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Innovation Strategies and Employees Effects of Motivation on Business Performance in Civil Aviation Operation

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ABSTRACT

According to the findings of this explanatory study, businesses in the civil aviation sector can enhance their performance by focusing on innovative projects and increasing employee motivation. The research employed a survey method, and the data collected from participants were analyzed using SPSS software. To test the proposed hypotheses, a total of 59 scale items were used. The company performance scale was adapted from Çakıcı et al. (2011), the innovation scale from Can (2012), and the employee motivation scale from Köroğlu (2011). The study population consisted of 15,215 individuals. Due to the heterogeneous nature of the sample, the sampling calculation was conducted using p=0.5 and q=0.5, resulting in a sample size of 850 participants. The reliability coefficients of the scales used in the study were found to be high. Frequency analysis was applied to determine the demographic distribution of the participants working in the civil aviation sector. Exploratory Factor Analysis (EFA) was used to assess the validity of the scales and determine the relationships between the items and their components. Correlation analysis was also conducted to examine the relationships among variables. The results confirmed all hypotheses, indicating that increased employee motivation and a greater focus on innovation positively influence company performance in the civil aviation industry.

Keywords: Innovation strategies, Motivation, Performance, Civil aviation, Productivity.

Introduction

Every firm has universally accepted that human resources are the main component of production, in addition to managing modern resources like cash, information, and technology. Given that human resources are known to be the only element capable of utilizing material assets and making them functional, practices that will draw human resources to the company are becoming more and more important, ensure their satisfaction and retention, and enhance their productivity (Akbaba, 2008). The increasing emphasis on human resource practices in businesses is one of the main indicators of the value, understanding, and tolerance shown towards people. It has been recognized that businesses cannot operate without humans, and humans are not merely economic beings but also psychological and social entities (Akgemci, 1998). In this situation, a new management style that is devoid of strict hierarchies and founded on flexibility and autonomy has replaced the conventional management style (Atalay *et al.*, 2013).

Employees' motivation — including their commitment to the organization, enthusiasm, desire, eagerness, and satisfaction with their work — drives them to take action for the success of the business, allowing the business to eventually accomplish its main objectives, which include making money, acquiring a long-term competitive edge, and establishing a solid reputation (Argyris, 1993). As a result, companies are putting more emphasis on procedures meant to boost worker motivation and job satisfaction. During this time, human resources will play a crucial role in creating valuable information and technology, or, to put it another way, turning them into the innovation required for the company to survive (Ataman, 2001). Remember that the process of innovation starts with the creation of concepts

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meant to identify and assess opportunities (Baysal & Tekarslan, 1998). Individuals have an obligation to recognize opportunities and generate solutions for issues or requirements (Bulut & Arbak, 2012). Thus, expressing each person's creative potential guarantees that innovative ideas and actions will benefit both the company and the individual. According to Bingöl (2006), organizations use a variety of apps that will inspire staff members to be innovative and showcase their current creative potential. Establishing a creative and adaptable corporate culture inside the organization will encourage people to be inventive and creative, which will initiate the change and innovation movements that are essential for the company's success. According to Damanpour and Aravind (2012), companies use innovation and employee motivation as data to obtain a competitive edge in the global marketplace. Companies that are able to successfully combine these two crucial data points both meet sustainable development standards and establish themselves in the market. Amabile (2012) argues that the role of the human in the method of innovation is significantly more important than the means of financing and technology. Businesses should not overlook and should retain highly motivated personnel (Agarwal & Selen, 2009). These people are inquisitive, interested, eager to learn and develop, able to predict market needs, and capable of using their experience to generate novel and distinctive ideas. According to Arık (1996), companies have a fundamental responsibility to ensure that their employees are highly motivated, avoid situations that could hinder their creativity, provide them with flexible applications that will allow them to be free and autonomous, and ensure transparency through information-sharing applications.

Additionally, the innovative culture that is fostered inside the company will boost employee engagement for those who participate in the innovation process. It is evident that there is an interaction between the ideas of motivation and invention. One of the questions that company managers have recently been considering is the degree to which employee motivation influences their innovation performance. Several studies on the topic have been required due to the importance of innovation in the business's performance and sustainability as well as the degree of drive of the staff members who will drive innovation. Upon reviewing the literature, it was discovered that no research had combined the evaluation of innovation, employee motivation, and company performance. In this respect, it differs from other studies. In this context, it can be stated that the contribution of the research to the literature is quite high.



