



Being a game changer with happy workers: The Ziraat Bank example

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ABSTRACT

Many companies have been implementing strategies in recent years to increase employee happiness, which has become one of their primary corporate objectives. Research has explored which initiatives are effective in promoting employee happiness, the extent to which happiness affects employee performance, and the importance of numerical evidence in this regard. Studies have found a positive correlation between employee happiness and organizational performance, making employee happiness rate a crucial indicator for measuring the health and sustainability of an organization.

The aim of this research was to examine the connection between performance scores and happiness, drawing on Fisher's "happy-super worker" hypothesis proposed in 1980. Data analysis was conducted on seven quarters (21 months) of information from 4,277 employees, and the results confirmed that happiness and performance are positively correlated. The study revealed that happiness had a beneficial impact on performance at both low- and high-performance score levels, albeit with a gradual effect. In contrast, happiness had a more rapid impact on success at medium-performance levels. However, a positive association was found between happiness and success across all performance scores, including low, medium, and high performance.

The study revealed a curvilinear relationship between happiness and performance. Furthermore, panel data modeling showed that an increase of 1 unit in individual happiness at any given time led to an average increase of 3.41 units in their performance score.

1. Introduction

Happiness has been the focus of attention of many researchers in recent years; therefore, it has been the subject of study in different disciplines, and models and definitions related to the subject continue to be popular. The concept of happiness in positive psychology includes situations in which positive emotions, ranging from subjective well-being to goal realization, are more dominant [1]. From a psychological perspective, a general definition of the components of happiness can be explained as follows. Regardless of the complexity of the models of happiness, the concept can be explained by the main views of hedonism and eudemonism, which are considered related [2] to each other. According to the hedonic view, well-being is related to pleasure and happiness. From this perspective, individual pleasures are important. On the other hand, the eudemonic approach considers well-being as realizing one's strengths, serving a greater purpose than oneself, living a life in harmony with one's values, and living a meaningful life by reflecting on one's potential. From a eudemonic perspective, the effect of extrinsic motivation is negligible and is based on four [3] basic

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motivations. First, people perceive and evaluate the values they possess, not depending on external rewards but with motivation coming from within. Second, instead of behaving in a manner that is pleasing to the outside world, people exhibit behaviors that are both original and natural. Third, they are aware of what is going on around them as they have high awareness. Finally, they behave in a manner that meets their psychological needs, in terms of competence, commitment, and autonomy.

When the subject started to shift towards social sciences, a wide range of research, including also health, family, culture, country of residence, income level, GDP [4,5], social environment, and business life, included definitions of happiness and relations of happiness, and happiness criteria models are frequently encountered in the literature. These models are important in terms of numerically showing the correlation of happiness and components of models in the structure of happiness and social interaction models. For instance, Joshanloo in 2018, taking advantage of Gallup World Survey data from 166 countries [6] in his 12-year study with approximately 1,800,000 people, measured ultimate happiness. Measures considered in the social context, in Keyes’s 1998-5 social happiness model [7], comprised social coherence, social inclusion, inclusion in society, social contribution, and social realization. As can be seen from Fig. 1; Joshanloo, on the other hand, went one step beyond this five-criteria social happiness model in his research and considered seven key elements in measuring ultimate happiness: learning, social support, respect, self-efficacy, freedom, humanity, and volunteering.

Joshanloo’s final measure of happiness identified Canada, Norway, and Australia as the highest-scoring countries based on the seven criteria. Socioeconomic status had a 14% impact on the final happiness measure, while the correlation between social classes and life satisfaction was 21%. The study’s results highlight that external factors have a limited influence on happiness provision. Analysis of data from 254,914 participants across 132 countries showed that individuals who add value to their lives tend to be happier than those who do not. Additionally, feelings of freedom and security were observed to have a significant impact on happiness.

Undoubtedly, another crucial area that is closely linked to happiness and is widely discussed in the literature is happiness research in the workplace. Happiness at work refers to the level of job satisfaction experienced by employees and how it impacts their personal lives, including achieving a healthy work-life balance [8].

