1
Support Services & Technical	2	Technical Manager	1
		Sales & Marketing Director	2
		Sales Manager	1
		Support Services Manager	1
		Operation Director & Manager	4

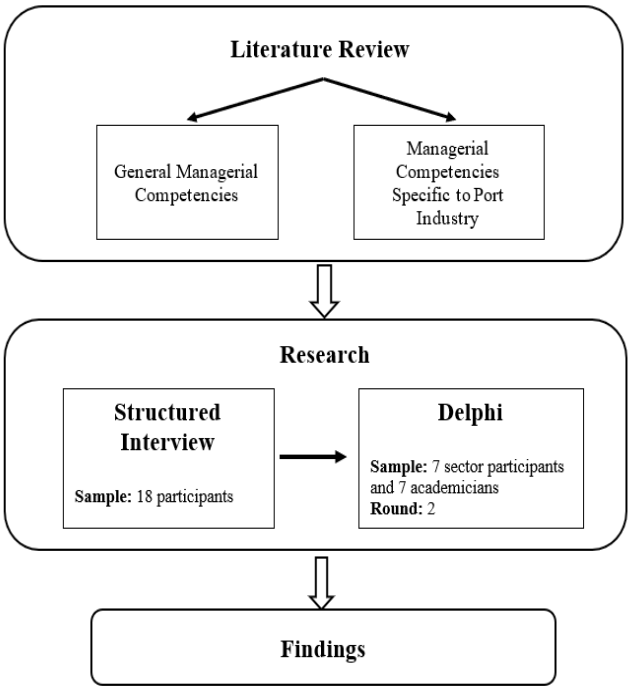

Figure 1. The framework of the study

In order to reach an expert consensus on the critical managerial competencies of senior-level port managers, Delphi research was completed in the second step of the study. The Delphi method is a repetitive procedure that uses a variety of data collecting and analysis approaches combined with feedback to gather anonymous expert opinions. The original Delphi approach was created in the 1950s by Norman Dalkey of the RAND Corporation (Skulmoski et al., 2007). Delphi is a judgment-gathering approach that seeks to overcome the limitations of focusing on a single expert, a one-time group average, or a roundtable conversation. It attempts to establish the most reliable group consensus through a series of rigorous surveys with controlled feedback (Clayton, 1997).

An expert is someone who has the knowledge and expertise required to participate in Delphi research (Clayton, 1997). Although there is no definite rule about the level of knowledge and expertise needed from the Delphi members, it is recommended that the participants of the Delphi study should have i) expertise of and background to the topics being investigated, ii) Capability and desire to participate, iii) adequate time to take participation, iv) strong communication abilities (Skulmoski et al., 2007). Therefore, all these criteria were considered while determining the sample of Delphi research. Furthermore, because the judgmental selection of experts is critical to the reliability of the data gathered throughout the Delphi process, the purposive sampling method (as suggested by Hasson et al., 2000; Skulmoski et al., 2007; McPherson et al., 2018) was used in this study. Based on the purposive sampling method, this study tries to reach managers and academicians with knowledge and experience about port businesses.

There are various opinions on the number of participant sizes necessary for the Delphi method in the literature, such as 15-30 experts for a homogeneous sample and 5-10 experts for a heterogeneous sample (Clayton, 1997), 10- 20 experts (Şahin, 2001), 10–18 experts (Okoli & Pawlowski, 2004), 10-15 experts in the homogeneous group (Skulmoski et al., 2007), 10-50, but no fewer than 7 experts (Hon et al. 2011). Accordingly, in this study, Delphi's first round was completed with 14 participants, 7 of whom were managers from the sector and 7 were academicians (Table 4). Table 5 describes the profile information of the participants in the Delphi research.

