

The Moderating Role of Sea Service Period on the Relationship between Perceived Organizational Justice and Job Satisfaction: Evidence from Seafarers

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ABSTRACT

Although the number of organizational justice studies has increased rapidly in recent years, little research has focused on fairness perceptions of seafarers. Therefore, this paper intended to fill the gap by investigating the effect of organizational justice perceptions of seafarers on their job satisfaction described by three facets including procedural justice, distributive justice and interactional justice. The data obtained through face-to-face survey technique were analyzed using SPSS 22 and AMOS 22 (with PROCESS macro) statistical package programs. The findings generated from regression analysis point that justice perception of seafarers positively affects their job satisfaction level. Furthermore, the length of seafarers' sea service has a moderating role between perceived organizational justice and job satisfaction. The managerial implications of the results are discussed in light of the particular context of the maritime industry with some suggestions for enhancing justice and satisfaction perceptions of seafarers.

Keywords

Organizational Justice, Job Satisfaction, Seafarers.

1. Introduction

Determining antecedents of job satisfaction (JS) has been an overriding effort of scholars for years and nowadays many of them have recognized the role of perceived organizational justice (POJ) of employees in designing this desired work attitude. After all, researchers have seemed to agree that organizational justice

is a powerful determinative of JS [1][2][3]. However, it is apparent that the linkage between justice and JS is too complex and thus it is beneficial to explore the relationship in different cultural and work settings. Although, how to maintain and promote JS in the workplace is crucial for all professions, to strengthen the feelings of JS among seafarers is even more important

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due to circumstances specific to life on a ship. Seafarers live an isolated life on board for months away from their families and society which makes seafaring a highly unsatisfied and stressful occupation.

Seafarers suffer from long working hours, shift work and watchkeeping, high job demands and high stress, poor quality sleep, hectic pace, physical work hazards, and ill health [4][5][6][7]. In addition, permanent job-related physical factors on vessels including noise, temperature, vibration, and ship motion decrease seafarers' satisfaction, both during work hours and during leisure time [8][9]. Thus, relative to other areas of employment, disadvantageous working conditions create high turnover rates in the shipping industry which in turn costs the organization time and money [10][11][12]. Many pieces of research have indicated that poor and unfavourable working conditions at sea are negatively influencing both the recruitment of young people into a seafaring career and retaining in-service seafarers [11][12][13][14][15]. All these mentioned aspects jointly decrease the overall performance and competitiveness of marine organizations.

One possible solution may increase JS of seafarers that may have a significant impact on employee behavioural responses, such as job performance, productivity and efficiency, intention to quit, organizational turnover, absenteeism, work engagement and organizational identification [16][17][18][19][20][21][22]. In general, JS refers to an employee's subjective perception of his/her work and all aspects of the work environment. It is influenced by many organizational elements, ranging from salaries, job security, job autonomy, career prospects, to the relationship between employees and colleagues. Organizational justice raises above all these potential elements because seafarers who feel that their contributions and sacrifices are not reciprocated by the organisation will be

frustrated and most likely to respond negatively.

For that reason, the data of this study are drawn from marine employees in order to analyze the linkage between POJ and JS in the maritime industry which is strategic for the economy of countries. Although the positive effects of POJ on employees' JS have been confirmed, to the best of the authors' knowledge, this connection has not been investigated in the shipping industry. It is vital to determine the predictors of seafarers' satisfaction due to high demands of the job and the strategic value of their motivation and psychological well-being to enhance firm performance and competitiveness. Therefore, the current study is important in filling the void in the literature by focusing on shipping organizations that seems to expose their employees to high levels of emotional and work-related stresses leading to decreased JS which in turn can affect absenteeism, performance, productivity and turnover [23][24][25].

2. Theoretical Background and Hypotheses

Organizational justice is a concept basically used to describe subjective fairness perceptions in the work environment. As Adams put forward years ago in his well-known equity theory, employees compare their input (contributions) and output (rewards) with those of relevant workers and conclude if they are being treated fairly or not [26]. For instance, when an individual explores that a co-worker with the same seniority and experience has a higher status than himself/herself, s/he is likely to perceive the situation as unfair. Besides, social exchange theory which assumes sources are exchanged via a process of repayment is a breeding ground for perceived justice [27] whereby one party tends to reciprocate the good or bad actions of another party [28]. Accordingly,

the positive judgement of employees regarding the supervisor or organization may probably result in a sense of obligation to reciprocate positively [29]. So, it seems logical to expect that positive justice perception of seafarers is likely to turn into desired responses such as motivation, satisfaction and commitment.