The primary objective of this study is to demonstrate how an analytical model can measure the numerical relationship between job performance and happiness. The study utilizes a 1–10 point scale to score employees’ overall happiness with their work life. The hypothesis being tested is whether a significant correlation exists between happiness and performance which is measured by the employees’ ability to achieve their sales targets in each quarterly period at the bank. The study continues by revealing the relationship dimension of the data, which is found to have a significant correlation through statistical models. The study conducted a thorough statistical analysis and utilized a numerical model to articulate the correlation between job performance and happiness, along with the unitary contribution of happiness to job performance. As measuring happiness over an extended period can be challenging, research on the correlation between happiness and other variables is limited. However, in this study, we utilized daily happiness data collected over a span of 21 months (7 quarters). The rich data collected over a wide period of time and detailed statistical analyses are expected to contribute to the literature in terms of the numerical modeling of technical research.

2. Literature review

In today’s world, a significant portion of our time is spent at work, which directly affects our overall quality of life. As happiness is influenced by a combination of positive and negative emotions, philosophy, and psychology, workplace happiness is impacted by a

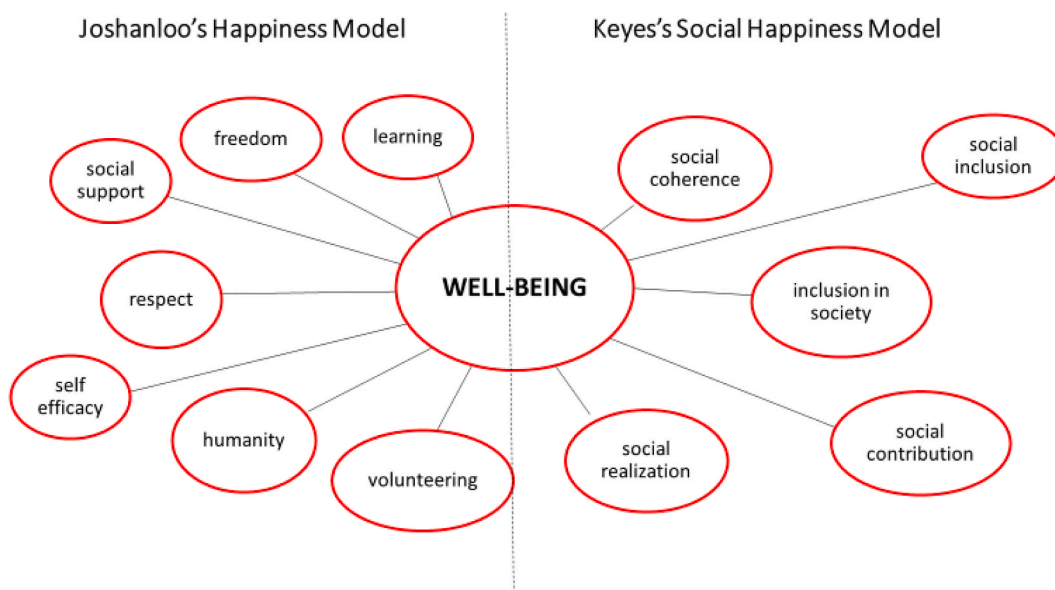


Fig. 1. Joshanloo’s vs. Keyes’s Happiness Models.

range of organizational, personal, and social factors [9]. As stated at the beginning of our study, happiness is closely tied to how individuals perceive and assess their life experiences, including their economic circumstances, work environment, and overall working life. As such, one key element that can contribute to an individual's happiness is their work life. Given that work constitutes a significant part of daily life, it can have both positive and negative impacts on an individual's overall well-being [10]. The literature also suggests that happiness at work has a significant positive impact on performance, as it creates a full mediating relationship [11].

Research has highlighted the crucial role that the workplace plays in shaping the concept of happiness and revealed that having happy employees provides positive business results, such as increased productivity for the organization [12,13]. Research on why it is important to be happy at work has shown that happy employees are more successful, optimistic, and friendly and create value [14] because of their motivated and energetic state and that individuals' happiness levels positively reflect their behavior [15,16] in the formation of corporate work outputs. Therefore, it is critical to create and measure happiness in the business environment and to determine strategies based on these results.