The Delphi procedure typically starts with open-ended questions in the first round. However, if the preliminary information about the investigated issue is accessible and useable, a modified Delphi process can be used (Hsu & Sandford, 2007). In addition, open-ended questions in round one can be eliminated if the round two survey questionnaire can be created based on the literature study and interviews. Therefore, it was decided to skip the exploratory first round of the Delphi, as the literature on competencies was reviewed, and preliminary interviews were conducted. As mentioned by Karataş Çetin (2012), in Delphi studies, most of the changes of opinion take place in the first two rounds (Dodge & Clark, 1977), and sending the questionnaires more than twice, especially in Classical Delphi, does not increase the contribution to study too much (Ford, 1975; Mitchell & McGoldrick, 1994). Accordingly, it seemed appropriate to conduct a two-round Delphi study considering that prolonging the Delphi process may reduce the interest and participation of Delphi members. As a result, the competencies evaluated by structured interview participants as being highly important (mean value 4.5 and above) were included in the first round Delphi questionnaire form.

Table 4. Details of Delphi research

Criteria	Choice
Aim of the research	Evaluation
Rounds	Two sequential sets of rounds
Sample	7 sector participants and 7 academicians
Implementation	Face-to-face and E-mail
Anonymity of group	Full

Note: Source: Derived from Day & Bobeva (2005).

Table 5. Profile information of participants in Delphi research

ACADEMIC PARTICIPANTS				
Age	**Title**	**Faculty**	**Total Academic Experience**	**Total Experience in Sector**
46	Prof. Dr.	Maritime Faculty	20 years	2 years sector 13 years consultancy
46	Asst. Prof. Dr.	Naval Architecture and Maritime Faculty	9 years	15 years
41	Asst. Prof. Dr.	Maritime Faculty	20 years	3 years (part-time)
39	Asst. Prof. Dr.	Marine Science and Technology Faculty	11 years	5 years (officer)
32	Asst. Prof. Dr.	Naval Architecture and Maritime Faculty	5 years	1.5 years
33	Dr.	Maritime Faculty	10 years	9 months
33	Dr.	Maritime Faculty	9.5 years	6 months
SECTOR PARTICIPANTS				
Age	**Education**	**Department / Position**	**Managerial Experience in Port Sector**	**Total Experience in Port Sector**
56	Master's degree	Top Management / General Manager	20 years	22 years
46	High-school graduate	Operation / Manager	19 years	25 years
41	Master's degree	Customer Services / Manager	10 years	20 years
42	Bachelor's degree	Finance / Manager	10 years	18 years
40	Master's degree	Trade / Commercial Manager	8 years	8 years
43	Bachelor's degree	Finance / CFO (Chief Financial Officer)	8 years	8 years
34	Bachelor's degree	Trade / Marketing Manager	4.5 years	8. 5 years

Results

The findings obtained from the structured interview and Delphi research are presented in this section.

Structured Interviews

A total of 84 competencies, including 65 general managing abilities and 19 port-specific managerial competencies, are identified from the literature. The competencies were assessed according to their level of importance for container port senior managers. In order to identify the most critical managerial competencies, it was decided to choose competencies with a mean value of 4.5 and above, which are rated as very important. A total of 36 competency criteria have been revealed to have a mean value of 4.5 or above. Table 6 displays the managerial competencies' mean values.

Following Katz's (1955) three fundamental managerial skill dimensions, open-ended questions were asked in the interview's last section. The answers given to the open-ended questions show similarities with high-value competencies determined in the previous section. Most repeated responses include analytical thinking leadership, effective communication, strategic orientation, problem solving, sector knowledge, customer orientation, port operations, and planning. Different from these competencies, competition management and competitive analysis are frequently mentioned in open-ended questions. Therefore "competitive analysis and competition management" competency is included in the Delphi research form. In addition, before the