Materials and Methods

Research Model

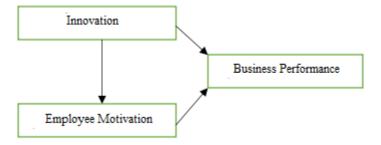


Figure 1. Research Model

In this study, the contributions of innovation to businesses, the important results that employee motivation will lead to in terms of business efficiency, and how employee motivation with innovation will affect business performance are also investigated in detail in the civil aviation sector. This study is produced from the doctoral thesis of Ekrem SÜZEN (Advisor: M. Zahit SERARSLAN).

Data Gathering Method

In order to test the research problems, employees of X civil airline company were considered as the main population of the study. To explain the hypotheses established in accordance with the study paradigm, 59 elements are included

in the scales. In addition to the scales, there are also 6 demographic items in the survey. Including the demographic items, the questionnaire form contains a total of 65 items.

Explanatory research is the type of study that was carried out. Examining the correlation between demographic factors and information gathered from individuals employed by civil aviation corporations based on hypotheses is known as the explanatory research approach. The research employed the survey approach, and the SPSS software program was utilized to evaluate the data collected from the participants. Frequency analysis was initially performed to express the distribution of participants based on demographic parameters in order to evaluate the data collected from participants employed in the civil aviation sector. To evaluate the validity of the scales assessing creativity, employee motivation, and company success, as well as to ascertain the link between items and factors, an exploratory factor analysis has been

It was determined to carry out a pilot study with 50 questionnaire forms prior to gathering answers to the questions in the questionnaire form sent to participants within the parameters of the study. The pilot study's findings were used to assess the questionnaire form's items' dependability and clarity.

Population and Sample

The business examined within the scope of this research is one of the large and leading airline companies operating in Turkey. According to 2019 data, the total number of employees working in the civil aviation sector company under investigation is 15,215. In this study, the population size consists of this group of 15,215 individuals. "For the sample of this research, at a significance level of 0.05 and a sampling error of d = 0.05, assuming the population is heterogeneous with different views and opinions, p = 0.5 and q = 0.5 were taken for the sample size calculation." Based on these calculations, it was determined that analyses must be conducted with at least 837 participants under the specified conditions. To choose the sample for this investigation, the basic random sampling approach was employed. This is due to the fact that the civil aviation enterprises where the study was carried out employ more people than the sample size. Therefore, emails were randomly sent to 900 employees using the email addresses obtained from the companies. For these reasons, and to ensure representation of the determined population as well as to account for the forms that may be answered incorrectly, a total of 900 questionnaire forms were distributed via email over the internet. Out of the sent emails, a total of 873 responses were received, but it was determined that only 850 of these forms were suitable for use in the research. Therefore, the study was analyzed based on a total of 850 participants.

Demographic Features

Table 1. Demographic Features

		Frequency	%
Candan	Female	332	39,1
Gender	Male	518	60,9
Marital Status	Married	546	64,2
viaritai Status	Single	304	35,8
	19-25 years old	138	16,2
A ===	26-35 years old	248	29,3
Age	36-45 years old	184	21,6
	46 years old and above	280	32,9
	Director	170	20
	Deputy Director	232	27,3
Profession	Office Clerk	138	16,2
	Information Desk Officer	130	15,3
	Security	180	21,2
Education level	Elementary	44	5,2
education level	High School	188	22,1



			Strije.t
	Bachelor's degree	120	14,1
_	Master's degree	374	44
_	Doctorate	124	14,6
	0-5 years	268	31,5
Working your at the	5-10 years	148	17,4
Working year at the	10-15 years	84	9,9
company —	15-20 years	112	13,2
_	20 years and above	238	28
TOTAL		850	100

39.1% of the participants were female, while 60.9% were male, according to the analysis of the answers to the questions posed to those employed by X airline, a corporation involved in the civil aviation industry, for the purposes of the study. Of the total participants, 16.2% were between the ages of 19-25, 29.3% between 26-35, 21.6% between 36-45, and the remaining 32.9% were 46 years old and over (**Table 1**). 5.2% of the total participants were graduates of primary education, 22.1% of high school, 14.1% held a bachelor's degree, 44% had a master's degree, and the remaining 14.6% had a doctorate degree. Thirty-five percent of the participants were unmarried, and 64.2% were married. Assistant managers made up 27.3% of the participants, while managers made up 20%, 16.2% office clerks, 15.3% information desk officer, and the remaining 21.2% were security staff. 31.5% of total participants have been working in the airline business for 0-5 years, 17.4% for 5-10 years, 9.9% for 10-15 years, 13.2% for 15-20 years, and the remaining 28% have been working for 20 years or more.