Given the significant amount of time spent in the work environment, it is no surprise that happiness has become a key area of focus in the business world. The increasing number of studies aimed at enhancing well-being and happiness in recent years can be attributed to the belief that happiness is positively linked to employee performance. In a study conducted by Lester [17] on the measurement of happiness and performance at work, performance increased as subjective well-being increased. The improvement in performance at low and high levels of happiness had an increasing relationship, and the difference between moderate and high levels of happiness and performance was relatively small. People who feel happy at work tend to focus more on their work and increase productivity [18]. When the samples of the studies were examined, it was determined that although the cultures and job contents are different, the level of happiness of the person has a positive effect on job performance [19]. Pushpakumari also found a positive relationship [20] between employee performance and job satisfaction. His study revealed that job satisfaction is higher in high-level employees than in low-level ones and that professionals and managers put more effort into work than non-managers. It has been observed that most of the employees with high job satisfaction (82%) are more willing to go to work. Employees at higher levels tend to derive more satisfaction from intrinsic rewards (e.g., benefiting society and creating value), whereas those at lower levels tend to derive greater job satisfaction from extrinsic rewards (e.g., pay, recognition, and promotions). While internal rewards are a greater determinant of job satisfaction for professional employees, there is no significant difference between managers' internal and external rewards. Extrinsic rewards increase job satisfaction among relatively low-level employees. The most important reason for this is that these employees prioritize monetary rather than extrinsic rewards to meet their basic needs. Employees working in sectors with high economic competition had higher job satisfaction than those working in less competitive sectors. It has been concluded that job satisfaction is high and moderate, especially in terms of the banking sector [20]. Pushpakumari was not the first researcher to report such results. Research conducted by Vroom [21] revealed a positive relationship between performance and job satisfaction. According to him, the satisfaction-productivity relationship is stronger when employees' work behaviors are not restricted or controlled by various external factors. When factors such as forming small and consistent groups, determining the types of supervision, and self-testing are considered, satisfaction and high performance are achieved and employees enjoy their work lives [22]. Herzberg's [23] two-factor theory is an important contribution to this view. Herzberg focused on situations in which employees were either satisfied or unsatisfied. Success, recognition, work itself, responsibility, and advancement factors are listed as factors that lead to satisfaction; management, supervision, working conditions, wages, and friendships are listed as "hygiene factors" that can cause job dissatisfaction. However, the absence of these factors could also lead to dissatisfaction. Improvements in hygiene factors prevent dissatisfaction, but do not provide a sense of satisfaction. Direct motivating factors lead to job satisfaction. Herzberg posits that job satisfaction is a priority in the relationship between performance and job satisfaction. In other words, conditions that create happiness or eliminate dissatisfaction should first be met, followed by an increase in performance. It is important to note that the causality works both ways. Employees who perform well are often recognized and promoted by management, which can contribute to their happiness [24].

Another study on conditions affecting happiness at work focused on the finance sector. Particularly in the banking sector, mass layoffs and heavy workloads can increase employees' anxiety levels and make them unhappy. Studies examining the relationship between happiness and performance also found that being morally secure in such situations has a greater effect on happiness [25]. Employees with busy life schedules do not have time to feel happiness. In sectors such as banking and operations, where accuracy, compliance, security, and ethical practices are very important, management can take conscious steps to make employees happy through interventions, such as increased job satisfaction. Providing learning and development opportunities, allowing inspiring and positive leadership behavior, and encouraging commitment among employees positively contribute to happiness [26]. Another study was conducted with 199 employees from 118 companies based on the broaden-and-build theory developed by Fredrickson [27]. The theory suggests that happy employees are more flexible, creative, socially connected, and physically and mentally healthier. That study tested the hypothesis that "happy employees exhibit better personal performance". How effective and successful employees regard themselves was measured using a 7-point Likert scale questionnaire. The happiness measurement was also applied to the same employees and the hypothesis was accepted [28].

Several factors that affect employee performance are also discussed. In a study in which job stress, friend support, and workplace happiness were selected as variables, happiness was the most important determinant of employees' innovative behavior [29]. In other words, the positive link with performance is remarkable because of workplace happiness and innovative thinking. Authors [29] focused on the strong correlation between performance and workplace happiness. Studies determining the effect of workplace happiness on performance are limited compared to those on factors affecting workplace happiness. Besides performance, other positive reflections of happiness in working people include significantly faster and more comprehensive mental processing, more positive objectivity, positive expectation motivation, enhanced optimism, increased creativity and self-esteem, and greater collaboration with others [30]. These effects can be defined as pathways to success. While some of the effects mentioned can be analyzed through

controlled experiments and long-term data, the inability to measure some effects has led researchers to use mixed model analysis. In a study conducted with three controlled groups, the productivity of happy employees and their positive behaviors were 12% higher than those of other employees. In an empirical study conducted with credit unions operating in Canada, analyses were conducted to explain the relationship between job satisfaction and performance; global performance, planning capacity, autonomy in work processes, and relationships among colleagues were found to significantly affect job satisfaction. However, a significant relationship was also observed between wages, social rights, job security, and job satisfaction. In addition to the factors listed, it has been revealed that education and knowledge also contribute positively to job satisfaction; as a result, all the factors listed above have a positive effect on the job satisfaction and performance of credit union employees [31].