Table 6. Mean values of managerial competencies

Managerial Competencies	Mean	Managerial Competencies	Mean
Planning	4.88	Creative thinking	4.39
Port operations and operational planning	4.88	Understanding others	4.38
Analytical thinking	4.83	Accountability	4.38
Port financial management	4.83	Learning orientation	4.38
Port strategic planning	4.83	Performance appraising	4.38
Decision making	4.78	Flexibility	4.38
Organizing	4.77	Judgment	4.33
Problem identification and solving	4.77	Self-assessment	4.33
Development of port service quality	4.77	Port quality management	4.33
Port customer relations and management	4.77	Self-management	4.33
Effective Communication	4.72	Responsibility	4.33
Port marketing management	4.72	Ethical concern	4.30
Customer orientation	4.72	Quality orientation	4.30
Strategic orientation and thinking	4.72	Fairness	4.28
Commercial awareness/concern	4.70	Goal orientation	4.27
Managing change	4.66	Conceptual thinking /Conceptualization	4.27
Reliability and Integrity	4.66	Negotiating ability	4.27
Port tariffs and pricing	4.66	Self-control	4.27
Achievement and Result orientation	4.61	Delegating / Empowerment	4.27
Developing others/employees	4.61	Safety and security at the port	4.27
Leadership	4.61	Port policy development and evaluation	4.22
Having a Vision	4.61	Information and operations about cargo types	4.22
Port management information system	4.61	Port Equipment – operational, maintenance, and repair	4.22
Port performance and efficiency management	4.61	Discipline	4.22
Understanding and using port information systems and technologies	4.61	Empathy	4.22
Global industry analysis	4.61	Objectivity	4.22
Teamwork and Cooperation	4.60	Business orientation/awareness	4.17
Managing time / Time management	4.56	Customs and regulatory procedures	4.11
Effective Listening	4.55	Emergency management	4.11
Port roles and functions	4.55	Self-confidence	4.11
Interpersonal relationship skills	4.50	Controlling	4.06
Motivation and motivating	4.50	Impact and Influence	4.00
Self-development	4.50	Persuasiveness	4.00
Risk-taking and management	4.50	Resilience	3.94
Team Leadership /Managing team	4.50	Sensitivity	3.94
Expertise / Specialized knowledge	4.50	Proactivity and Entrepreneurship	3.94
Initiative	4.44	Counseling and coaching	3.83
Productivity and efficiency orientation	4.44	Conflict management	3.72
Innovation	4.44	Presentation ability	3.67
Adaptability	4.40	Cultural awareness	3.66
Managing stress / Stress management	4.40	Authority/power	3.39
Information Management	4.39	Loyalty	3.39

Delphi process, the competencies were reviewed and simplified. Because communication is a two-way action and listening plays an integral part in communicating, "effective listening" competency is unified under "effective communication" competency. Similarly, it is thought that team leadership and team management are covered within the broader meaningful competencies of "leadership" and "teamwork". To prevent the recurrence of similarly meaningful competencies, they were unified in the Delphi stage.

Delphi Research

The APMO (Average Percent of Majority Opinion) technique (Equation 1) was used in this study as a consensus criterion. In maritime literature, the use of the APMO formula is supported by Saldanha & Gary (2002), Özer & Tuna (2002), Yılmaz & Cerit (2005), Karataş Çetin & Cerit (2010), Emiroglu et al. (2014), Ayaz & Çetin (2018), Göçer et al. (2019).

The APMO cut-off percentage rate for the first round of the Delphi survey is 98.1%, as calculated by the responses of 14 participants. As a result of the evaluation, a total of 476 responses are given by the Delphi participants, including 421 "agree", 46 "disagree", and nine "no comment" statements (Table 7). Since the participants are experienced and knowledgeable about the port business and have an opinion on the evaluated competencies, quite a few evaluations were made as "no comment". This situation caused the APMO value to be quite high.

A statement was deemed to have achieved consensus when it attained 70% or above, according to Brett & Roe (2010). Low consensus rates were defined as those between 70 and 79%, medium consensus rates as those between 80 and 89%, and high consensus rates as those between 90 and 100%. Therefore, 12 competencies are entered into the subsequent round. Their consensus rates are between 61.5% and 85.7%. Although 8 of these statements have a low and medium consensus rate, they entered round three because their consensus rates are lower than the high consensus rate (90%) and APMO rate (98.1%).