Exploratory Factor Analysis

The innovation scale's KMO value was 0.89, and the significance level of the Bartlett's test was p = 0.000, according to the study done using the KMO and Bartlett's tests. With a Bartlett's test significance threshold of p = 0.000, the KMO value for the employee motivation scale was also determined to be 0.87. The KMO value for the business performance scale was 0.82, and p = 0.000 was likewise the significance threshold for the Bartlett's test (**Table 2**). These findings at the end of the study led to the conclusion that the data was appropriate for factor analysis and that the assumptions were satisfied.

Following the study's factor analysis and a review of the scales' factor distributions, it was discovered that the innovation scale's items were classified under four dimensions, the staff motivation scale under two dimensions, and the business efficiency scale under one dimension.

When examining the factor distributions of the scales used in the study, it was observed that each item was grouped under the corresponding scale it belonged to. Since none of the items fell below the accepted threshold in any of the scales, there was no need to exclude any item or repeat the factor analysis. The study's values led to the conclusion that the data was appropriate for factor analysis and that the assumptions were satisfied.

When examining the **(Table 3)** below, which presents the results of the exploratory factor analysis, it is observed that the 59 items are grouped under 7 factors. Each item's factor loading value is above the predetermined acceptance threshold set at the beginning of the research. The fact that the items are clustered under their respective factors with loading values above the acceptable level indicates that the items within each cluster effectively measure the underlying construct. Collectively, these seven factors explain 88.56% of the total variance.

Table 2. Results of Factor Analysis

Scale Items	Process	Product Innovation	Market Innovation	Organizational Innovation	Intrinsic Motivation	Extrinsic Motivation	Business Performance
8	0,966						
10	0,966						

19	0,725						
20	0,663						
7		0,813					
11		0,782					
13		0,713					
14		0,631					
9			0,926				
12			0.891				
15				0,893			
16				0,772			
17				0,747			
18				0,710			
25					0,956		
26					0,918		
27					0,876		
28					0,810		
29					0,759		
30					0,714		
32					0,698		
33					0,664		
34					0,508		
35					0,505		
21						0,942	
22						0,910	
23						0,856	
24						0,781	
31						0,777	
36						0,687	
37						0,547	
38						0,506	
							$\overline{}$



 Table 3. Results of Factor Analysis (Continued)

Scale Items	Business Performance	Product Innovation	Market Innovation	Organizational Innovation	Intrinsic Motivation	Extrinsic Motivation	Business Performance
39		<u> </u>			I_	<u> </u>	0,984
41							0,974
42							0,954
50							0,924
51							0,913
52							0,897

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0,884
0,846
0,815
0,799
0,783
0,742
0,701
0,697
0,688
0,672
0,650
0,624
0,617
0,599
0,588
0,587
0,573
0,566
0,554
0,532
0,517
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Reliability Analysis

Table 4. below shows the findings of the reliability analysis for the scales used to describe the model established within the parameters of the research. The reliability coefficients for the innovation scale, employee motivation scale, and company performance scale were found to be 0.963, 0.927, and 0.919, respectively, at the conclusion of the reliability analysis. These findings indicate that all seven of the criteria included in the study have extremely high dependability coefficients.

Table 4. Results of Reliability Analysis

Factors	Item number	Coronbach's Alpha Coefficient
Innovation	14	0,963
Process innovation	4	0,973
Product innovation	4	0,952
Market innovation	2	0,948
Organizational innovation	4	0,956
Employee motivation	18	0,927
Intrinsic motivation	10	0,935
Extrinsic motivation	8	0,918
Business performance	27	0,919

Results and Discussion

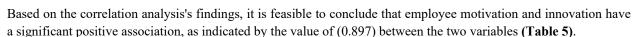
Regression—Correlation Analysis

It is required to do regression and correlation analyses in order to test the previously established hypotheses within the scope of the research. Prior to conducting the regression and correlation analyses, the necessary factor and reliability analyses were performed, and it was concluded that the scales used in the study are suitable for testing the relationships among them.