Recent progress and perspectives in this area describe three sorts of organizational justice including procedural, interactional and distributive [30]. Building on the equity theory [26], distributive justice placed emphasis on the equitableness of the outcomes (e.g., pay, rewards, promotions) while procedural justice on the fairness of the process like policies and procedures [30][31]. On the other hand, interactional justice focuses the degree to which employees are treated with dignity, politeness, gentleness and respect by supervisors in the application of related operations [32]. Researches on organizational justice have proved that fairness perceptions at work may affect individuals' critical work manners and behaviours like organizational commitment [33][34], organizational citizenship behaviour [35][36][37] performance [30][38] innovative behaviour [39][40] and turnover intentions [41][42].

Most of the previous studies conclude that three dimensions of justice perception act in a holistic way but participants felt justice in different ways. For instance, Robbins [43] argued that in high perceptions of procedural justice, employees look up positively to their supervisors, even if they are dissatisfied with their salaries, job opportunities, and other personal variables. Some individuals may feel justice in the way the outcomes were distributed while others feel it in management support. These different perceptions with regard to dimensions of organizational justice may be explained by Maslow's well-known hierarchy of needs in which needs

and expectations are categorized. When employees' contributions are rewarded in terms of their own needs and expectations, their perception of justice would increase as well. Accordingly, perhaps the conditions of specialty settings differentiate according to what employees value most and these incoherences (between perceived importance and perceived fulfilment) significantly influence seafarers POJ. Thus, the following is proposed;

Hypothesis 1: There are significant differences among seafarers' perception mean scores with regard to dimensions of organizational justice.

There is also a considerable amount of research indicating that there exists a significant correlation between POJ and JS [2][44][45][46][47][48]. Job satisfaction is explained as a positive emotional response of an employee at the workplace resulting from the assessment of five dimensions such as satisfaction with work, pay, promotion opportunities, supervision, and co-worker [49]. Karimi et al. [50] referred to JS as employees' feeling of job or the emotional reaction to the work environment. Such a perception depended on the gap of employees acquired rewards and the expected deserved rewards in the specific work environment. The smaller gap would present higher satisfaction, while the larger gap would result in lower satisfaction. In other words, JS relied on individuals assessing the objective environment and various factors and comparing past experiences with reference to other groups [51]. Organizational scholars recognize the importance of investigating the antecedents of JS because it has been discovered not only to reduce absenteeism and turnover intentions [52][53][54][55] but also increase employees' commitment [53][55][56][57].

High turnover rates present a number of risks to the shipping industry and thus place great importance on seafarers JS

because it is directly related to the retention in the seafaring profession. Accordingly, Li and colleagues investigated the main factors that contribute to JS and found that promotion is the key factor in the JS of the Chinese seafarers [58]. In another study, [59] participants stated that income as the only source of pleasure related to the job and the primary reason for being in this job. In addition, they also emphasized financial stability and security as a source of satisfaction. Studies have also shown that organizational support, job demands, and team cohesion are among the important factors related to JS of seafarers [60], [61]. Factors including salary, promotion opportunities, fringe benefits, supervision, co-workers, job conditions, the nature of the work, organizational support and communication have been frequently linked to satisfaction and thus inconsistent or unfair treatment of these factors may lead to low JS [15][58][60][61][62][63]. Consequently, employees would perceive the organization as fair if the comparison of these elements results in a positive way which leads to the development of the following hypothesis to be tested;

Hypothesis 2: Seafarers' POJ positively affects their JS.