A total of 17 competencies have achieved the full consensus with 100%, four competencies have reached a high consensus with the 92.9%, and one competency has reached a high consensus with the 92.3%. Five competencies have a consensus rate lower than APMO but higher than 90%, so they have a high consensus rate. Hence, these five competencies haven't been included in the Delphi study's second round. The findings of the first round of the Delphi research are displayed in Table 8.

Table 7. Summary of Delphi's first round of results

Response	Values
Total Agreements	421
Total Disagreements	46
Total Answers	476
APMO Rate	98.1%
Competencies with Low Consensus Levels - (70–79%)	5
Competencies with Medium Consensus Levels - (80-89%)	3
Competencies with High Consensus Levels - (90-100%)	22
Competencies less than 70% Consensus	4
Competencies to be included in Delphi Round 2	12

The second round Delphi form was prepared using 12 competencies that were not agreed upon by the participants in the first round. The second round of Delphi received responses from 12 participants. For the second round of Delphi, the APMO cut-off percentage rate was found to be 96.5% (Table 9).

According to the result of the second round (see Table 10), four competencies have received a high consensus. Eight competencies could not reach a consensus in the second round. As a result, 26 of the 34 competencies reached consensus by the experts. These competencies were categorized as "technical & operational", "human & social", and "conceptual & cognitive" by the participants (see Table 11). Marketing management was perceived as both technical and conceptual competency.

$$\text{APMO} = \frac{\text{Majority Agreements} + \text{Majority Disagreements}}{\sum \text{Opinions Expressed}} \qquad 98.1 = \frac{421+46}{476} \tag{1}$$

$$\text{APMO} = \frac{\text{Majority Agreements} + \text{Majority Disagreements}}{\sum \text{Opinions Expressed}} \qquad 96.5 = \frac{103+36}{144} \tag{2}$$

Table 8. First-round results of the Delphi research

Managerial Competencies	**Consensus**	**No Consensus***
Analytical thinking	100 % agreed	
Achievement and Result orientation		85.7 % (agree)14.3 % (disagree) ***(Second Round)***
Developing others/employees	100 % agreed	
Managing change	100 % agreed	
Effective communication	100 % agreed	
Reliability and integrity	100 % agreed	
Decision making	Agreed with 92.9 %	
Interpersonal relationship skills		85.7 % (agree) 14.3 % (disagree) ***(Second Round)***
Leadership	Agreed with 92.9 %	
Motivation	100 % agreed	
Customer orientation	100 % agreed	
Organizing	100 % agreed	
Self-development	100 % agreed	
Planning	Agreed with 92.9 %	
Problem identification and solving	100 % agreed	
Risk-taking and management	100 % agreed	
Strategic orientation and thinking	100 % agreed	
Teamwork and cooperation	100 % agreed	
Commercial awareness/concern	100 % agreed	
Expertise / Specialized knowledge	100 % agreed	
Having a vision	100 % agreed	
Managing time / Time management	Agreed with 92.9 %	
Port roles and functions		70.9 % (agree) 23.1 % (disagree) ***(Second Round)***
Financial management		69.2 % (agree) 30.8 % (disagree) ***(Second Round)***
Port tariffs and pricing		64.3 % (agree) 35.7 % (disagree) ***(Second Round)***
Marketing management		78.6 % (agree) 21.4 % (disagree) ***(Second Round)***
Port operations and operational planning		71.4 % (agree) 28.6 % (disagree) ***(Second Round)***
Development of port service quality		78.6 % (agree) 21.4 % (disagree) ***(Second Round)***
Port strategic planning	100 % agreed	
Management information system		61.5 % (agree) 38.5 % (disagree) ***(Second Round)***
Port performance and efficiency management		78.6 % (agree)21.4 % (disagree) ***Second Round)***
Understanding and using port information systems and technologies		58.3 % (agree) 41.7 % (disagree) ***(Second Round)***
Global industry analysis	Agreed with 92.3 %	
Competitive analysis / Competition Management		85.7 % (agree) 14.3 % (disagree) ***(Second Round)***
* Consensus rates that are lower than the high consensus rate (90%) and APMO rate (98.1%)		