The means of participants' responses to the items in the scales must be calculated before performing regression and correlation analyses. The regression and correlation analyses between the scales were carried out based on these calculated scale means. The correlation analysis, conducted using the means of the 59 items grouped under the 7 factors directed to participants, is presented below in Table 5.

Table 5. Correla	ation 1	Anar	VS1S
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Table 5. Correlation Analysis									
	Innovation	Process	Product	Market	Organizational	Motivation	Intrinsic	Extrinsic	Performance
Innovation	1								
Process	0,814	1							
Product	0,789	0,796	1						
Market	0,821	0,819	0,802	1					
Organizational	0,796	0,805	0,792	0,813	1				
Motivation	0,897	0,856	0,824	0,862	0,816	1			
Intrinsic	0,876	0,837	0,849	0,854	0,835	0,849	1		
Extrinsic	0,901	0,875	0,879	0,876	0,824	0,840	0,868	1	
Performance	0,939	0,891	0,893	0,912	0,902	0,872	0,894	0,923	1



One may conclude that there is a substantial positive correlation between innovation and company performance based on the value of (0.939) that was found between the two variables.

It is also feasible to conclude that there is a substantial positive correlation between employee motivation and business performance based on the value of 0.872 that was found between the two.

The direction and intensity of the link between variables are ascertained using correlation analysis. Based on the correlation analysis results, it is determined that every hypothesis that was developed at the start of the study has been accepted. This leads to the conclusion that airline firm X, which operates in the civil aviation industry, may improve its business performance if it also raises employee engagement and innovates more.

Research Findings Related to Demographic Variables

The results obtained from the conducted survey are evaluated and discussed in this section. Employees in the civil aviation sector who participated in the research indicated a moderate level of agreement with the statements related to "process innovation" (2.763 \pm .921), "product innovation" (2.856 \pm .889), "market innovation" (2.916 \pm .928), "organizational innovation" (3.175 \pm .784), "intrinsic motivation" (3.227 \pm .914), "extrinsic motivation" (2.874 \pm .893), and "business performance" (2.934 \pm .916).

In order to investigate the differences between demographic groups with respect to the study factors, a one-way ANOVA was performed for factors with more than two groups, like age groups, educational background, job categories, and years of service, and an independent samples t-test was employed for factors with two groups, including gender and marital status: male-female and married-single. The mean scores for the business efficiency, motivation, and innovation measures are shown in Table 6.



	Table 6. Means of the Scale										
		Process	Product innovation	Market innovation	Organizationa I innovation	Intrinsic motivation	Extrinsic motivation	Business Performance			
NI.	Valid	850	850	850	850	850	850	850			
N	Empty	0	0	0	0	0	0	0			
	Mean	2,763	2,856	2,916	3,175	3,227	2,874	2,934			
	Median	3,000	2,916	3,000	3,200	3,500	3,000	3,000			
	Mode	3,00	3,00	3,00	3,00	3,50	3,00	3,00			
St	andard deviation	,921	,889	,928	,784	,914	,893	,916			
	Variance	,843	,805	,883	,606	,805	,846	,818			
	Minimum	1,14	1,17	1,00	1,40	1,00	1,18	1,29			
	Maximum	5,00	5,00	5,00	5,00	5,00	5,00	5,00			

Independent Groups T-test

No statistically significant differences were detected for any of the variables in the t-test used to compare male and female workers with regard to the research variables. Accordingly, it can be said that employees in the civil aviation industry, irrespective of gender, take part in the innovation, motivation, and business performance scales.

According to the results of the t-test used to compare married and single workers with regard to the research factors, none of the variables showed statistically significant differences. Thus, it can be concluded that employees in the civil aviation industry, irrespective of their marital status, engage in the innovation, motivation, and business performance scales.



