EXPLORING THE KEY ASPECTS OF MANAGEMENT ORGANIZATIONS IN SHIPPING BUSINESS

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ABSTRACT
Ship management, recognized as one of the complex business disciplines, consists of various managerial aspects in different levels of organization hierarchy such as administrative, technical, and operational. On the other hand, the requirements of international maritime rules & regulations, market competitiveness, safety and environmental related concerns are the primarily constraints in maritime transportation industry. This paper mainly concentrates on identification of key issues within the concept of ship management in shore-based organizational level. Consequently, the relative importance of the each item is determined quantitatively by utilizing Analytic Network Process (ANP) that led to ensure dependencies and feedbacks between relevant aspects.

Key words: Ship management, Maritime Industry, ANP.

1. MOTIVATION ON SHIPPING BUSINESS

The increased popularity and growth of the maritime transportation industry in global trade have eagerly motivated the researchers and practitioners in the field of maritime policy and management. In recent years, the potential and were deeply underlined in several papers (Hork, 2004; Panayides, 2006) in literature. Especially, the human resources context in shipping business (Wu and Lai, 2006) has been addressed as one of the significant themes due to the availability of various constraints and complexity of maritime transportation environment. On the other hand, as the human factor has been cited as the preliminary factor in maritime accidents, it is another critical point to link the human resources with the safety aspects (MIF, 2001). Therefore, effective execution of the shipping operations is required well-qualified personnel both on board and ashore positions, moreover, it is also necessary to structure an innovative management style in practice (Celik and Er, 2006; Celik and Karayigit, 2007).

This paper discusses the key aspects of shore-based organization of ship management companies comparatively. The motivating information on shipping business is represented in this section. The remains of paper are organized as follows: the concept of managerial responsibilities in traditional ship management process is introduced in Section 2. Then, Section 3 concentrates on structuring a control criterion with dependency and feedback on problem by utilizing Analytic Network Process (ANP) as one the popular multiple criteria decision making (MCDM) tool to illustrate quantitative outcomes. The conclusive remarks and proposals towards further research interests are summarized at the end of the paper.

2. OVERVIEW ON MANAGERIAL RESPONSIBILITIES IN SHIP MANAGEMENT

Apart from the other business disciplines, ship management requires high level of competency and proficiency due to the complex nature of maritime industry. Besides the existing risks and challenges in global manner, the internal weakness and threads especially in operational process enforce the ship mangers to seek for the multidisciplinary solutions on various issues such as finance, risk management, legislation, maritime laws, and etc. Managing of decision-making process with respect to main targets and prior principles of ship management company depends on designing and setting the divisional responsibilities in a systematic manner.

Briefly, the common responsibilities and priorities of the different divisions of shore-based management organization (Er, 2001) can be identified as follows:

- Establishing interrelationships and coordination between divisions in high level of communication without any conflict.
- Enhancing the competitiveness of the company through increased quality and productivity.
- Increased the reputation of the company in the maritime transportation market.
- Implementing integrated management system approach based upon employee involvement and commitment to manage sustainable development.
- Integration of technology and innovation to enhance the continuous improvement of managerial procedures.

The scope and concept of relevant responsibilities are planned to be utilized as a guide in further sections for defining the key aspects of management organizations in shipping business.

3. ANALYTICAL MODELING OF KEY ASPECTS IN ORGANIZATION & MANAGEMENT

This section briefly introduces the ANP as the research methodology this study, moreover, the control criterion on modeling of key aspects in various critical phases of ship management in organizational level are categorized by taking the role of human element for shipping business into account.

3.1 Brief Overview on ANP

The ANP is originally developed by Saaty as one of the comprehensive MCDM methodology (Saaty, 1996; Saaty, 1999). The problem that includes tangible and intangible factors can be achieved to be modeled and solved quantitatively to make an optimum decision (Saaty, 2003) by utilizing ANP methodology. Moreover, the theory of ANP lets the decision-makers to design a control criterion with inter/outer dependencies in feedback. It means that the relations between the elements of clusters can be defined (Saaty, 2001; Kinosita, 2003).

Furthermore, recent applications of the ANP methodology have been seemed in literature on various management-related themes such as strategy selection (Wolfslehner et al., 2005), product planning (Chung et al., 2005), knowledge management (Wu and Lee, 2007), strategic partnering (Cheng and Li, 2007), hazards planning and emergency management (Levy and Taji, 2007).

3.2 Structuring of Control Criterion

The initial stage of ANP methodology is based on structuring a control criterion whose elements have dependencies and feedbacks. This study defines the numbers of five clusters and relevant factors. Table 1-5 illustrate the key aspects for the executive management, personnel management, operational management, technical management, and safety management in ship management respectively.