Table 9. Summary of Delphi's second round of results

Response	Values
Total Agreements	103
Total Disagreements	36
Total Answers	144
APMO Rate	96.5%
Competencies with Low Consensus Levels - (70–79%)	1
Competencies with Medium Consensus Levels - (80-89%)	1
Competencies with High Consensus Levels - (90-100%)	4
Competencies less than 70% Consensus	6

Discussion

The main aim of this study is to determine the managerial competencies critical for senior managers in container ports. For this purpose, a two-step study method was designed. In the first step of the study, interviews were conducted, and the majority of the competencies identified through the literature were assessed to be important (over 4.0 mean value). However, the competencies with the high mean value (over 4.5) were determined as the most important ones. Among the general managerial competencies presented to the expert opinion, "planning", "analytical thinking", "organizing", "problem identification and solving", "decision making", "effective communication", "customer orientation," and "strategic orientation" were the competencies considered to be of the utmost importance for senior port managers. "Port operations", "port financial management", "port strategic planning", "port service quality," and "port customer relations" are the sector-specific competencies that are perceived most important for senior managers in the interview part. However, some of these competencies haven't reached expert consensus in the second step of the study. The reason may be due to differing opinions between academic and sector experts. The competencies that are reached consensus in this study such as team working (Siu, 1998; Abraham et al., 2001; Qiao & Wang, 2009, Çetinkaya & Özutku, 2012), customer focus (Siu, 1998; Abraham et al., 2001, Çetinkaya & Özutku, 2012), communication skills (Siu, 1998; Abraham et al., 2001; Qiao && Wang, 2009), leadership skills (Siu, 1998; Abraham et al., 2001), problem-solving (Abraham et al., 2001), planning, decision making, commercial concern (Siu, 1998), developing employees and interpersonal relationship skill (Çetinkaya & Özutku, 2012) has some similarities with empirical studies from different sectors. In addition, some of the competencies determined in this study for senior-level managers are the same as those determined for operation managers concerning the sustainability performance of container ports by Tezcan & Kuleyin (2019b). These are decision-making, problem-solving, analytical thinking, and expertise. There are also some different findings with the literature. For instance, unlike the study of Reichel (1996), professional knowledge and problem-identification competencies were found essential for the port senior managers. Siu (1998), Abraham et al. (2001), and Çetinkaya & Özutku (2012) revealed that the result and success orientation is one of the critical competencies to managerial success. However, this competency has not reached a consensus in our study.

Table 10. Second-round results of the Delphi research

Managerial Competencies	Consensus	No Consensus*
Achievement and Result orientation		75.0 % (agree) 25.0 % (disagree)
Interpersonal relationship skills	Agreed with 91.7 %	
Port roles and functions		81.8 % (agree) 18.2% (disagree)
Financial management		63.6 % (agree)36.4 % (disagree)
Port tariffs and pricing		54.5 % (agree) 45.5 % (disagree)
Marketing management	Agreed with 90.9 %	
Port operations and operational planning		63.6 % (agree) 36.4 % (disagree)
Development of port service quality		66.7 % (agree) 33.3 % (disagree)
Management information system		66.7 % (agree) 33.3 % (disagree)
Port performance and efficiency management	Agreed with 91.7 %	
Understanding and using port information systems and technologies		50.0 % (agree) 50.0 % (disagree)
Competitive analysis / Competition Management	Agreed with 91.7 %	