Reviewing past studies also reveals that demographic characteristics such as age marital status, gender, job position, education, job satisfaction, organizational tenure may influence the perceptions of individuals. Different needs and expectations of different demographic and personality groups can affect the feeling of organizational justice. However, it is also important to note that all members of the same demographic group do not necessarily share similar experiences and hence have the same justice perceptions [64]. For instance, in some studies, gender differences found to moderate the POJ and JS [65]) whereas some others found no significant differences [66]. Organizational

tenure is another demographic variable that is frequently linked to both justice and satisfaction. Relatedly, Pignata & colleagues [67] found that academic staff's tenure predicted perceived justice which was the strongest determinant of academic staff's JS. This result is also supported by two studies of Bidarian & Jafari [68] which point that there is poor but positive linkage between perceived justice and the length of work experience. Accordingly, it is proposed;

Hypothesis 3: Seafarers' sea service period moderates the relationship between POJ and JS.

Consequently, past studies revealed significant relationships between the three facets of justice and JS. However, the topic is generally investigated by using samples drawn from the employees of west organizations with similar occupations. The lack of studies investigating the relationship between POJ and JS on a particular working environment of seafarers increase the importance of this study. Consequently, the present study intends to enhance the literature by examining the following research model in Figure 1 with data drawn from a probability sample of seafarer's from Turkey.

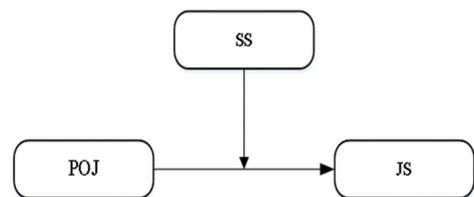


Figure 1. Research Model

3. Method

This study was conducted to measure the organizational justice perceptions of seafarers and to examine the causal relationships between their POJ and JS. The data were collected using face-to-face survey method, and analyzed by SPSS 22 and AMOS 22 statistical package programs

using descriptive statistics, skewness and kurtosis coefficients, convergent and discriminant validity in confirmatory factor analysis for validity analysis, Cronbach's alpha and composite reliability coefficients in reliability analysis. Correlation analysis, dependent-samples one-way analysis of variance (ANOVA), path analysis and structural equation modelling were used to test research hypotheses.

3.1. Sample

The sample consists of Turkish seafarers working on merchant ships. The data were collected using convenience sampling method and face-to-face survey from seafarers working on ships including ferries, passenger boats and sea buses used for passenger transportation in the Marmara Region.

3.2. Data Collection Tools

The survey form consists of two sections. The first section includes questions about the seafarers' demographic features such as age, gender, education and working time at sea, and the second section includes two scales to measure the research variables including POJ and JS. Five-point Likert scale (scoring between 1= strongly disagree and 5= strongly agree) is used to rate the perceptions of seafarers. POJ scale configured by Neiehoff & Moorman [69] and adapted to Turkish by Yıldırım [70] covers 20-items relating to three facets of justice; distributive justice perception (DJP) (5 items), procedural justice perception (PJP) (6 items) and interactional justice perception (IJP) (9 items). Some of the scale items are as follows: "I think the arrangements on my working hours onboard are fair", "Seafarers' opinions are asked before any decision about works on board", and "My supervisor onboard explains every decision about my job very clearly and in details". According to the results of the exploratory factor analysis

(EFA) applied using varimax rotation and principal components analysis techniques to determine the consistency of POJ scale, it was revealed that the scale had a three-dimensional structure (PJP, DJP and IJP) with eigenvalues greater than 1 as in previous studies (KMO=0.954; $\chi^2=4466.375$; $df=190$; $p<0.001$; factor loadings ranging between 0.565-0.878; total explained variance: 64.7%). Table 1 presents the goodness of fit indices of the first and second-order confirmatory factor analysis (CFA) performed to determine the structural validity of the scale. Accordingly, both the first (χ^2/df : 2.477; GFI: 0.894; CFI: 0.945; TLI:0.936; RMSEA:0.066) and second (χ^2/df : 2.410; GFI: 0.897; CFI: 0.948; TLI: 0.939; RMSEA: 0.065) order fit indices were within acceptable values [71],[72]. In addition, the average variance extracted (AVE) and composite reliability (CR) values were calculated to determine the convergent and discriminant validity in DFA, and results are given in Table 2. Accordingly, the factor loadings of observed variables varied between 0.577 and 0.857, and the t-test values were statistically significant ($p < 0.001$). The standardized β coefficients of observed variables were higher than the threshold value of 0.50, and the AVE values were higher than the critical value of 0.50. Furthermore, the CR values were higher than the critical value of 0.70 and AVE values suggested a convergent validity between the dimensions of the measurement model. However, due to correlation coefficients between the dimensions of the measurement model lower than the square roots of AVE values, the discriminant validity was also achieved [73]. In the reliability analysis, the Cronbach's Alpha (CA) coefficients ranged between 0.842-0.928 and the CR coefficients between 0.888-0.960. Accordingly, the organizational justice perception scale is valid and reliable [72][73].