To help organizations clarify the values of employees, originality, harmony, and satisfaction can be defined as indirect effects that cannot be measured directly [32]. Happiness and optimistic thinking are not a result of success or performance in the workplace but a prerequisite and a precursor. Because a happy brain makes us more motivated, effective, resilient, and creative, these features increase performance [33]. Although the sectors differed in the studies conducted on this subject, a positive relationship between happiness and performance emerged in most studies. Supporting previous studies, a study conducted with 722 employees in the gas industry revealed that workplace happiness has a direct and positive effect on job satisfaction and performance turnover rates [34]. Happiness had a significant effect on average employee performance among 283 employees serving in the pharmaceutical industry, with a positive correlation of 45% [35]. Studies measuring the extent of the relationship between workplace happiness and performance date back to 1945 [36]. In the first study, a positive correlation of 17% was found between workplace performance and happiness. This relationship is considered positive but weak. Later, in more detailed analysis (sample number 3140), excluding the dataset used in that study, the same relationship was 23% [37]. Recent studies have demonstrated a strong correlation between workplace happiness and performance. The important point here is that the methods used in performance measurement are accepted and based on a reward system and multidimensional measurement results; adding methods that include happiness in the workplace as well as general happiness in life and increasing the sample size will contribute to the accurate measurement of this relationship. Although correlation coefficients vary between studies, it is accepted that there is a positive relationship between performance and happiness and that this coefficient is significant between groups in most studies. Generally, life satisfaction may be a stronger predictor of performance than job satisfaction. Adding life satisfaction to the existing models to predict job performance contributes to stronger results [38]. In the literature, some studies examine the positive effect of happiness on performance from different perspectives. For example, it has been observed that employees who prefer flexible working are happier in parallel with their wishes, and this happiness is reflected in behaviors and a series of positive performance results [39]. The positive correlation between employee commitment to the organization and happiness indirectly leads to success, as job outcomes are also positively linked to employee happiness [40,41]. Evidence suggests that the happy-productive worker hypothesis is more accurate than previously thought [42]. In the future, it is predicted that organizations will include more analytical measurements for happy employees and that the happiness level of the units and the contribution of the interaction between units to happiness and productivity will be measured, as well as the happiness of the individual. These predictions and studies revealed the importance and sensitivity of the subject [43].

Consequently, in order to maximize productivity, it is crucial for organizations to ensure that their employees are able to utilize their full potential. This requires the creation of a suitable work environment that meets the expectations of employees. Several studies have supported Fisher’s “productive-happy employee” hypothesis, which suggests that there is a positive relationship between employee happiness and productivity [44,45]. Besides providing analytical insights into the relationship between employee happiness and performance, this thesis also highlights the importance of maintaining a satisfactory level of this relationship for productivity.

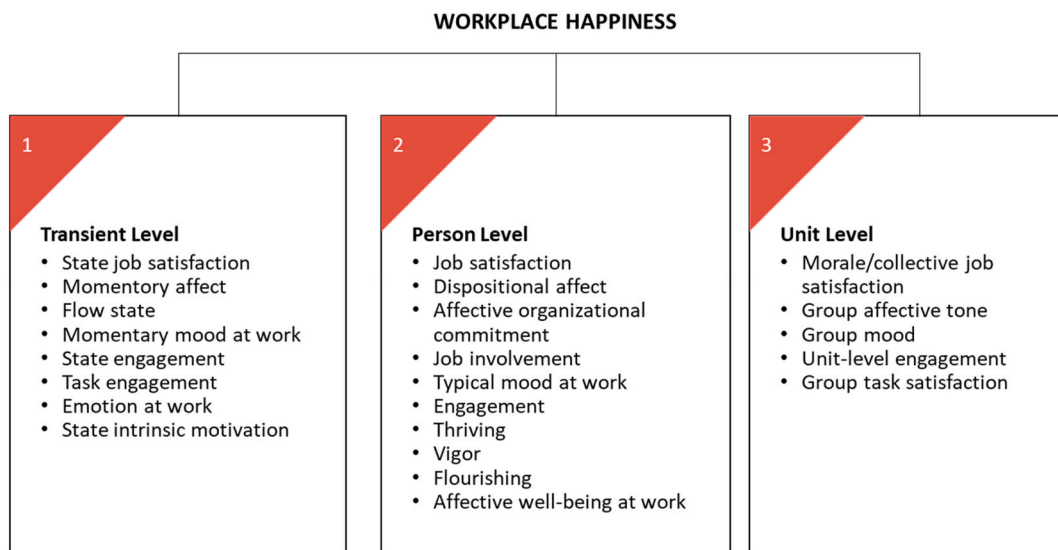


Fig. 2. Fisher’s workplace happiness model.