Note: * Consensus rates that are lower than the high consensus rate (90%) and APMO rate (96.5)

Table 11. Categorization of managerial competencies by participants

	Technical & Operational	Human & Social	Conceptual & Cognitive
CONSENSUS	• Expertise / Specialized knowledge • Port performance and efficiency management • Planning • Marketing management	• Reliability and integrity • Interpersonal relationship skills • Teamwork and cooperation • Effective communication • Leadership • Motivation • Self-development • Developing others/employees • Organizing • Customer orientation and relations	• Global industry analysis • Competitive analysis / Competition Management • Analytical thinking • Strategic orientation and thinking • Commercial awareness/concern • Problem identification and solving • Managing change • Decision making • Risk-taking and management • Port strategic planning • Managing time / Time management • Having a vision • Marketing management
NON-CONSENSUS	• Port operations and operational planning • Understanding and using port information systems and technologies • Management information system • Development of port service quality • Port tariffs and pricing • Port roles and functions • Financial management		• Achievement and Result orientation

In the Delphi method, the majority of the competencies that have reached consensus are gathered under *conceptual* and *human* categories. All human-related competencies have reached a consensus. It shows the importance of these competencies for senior managers are supported by expert opinions for the port sector. Out of the conceptual competencies, only achievement and results orientation did not reach expert consensus. Experts' comments include that success or result-oriented managers are mostly not interested in the process, but they should focus on the whole process rather than just success and outcome. It is also mentioned that the understanding that "the ends justify the means" is not true. Although the technical competencies have been evaluated as very important in the interview findings of the study, few of the technical competencies have reached consensus by experts in the Delphi method. For most of the technical competencies, it is expressed that it is sufficient for senior managers to have a general idea, not technically and in detail. Department managers who are experts in the subject can fulfill their duties by having these competencies. For instance, expert opinions show that port operations and operational planning are too detailed for senior managers, they can be aware of important developments in the port field, but the senior manager does not need to have competence in field planning. These findings have similarities with the common understanding in the management literature and empirical studies. It is generally accepted in the management literature that as managerial levels increase, technical competencies would be given less importance than conceptual and interpersonal skills. Technical competency is regarded as being crucial for the organization's lower-level managers. Similarly, Labbaf et al. (1996) argued that people-related, analytical and self-related skills rate more critical than task-related skills for senior managers. Mbokazi et al. (2004) found out interpersonal competencies are more critical for senior-level managers, and first-line managers perceived operational competence as more critical.

Conclusion

In conclusion, this study demonstrated expert consensus on 26 competencies critical to strategic management in a dynamic and competitive environment for senior managers in container ports. The findings of this study can be taken into consideration by container port management in designing their human resource development policy. The identified competencies can provide useful insight to practitioners in the selection of new managers, designing promotion and career development programs, organizing training and development activities, and evaluating manager performance. The maritime training and education institutes or universities may benefit from the findings of this study to train and educate future manager candidates in the sector. In addition, container ports managers can consider these competencies when assessing their own competencies and development needs. This study has some limitations regarding research scope; first, the evaluation of competencies includes the opinions of experts who agreed to participate in the research in Türkiye. Second, the competencies were investigated for only senior-level managers. Also, the competency requirements have been evaluated only for container ports, and other port types are not included. For further research, the research scope can be expanded by including the middle and first-line managers, and a comparison can be made between them. Also, other studies can be conducted in other cargo-type ports such as liquid bulk, dry bulk, general cargo, passenger, and ro-ro. Similarities and differences in the competencies that are critical in other cargo-type ports can be revealed. In addition, as a comparative study, managerial competency requirements in public and private ports can be examined in future studies.

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Compliance With Ethical Standards

Authors' Contributions

EBK: Manuscript design, Drafting, Writing
MSA: Manuscript design
Both authors read and approved the final manuscript.

Conflict of Interest

The authors declare that there is no conflict of interest.

Ethical Approval

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