JS scale developed by Chen et al. [74]

Table 1. Confirmatory Factor Analysis Goodness of Fit Indices

Scales	χ^2	sd	χ^2/sd	GFI	CFI	TLI	RMSEA
First Order POJ	406.190	164	2.477	.894	.945	.936	.066
Second Order POJ	392.824	163	2.410	.897	.948	.939	.065
JS	10.138	4	2.535	.988	.957	.983	.068

Table 2. Confirmatory Factor Analysis Results

Factors	Observed Variables	Standardized β	t Values	AVE	CR	CA
PJP	PJP1	.577	7.701***	.522	.866	.842
	PJP2	.766	11.128***			
	PJP3	.829	11.716***			
	PJP4	.803	11.482***			
	PJP5	.717	10.635***			
	PJP6	.605	-			
DJP	DJP7	.746	12.689***	.587	.876	.873
	DJP8	.786	13.332***			
	DJP9	.734	12.499***			
	DJP10	.857	14.407***			
	DJP11	.698	-			
IJP	IJP12	.727	13.416***	.582	.926	.928
	IJP13	.782	14.552***			
	IJP14	.758	14.072***			
	IJP15	.710	14.861***			
	IJP16	.830	15.563***			
	IJP17	.838	15.736***			
	IJP18	.727	13.423***			
	IJP19	.739	13.665***			
	IJP20	.746	-			
JS	JS1	.730	9.282***	.519	.841	.728
	JS2	.842	9.735***			
	JS3	.562	7.634***			
	JS4	.724	9.222***			
	JS5	.715	-			

***p < 0.001

and adopted to Turkish by Turunç and Çelik [75] is used to rate JS levels of seafarers. Some example items are as follows: "I am satisfied with my job onboard" and "I feel like the day will never end when I do my

work onboard" (reverse coded). According to the EFA results applied using varimax rotation and principal analysis to determine the consistency of the JS scale, it was revealed that the scale has a one-dimensional

structure with an eigenvalue greater than 1 as in previous studies (KMO = 0.731; $\chi^2 = 368.170$; $df = 10$ -factor loads ranging from $p < 0.001$; 0.589-0.896; total explained variance: 57.2%). Table 1 presents the DFA goodness of fit indices calculated to determine the structural validity of the scale. Accordingly, the fit indices of this single-factor JS scale (χ^2/df : 2.535; GFI: 0.988; CFI: 0.957; TLI: 0.983; RMSEA: 0.068) were within acceptable values [71],[72]. In addition, the average variance extracted (AVE) and composite reliability (CR) values were calculated to assess the scale's convergent and discriminant validity in DFA, and the results are given in Table 2. Accordingly, the factor loadings of observed variables varied between 0.524 and 0.842, and the t-test values were statistically significant ($p < 0.001$). The standardized β coefficients of observed variables were higher than the threshold value of 0.50, and the AVE values were higher than the crucial value of 0.50. Furthermore, the higher CR values than the critical value of 0.70 and the AVE values suggest a convergent validity of the measurement model. Cronbach's Alpha

(CA) and CR coefficients of the scale were found as 0.728 and 0.815 respectively which indicates JS scale is valid and reliable [72][73].

Before testing the research hypotheses, the skewness and kurtosis coefficients of the observed variables were examined to determine whether the data had a normal distribution. As the coefficients ranged between -1.5 and + 1.5, the data were considered to have a normal distribution.

4. Results

4.1. Demographic Characteristics of Participants

Table 3 presents the seafarers' demographic characteristics. Accordingly, 94.3% (n=316) of them are male, 30.4% (n=102) are 31-40 years old, 49.2% (n=170) are high school graduates, 25.4 % (n=85) have work experience between 4-7 years, and 60.3% (n=202) are deck crew.