Table- 1: Key Aspects in Executive Management

Cluster A: Executive Management	Code
Safety policy	A1
Budgeting	A2
Resource allocation	A3
Leadership philosophy	A4

Table- 2: Key Aspects in Personnel Management

Cluster B: Personnel Management	Code
Selection and check of competence	B1
Education and training	B2
Leadership and supervision	B3
Motivation	B4
Modification of attitudes	B5
Development of social climate	B6

Table- 3: Key Aspects in Operational Management

Cluster C: Operational Management	Code
Inspection methods	C1
Maintenance methods and procedures	C2
Operations procedures	C3
System documentation	C4
Manning and watch systems	C5

Table- 4: Key Aspects in Technical Management

Cluster D: Technical Management	Code
Reliability and availability	D1
System performance	D2
Instrumentation	D3
Monitoring	D4
Automation	D5
Man-machine interface	D6
Work place conditions	D7

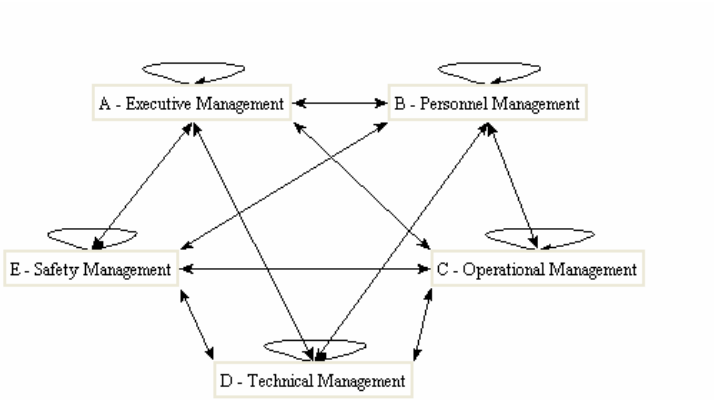
Table- 5: Key Aspects in Safety Management

Cluster E: Safety Management	Code
Management	E1
Organization	E2
Routines	E3
Inspection and auditing	E4
Feedback	E5
Learning	E6
Emergency planning and training	E7
Health	E8
Environment	E9
Safety at work	E10

After defining the assessment factors on the problem, initiating of relations and dependencies between the clusters is the next step in model structuring process. The Figure 1 illustrates the fundamental structure of proposed multi-criteria evaluation model in *Superdecisions Software* when the existing relations are established between the relevant factors.

The last step is to insert data inputs for the *Superdecisions Software*. In this stage, it is contacted with the several professionals from maritime industry to get the expert opinions on pair-wise comparisons in a group consensus as well. Totally, it is contacted with the numbers of twenty experts from maritime society for completing this research. The geometric means of the experts' judgments are computed to provide input data for the software consistently.

Figure-1: Fundamentals of model structure in *Superdecisions Software*



3.3 RESULTS & FINDINGS

After performing the software on the inserted pairwise comparison values, the unweighted supermatrix, weighted supermatrix, limit matrix, cluster matrix, and global priorities are computed as the output data of the *Superdecisions Software* package. Finally, Table 6 illustrates the global priority weights on key aspects of management organization in shipping business.

Table- 6: Global Priority Weights on Key Aspects

Code	Limiting Values	Normalized Values	%
A1	0.101	0.384	% 38
A2	0.065	0.248	% 25
A3	0.035	0.135	% 13
A4	0.061	0.234	% 23
B1	0.043	0.243	% 24
B2	0.051	0.286	% 29
B3	0.035	0.197	% 20
B4	0.023	0.127	% 13
B5	0.009	0.051	% 05
B6	0.017	0.095	% 10
C1	0.030	0.187	% 19
C2	0.058	0.363	% 36
C3	0.025	0.157	% 16
C4	0.024	0.152	% 15
C5	0.022	0.141	% 14
D1	0.059	0.243	% 24
D2	0.083	0.344	% 34
D3	0.008	0.032	% 03
D4	0.005	0.021	% 02
D5	0.029	0.118	% 12
D6	0.032	0.133	% 13
D7	0.026	0.109	% 11

E1	0.015	0.092	% 09
E2	0.013	0.084	% 08
E3	0.016	0.100	% 10
E4	0.011	0.067	% 07
E5	0.012	0.077	% 08
E6	0.017	0.108	% 11
E7	0.033	0.210	% 21
E8	0.014	0.086	% 09
E9	0.016	0.104	% 10
E10	0.011	0.071	% 07

4. CONCLUSION & FURTHER RESEARCH

This paper identifies the priorities of key aspects in managerial process in shipping business systematically. The results indicate that safety policy (% 38) in Cluster A, training (% 29) and crew competency (% 24) in Cluster B, maintenance procedures (% 36) in Cluster C, monitoring and keeping system performance in desired levels (% 34) in Cluster D, and emergency planning (% 21) in Cluster E are appeared correspondingly as significant issues among the key aspects in organizational base. The outcomes of this study can be utilize as decision aid for designing the organization structure of a professional ship management company, moreover, also for setting and planning of the general priorities within company strategic vision.

The ANP methodology contributes the problem modeling process due to the characteristics of relevant attributes. Further research direction can be motivated as structuring the problem problem's criterion hierarchically without any dependency and applying the Analytic Hierarchy Process (AHP) as another MCDM methodology.

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