ANOVA Test

Age, education, occupation, and years of service were used to compare the means of the research variables using a one-way ANOVA test. For every variable, the homogeneity of group variances—one of the presumptions of ANOVA—was first examined. For variables for which the assumption of variance homogeneity was satisfied, one-way analysis of variance (ANOVA) was used to compare means. In paired comparisons, the Scheffé test was employed to detect discrepancies.

Based on the Levene test results, none of the variables satisfied the premise that group variances were equal. For these factors, the prerequisite for conducting an ANOVA was thus not met. Therefore, as it would not be suitable to interpret the data, an ANOVA was not performed for age group comparison. Information on the results of the variance homogeneity test for each group is given below.

It is anticipated that these values will exceed 0.50. The groups are not comparable if this requirement is not satisfied since it shows that the differences between them are not uniform. In such cases, comparing the group means is not appropriate, and therefore, ANOVA cannot be performed.

According to the results of the Levene test, equal variances among the groups was met only for the variable of extrinsic motivation. Consequently, the requirement for conducting an ANOVA was not met for the parameters of method innovation, product innovation, market innovation, organizational innovation, intrinsic motivation, and business achievement. The sole motive that was analyzed was extrinsic. However, there is no discernible difference in extrinsic motivation between educational backgrounds (F=1.768, p>.05).

Equal variances across the groups were not acceptable for any of the variables, based on the Levene test results. As a result, these variables did not meet the requirements for performing the ANOVA test. Since an ANOVA evaluation wouldn't be appropriate for interpreting the data, it was not utilized to compare the occupational groups. The Levene test results showed that all variables, with the exception of intrinsic desire, had identical variances across the groups.

ANOVA tests were thus chosen to be performed for the variables of business performance, extrinsic motivation, market innovation, organizational innovation, process innovation, and product innovation. Analysis was done for more than just intrinsic motivation. Years of service and extrinsic motivation (F=1,965, .05>.042) and product innovation (F=3,548, .05>.014) were shown to vary significantly. It may be said that, in comparison to employees with more years of experience, individuals with less experience are more open to differences and more responsive to extrinsic incentives.

The factors of process innovation, market innovation, and company success did not significantly alter based on years of service.

While the findings of the ANOVA study regarding factors other than intrinsic motivation are presented in the analysis, the results of the Variance Homogeneity Test of the groups are also stated.

Conclusion

As predetermined prior to the research, this study was carried out exclusively with employees of Airline Company X, which operates in the civil aviation sector in our country. It has been assumed that all responses provided by the participants reflect their own personal truths.

The analytical results showed that every hypothesis put out at the start of the investigation was accepted. Following the acceptance of the hypotheses, the existence of a significant relationship between demographic variables and the scales was also tested. The studies revealed that only the years of service and product innovation differed significantly (F=3,548), (.05>,014), as well as extrinsic motivation (F=1,965), (.05>,042). In comparison to employees with more seniority years, it was shown that individuals with fewer seniority years are more successful at product innovation, extrinsic incentive, and being receptive to differences.

Increasing employee engagement and innovative activities in civil aviation firms automatically results in a rise in company performance, according to the findings from the research. Accordingly, it becomes evident that companies operating in the civil aviation sector need to enhance employee motivation and give equal importance to innovation activities. Therefore, for the companies in the civil aviation sector that are the subject of this research, focusing on employee motivation and innovation efforts is essential for improving business performance both in the short and long term.

After looking at the variable distributions of the study items, it was discovered that the company efficiency scale was categorized under one dimension, the employee motivation scale under two, and the innovation scale under four.

Every item was found to be categorized under its corresponding scale when looking at the factor distributions of the scales examined for this study. Since none of the items fell below the predetermined value in any of the scales, there was no need to remove or repeat any item for the factor analysis.

The findings of the reliability analysis of the selected scales were determined in order to explain the model specified inside the study's parameters. The innovation scale's reliability coefficient was determined to be 0.963, the employee motivation scale's to be 0.927, and the business performance scale's to be 0.919, following the reliability study. It may be concluded from these findings that all seven of the study's variables have quite good reliability coefficients.

A high positive association between innovation and employee motivation was indicated by the correlation analysis's results, which showed a value of 0.897 between the two variables. In this situation, it is reasonable to assume that greater innovation will lead to higher employee motivation.