4.2. Hypothesis Testing

Table 4 presents the means, standard deviations and correlation coefficients of the research variables.

Table 3. Demographic Characteristics of Participants

Variables	Groups	n	%	Variables	Groups	n	%	
Gender	Female	19	5.7	Work Experience	3 years and under	71	21.2	
	Male	316	94.3		4-7 years	85	25.4	
	Total	335	100.0		8-11 year	64	19.1	
Age	20-25	57	17.0		12-15 years	36	10.7	
	26-30	68	20.3		16 and over	79	23.6	
	31-40	102	30.4		Total	335	100.0	
	41-50	77	23.0		Department	Deck	202	60.3
	51 and over	31	9.3			Engine	101	30.1
Education status	Primary	55	16.4			Galley	32	9.6
	High school	170	49.2			Total	335	100.0
	University	110	32.8					
	Total	335	100.0					

Table 4. Means, Standard Deviations and Correlation Coefficients

Values	Means	SS	1	2	3	4
1. PJP	3.688	.785	1			
2. DJP	3.628	.845	.794**	1		
3. IJP	3.936	.735	.734**	.716**	1	
4. POJ	3.751	.719	.924**	.914**	.888**	1
5. JS	3.796	.636	.373**	.363**	.415**	.419**

**p< 0,01

There is a moderate and statistically significant relationship among seafarers' mean scores of JS, POJ, and three dimensions of justice. Mean scores of three dimensions of justice point a difference among justice perceptions of seafarers. The dependent samples' one-way analysis of variance was performed to reveal whether these differences were statistically significant or not. Firstly, Levene's test, a prerequisite of one-way analysis of variance, was conducted to check homogeneity between the groups (Table 5).

Table 5. Levene's Test

Values	Levene's Test	df1	df2	p
1. PJP	1.599	4	330	.174
2. DJP	1.395	4	330	.235
3. IJP	2.064	4	330	.085

Accordingly, the dimensions of organizational justice were homogeneous [$\alpha (0.05)<p$], and thus the prerequisite of variance analysis for these variables was met. After the dependent samples' one-way analysis of variance confirmed that the model was statistically significant [$\alpha (0.01)>p$; F:66.653], binary comparisons were applied to determine whether the difference between groups was significant (Table 6).

Consequently, the difference between seafarers' mean scores on organizational justice perception subscales was statistically significant. Therefore, Hypothesis 1 was accepted. The goodness of fit indices ($\chi^2/df:2.239$; GFI:0.876; CFI:0.932; TLI:0.924; RMSEA:0.061) regarding the structural

Table 6. Variance Analysis Binary Comparison

(I) Factor1	(J) Factor 1	Average Difference (I-J)	Std. Dev.	p
PJP	DJP	.059*	.029	.040
	IJP	-.248*	.030	.000
DJP	PJP	-.059*	.029	.040
	IJP	-.308*	.033	.000
IJP	PJP	.248*	.030	.000
	DJP	.308*	.033	.000

*p< 0.05

equation modelling in Figure 2, which was implemented to reveal the effect of POJ on JS were within acceptable values [71],[72]. The path analysis revealed that POJ had a significant positive effect on JS (std. β : 0.507; t: 6.518; p<0.001; R²:25.7) and explained around 26% of the variance of JS. Therefore, Hypothesis 2 was accepted, too.

To discover the moderating role of seafarers' service (SS) period at sea in the relationship between POJ and JS, the PROCESS macro plugin in SPSS 22 program was used[76]. The results of the moderating role analysis with the Bootstrap 5000 sample are shown in Table 7.