Fisher’s workplace happiness model comprises three levels in Fig. 2:

Furthermore, in addition to measuring individual employee happiness, measuring happiness at the team level, unit level, and between units can contribute to institutional efficiency and confirm the productive–happy employee thesis [46].

As can be seen, happiness is a concept related to the emotions that people feel. Some studies have revealed that happiness is fed by environmental factors, intrinsic motivation, way of perceiving life, family, work environment, the effect of material possessions on happiness, relationships, and genetic factors. Since we spend a considerable amount of time in the work environment, happiness in business life is an essential subject of research. In the literature, workplace happiness is affected by many factors, including the nature of the job and the environmental conditions of the working environment. However, there are relatively limited studies concerning the numerical value of the linear relationship that has been determined. The most important reason is that it is not easy to measure happiness numerically. Hence, the relationship between happiness and performance cannot be fully revealed by using limited data. The aim of the present study was to provide numerical insights into the relationship between employee happiness and performance, which has been relatively limited in previous research. The study examines the relationship between employee-reported happiness data over two years and their performance. Section 2 of the study elaborates on the analytical methods used, and the numerical contribution of happy employees to the growth rates of organizations is demonstrated.

3. Methodology

3.1. Examining the relationship between performance and happiness with correlation analysis

The aim of the study was to assess the impact of happiness levels on the performance of Ziraat Bank employees. Panel data analysis was used to measure the effect of happiness on employee performance, with a sample size of 4277. The happiness and performance scores of these individuals were collected in the data ranges of 2020-q4 and 2022-q2 for seven quarters, which is very wide range for such a study. A survey was conducted to measure the happiness levels of employees, asking them to rate their level of happiness with regard to various aspects of work life, such as business and corporate strategies, relationships with colleagues and managers, opportunities provided by the bank, and career expectations. Participation in the survey was voluntary and there was no obligation to use the application or respond to the survey. The scores given by the employees indicating the level of happiness are calculated by taking the average of the scores given in the relevant quarter at the end of each performance period. On the other hand, the performance score consists of the points received by employees at the end of each quarter, according to the level of realization of the distributed targets.

The strength of the data collected shows how the happiness level of the same employee has displayed a trend over about two years. When the happiness data are associated with the performance of the employee, data for a total of 14 time-series components concerning one employee were studied. Responding to the happiness questionnaire is voluntary, and the fact that the questionnaire is always accessible in the system did not force the employee to respond in a certain time frame, so the answers are quite free from bias. The fact that the employee was free to respond to the survey and to respond whenever he or she wanted provided a more objective measurement of employee performance.

The performance variable (y) is a continuous variable that takes a value between 1 and 100. Employees get a certain score in proportion to the targets they can achieve in each quarter. These scores form the performance scores. Employees who scored below 40 points in the relevant performance period were considered unsuccessful, while those who scored above 80 points were regarded as highly successful. Scores from 0 to 100 points were used for the modeling study. In the tables, the performance score ranges are used to express this more clearly.

In accordance with GDPR rules, clarification text was obtained from each of our employees, and no data that could identify individuals and cause data breaches were used. Participation in the survey was voluntary, and our employees participated entirely in accordance with their own discretion. *The clarification text was prepared by our bank’s lawyers in compliance with the GDPR, and written*