It may be concluded that there is a substantial positive association between innovation and company efficiency based on the correlation value of 0.939 that was found. In this context, it is expected that as innovation increases, business performance will also increase accordingly.

Similarly, based on the correlation value of 0.872 found between employee motivation and business performance, a strong positive relationship exists between these two factors as well. Therefore, it is expected that an increase in motivation will lead to a corresponding increase in business performance (Karpov et al., 2023; Medvedev et al., 2023; Sapunova et al., 2023).

No statistically significant differences were discovered for any of the factors in the t-test used to compare male and female employees with respect to the research factors. Accordingly, it can be said that employees in the civil aviation



industry, irrespective of gender, take part in the innovation, motivation, and business performance scales (BaSalamah *et al.*, 2022; Hungund *et al.*, 2022).

None of the research variables showed statistically significant differences between married and single employees, according to the results of the t-test used to compare them. Accordingly, it can be said that employees in the civil aviation industry, irrespective of their marital status, take part in the innovation, motivation, and business performance scales.

At the outset of the research, four distinct hypotheses were formulated in the context of the study that was given to personnel of civil aviation firms. These theories were predicated on corporate success, innovation, and employee motivation.

Despite being an outcome, the notion of innovation is very important when it comes to business innovation. The sum of actions used to consistently encourage one or more people toward a certain aim or target is referred to as motivation. Contrarily, performance is the quantifiable or intangible outcomes of the actions or endeavors made by people or organizations when they carry out their duties within a certain procedure.

In this regard, the study's goal was to demonstrate how innovation techniques and higher employee motivation affected the civil aviation sector's performance, as stated at the outset of the investigation. All of the hypotheses generated within the study's parameters were validated.

Based on the findings from the developed hypotheses and the data obtained through the research, several recommendations for improving business performance in the civil aviation sector have been presented in the discussion section, with reference to previous studies.

In addition, as a recommendation for future research, the scales and model developed by combining elements from various studies can be applied to different sectors or to other companies operating within the civil aviation industry. Furthermore, it is believed that future research could be conducted on a broader national scale, involving various groups either serving in or receiving services from the aviation sector. Future studies may not only focus on employee motivation and innovation but could also explore the effects of other variables on business performance.

An investigation into how employee participation affects innovation revealed that workers who participate in decision-making processes that identify the need for change and innovation embrace that need, come up with more innovative ideas, and perform better in terms of making sure the innovation process is successful. Similarly, the current study found that better corporate performance is a direct result of higher staff motivation. Accordingly, it may be said that the results validate and align with earlier research on performance, motivation, and creativity.

Amabile stresses that people should be given enough time and money, as these are the two main resources that impact creativity and invention. These resources are crucial, as their availability can either support or hinder creativity. If sufficient time and financial resources are not provided for experimentation or project completion, employees' motivation will decrease, and this prevents their success in creative processes. The results obtained in this study are fully aligned with these findings. When sufficient time and funding are allocated, employee motivation increases, which in turn enhances innovation activities. Naturally, this contributes positively to the overall performance of the business.

Considering these results, it can be concluded that social activities contribute to relieving individuals' mental and physical fatigue, reducing their stress levels, and providing opportunities for employees to get to know one another and engage in various activities outside the workplace. Social events help employees become more integrated within their groups, strengthen their organizational commitment, and motivate them. Therefore, the use of social activities is recommended as a means to increase both employee motivation and performance (Badrieva *et al.*, 2023; Bisri *et al.*, 2023; Saada *et al.*, 2023; Karim *et al.*, 2024; Mohammad *et al.*, 2024; Rohmani *et al.*, 2024).

Studies conducted on this topic indicate a strong relationship between the development of creative ideas and the organization of team-based activities. It has been defended that forming teams that develop creativity helps bring together individuals with different perspectives and ideas, providing interaction among them. These interactions often lead to the emergence of more creative ideas. Additionally, such teams should possess a sense of enthusiasm and commitment toward their goals. Team members should be cooperative and willing to share ideas in all matters. They should provide mutual support in both success and failure. Finally, each team member should be familiar with their colleagues' knowledge base and viewpoints. When these factors are present, intrinsic motivation is ensured, and



creative processes are initiated. Considering the direct link between organizational performance, motivation, and innovation, another recommendation for companies in the studied sector is to give importance to team-based work.

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