Table 7. Moderating Effect Analysis

	B	SE	t	95% CI	
				LL	UL
Constant	3.790	0.031	120.685	3.729	3.852
POJ	0.411***	0.045	8.994	0.321	0.501
SS	0.007	0.021	0.370	-0.033	0.049
POJ*SS	-0.073*	0.029	-0.249	-0.131	-0.015
Model Summary	R ² = 0.196; F=27.030; p < 0.01				
Change in R-sq.	Δ R ² = 0.015; F=6.246; p < 0.05				

*p< 0.05; ***p< 0.01

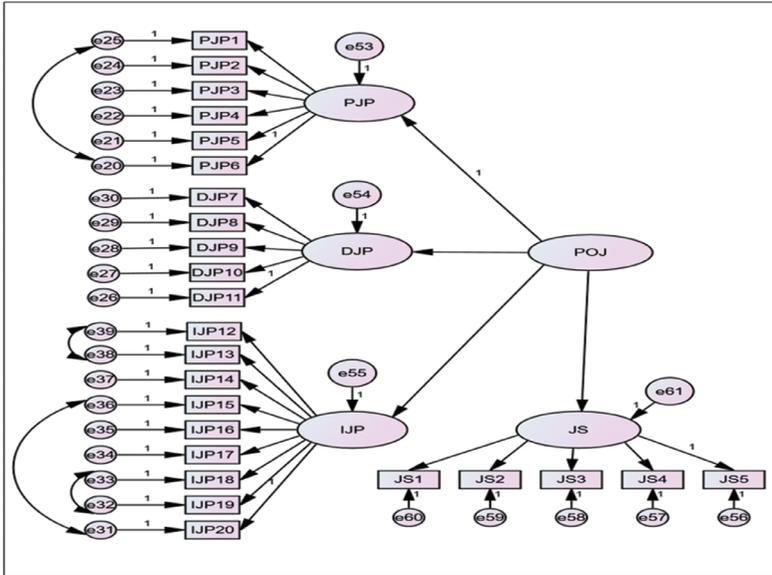


Figure 2. Structural Equation Modeling

The results presented in Table 7 points that moderating effect of SS period is significant ($R^2 = 0.196$; $F = 27.030$; $p < 0,01$) and the effect of the interaction term ($POJ * SS$) on JS is also significant ($B = 0.073$; $t = -0.249$; $p < 0.05$; $-0.113 < LL\ 95\% CI < -0.015$; $\Delta R^2 = 0.015$).

Therefore, Hypothesis 3 was accepted. Slope test was performed to determine whether POJ differs from zero from the average of working time at sea, a standard deviation from the average of working time [77], and the results are presented in Figure 3.

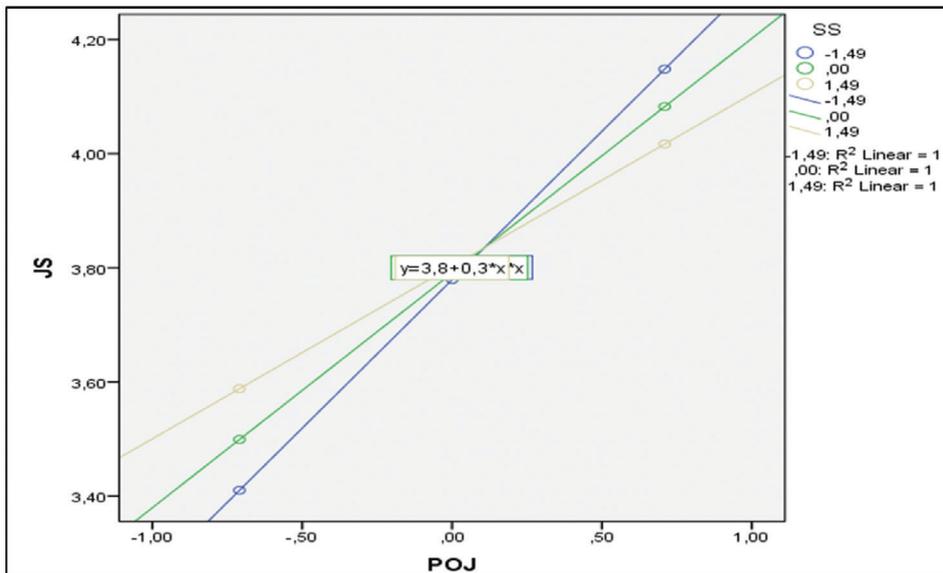


Figure 3. Slope Graph of Organizational Justice Perception and Sea Service Interaction

It is understood from Figure 3 that the relationship between POJ and JS is more powerful for seafarers whose length of sea service is shorter.

5. Discussion and Conclusions

The current study tests the effect of justice perception between seafarers on JS. The results show that the difference among seafarers' mean scores on organizational justice perception subscales is statistically significant. Accordingly, the level of distributive justice perception of seafarers ($X:3.628$) is lower than perceived procedural ($X:3.688$) and interactional justice ($X:3.936$). This result provides support for the organizational justice literature that suggests individuals from different contextual circumstances focus on a different criterion to rate justice [78],[79],[80]. Like Ambrose & Schmin [80] claim employees view justice dimensions differently and are apt to perceive one higher that serve the needs of the individual. Therefore, the low level of distributive justice might be due to the perception that salaries, promotional opportunities and organizational resources are generally insufficient when hidden costs involved for working onboard a ship is considered. This finding of the study suggests that seafarers perceive equity in the amount of compensation they receive and thus shipping companies need to find a delicate balance between seafarers' contributions and compensation.

The study also reveals that the level of perceived interactional justice ($X:3.936$) is greater than the other two dimensions of organizational justice. The attributes of the maritime companies may play a considerable role in seafarers' justice judgement. Shipping firms generally operate in a closed business environment where power and decision making is centralized, and communication channels follow a strict hierarchy. Besides, isolation is an innate

characteristic of the prevalent system onboard which may lead to a tendency to reduce interpersonal relationships. These characteristics of the working environment are well known among sea labour and thus may have created a negative bias and expectation towards interactional justice which seems to be the reason for rating the perceived interactional justice higher. In other words, unlike common practice, in the application of related operations, the ship managers within the scope of the current research seem to treat seafarers with dignity, politeness, gentleness and respect. Thus, seafarers who do not have many expectations in this regard may have felt interactional justice more than the other dimensions of justice.

So far, scholars have pointed out the link between POJ and JS but testing the similar link within the maritime context is neglected. Drawing on this idea, perhaps the most important benefaction of the current study is that it provides empirical support for the interaction between justice perceptions of seafarers and their satisfaction. The path analysis which was performed using the structural equation modelling has revealed that as predicted justice perception of seafarers positively affects their JS level (std. $\beta:0.507$; $t:6.518$; $p<0.001$) and explained around 26% of the variance in JS ($R^2:25.7$). This finding of the study is consistent with previous studies that found POJ to be positively related to JS [81], [82]. Although such connection is intensely verified among different occupations in the literature, this study extends prior researches by investigating the link between organizational justice and satisfaction for the first time in the shipping industry.

Furthermore, the results confirm that the length of seafarers' sea service has a moderating role ($B = 0.073$; $t = -0.249$; $p < 0.05$; $-0.131 < LL\ 95\% \text{ CI} < -0.015$) between POJ and JS. Short-tenured seafarers have

reported more positive views of fairness at work which moderates the relationship between POJ and JS. A possible explanation for this result is that seafarers entering a company may be more responsive to justice in the work environment which in turn influence their satisfaction levels. Maybe, it is more important for younger employees to have a job and that's why seafarers who have less experience with the organization are more likely to tolerate the shipping organization for making a justice violation. On the other hand, seafarers who have contributed to the organization with their experience and knowledge for years may think that they are not getting enough compensation for this long-term relationship.

The findings of the study should be judged given some constraints. For instance, there is some evidence in the literature that the different dimensions of organizational justice can have different effects on individuals' behaviours. According to Cohen-Charash & Spector's meta-analysis [64], distributive justice is the dominant factor that impacts satisfaction whereas Colquitt and colleagues [83] meta-analysis concluded procedural justice as the more effective determinant. Future studies that investigate which dimension of organizational justice has a higher impact on seafarers' job satisfaction would contribute to the literature. On the other hand, there is also some evidence in the literature that the amount of organizational justice demanded by staff from their organizations may be influenced by their national culture which in turn would affect their level of satisfaction. The individuals from high power distance culture may demand less interactional justice compared to those with low power distance since it basically requires the cooperation and communication between employees and the administrators. From this point of view, further studies can be performed

to investigate the effect of culture on the relationship between research variables. Second, the generalization of sampling is arguable because the survey was realized in a particular context. Therefore, the moderating effect of the length of seafarers' service at sea on the relationship between POJ and JS may be deepened with data obtained from different industries and the comparison of different industries will deepen the understanding of the process.

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