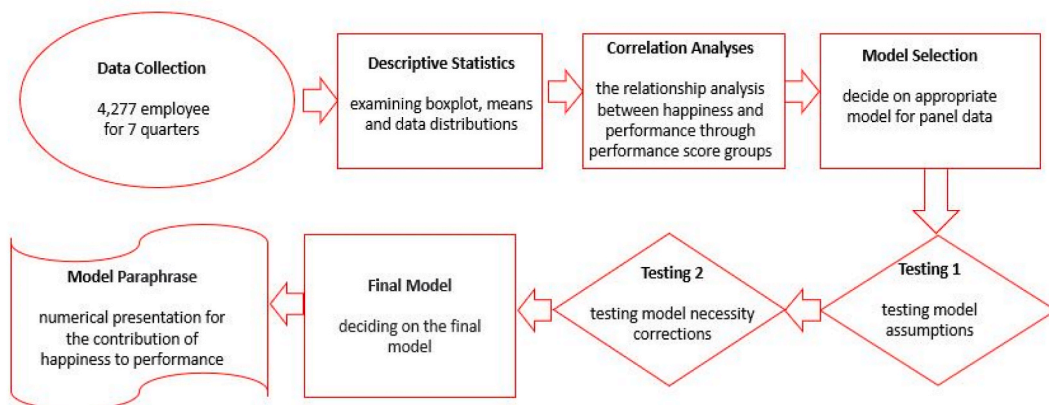


Fig. 3. Analytical process Flow.

consent was obtained from our employees by informing them that the information would be used in shaping human resources policies.

The flowchart in Fig. 3 summarizes the analytical process followed in the study. After general information was presented about the data, the study proceeded with correlation and modeling studies in later stages. Table 1 shows a summary of information about the data used in the analysis.

An examination of Table 1 reveals that happiness levels increase as employees get older. Furthermore, those with doctorate degrees and those in managerial positions report higher levels of happiness and male employees appear to be happier than female employees.

The Kruskal–Wallis test was used to determine whether there were differences between the happiness scores of the variables listed in Table 1. To test whether there was a difference between the variable levels, the following hypothesis was created for each variable:

H_0 : There is no significant difference between group variables and happiness scores.

H_1 : There is a significant difference between group variables and happiness scores.

Table 2 shows the test results.

When Table 2 is examined, it can be seen that there is a significant difference between age, occupation, gender, and happiness scores ($p < 0.05$). The level of education among bank employees did not have a significant impact on their happiness scores, except for doctoral graduates, who had higher happiness scores compared to the other groups. This suggests that while education level may not be an important factor in the distribution of duties among branch employees, it may have a positive impact on happiness for those who pursued higher education.

Table 3 shows the relationship between happiness and performance for the seven quarters that were included in the study. The performance scores vary between 0 and 100 points and the rate of happiness is shown as a percentage.

Table 3 shows a parallel increase between performance scores and happiness rates. The group with the lowest happiness rate (52%) had the lowest average performance score (<40). As the average performance score increased above 70, the happiness rate appeared to level off.

Fig. 4 displays box plots that were created to confirm the data in Table 3 for performance and happiness scores. As seen in the plots, once the performance score surpasses 70, the rate of increase in both performance and happiness scores decreases and the deviations towards the lower limits of happiness scores increase. (When the performance average score is between 70 and 80, the happiness rate is 63%, and when the performance average score exceeds 80, the happiness rate regresses to 62%.) Correlation coefficients between happiness and performance scores were calculated using Spearman's correlation coefficient [47]. These coefficients reveal that, although the relationship is not very strong, a similar trend also occurs between these coefficients. When the correlation coefficients in Fig. 4 were interpreted, a positive relationship was found between happiness and performance at all levels ($p < 0.05$).

In Fig. 4, it can be also seen that the performance score of the highest increase rate in happiness reaches the range of 50–60. Considering that the average performance score of a bank is 50 in this range, the happiness level of employees who switch to the successful side, that is, above average, shows a jump. However, after exceeding 60 points, the rate of increase in happiness slows and deviations begin to appear, especially when the performance is over 80 points, which is considered the most successful group. After the average success level is passed, the level of happiness also shows a stable trend. When the increased rate of happiness was evaluated together with success, the transition to a stationary trend after reaching a certain peak was tested in our sample set. The time graphs in Fig. 4 show that the rates of increase and decrease were parallel when the average happiness rates and performance scores in the last seven quarters were examined.

In the other part of the study, panel data analysis was employed to quantitatively determine the impact of happiness on performance.

3.2. Examining the contribution of happiness to success with panel data analysis

Random coefficients or fixed effects models have been studied for approximately 80 years. In conventional linear models, the

Table 1
Identifiable statistics.

Variables	Groups	Number of Employees	Average Happiness Rate (%)
Age	≤36	494 (12%)	53.42
	37–38	562 (13%)	53.11
	39–40	693 (16%)	54.00
	41–42	581 (14%)	58.08
	43–46	787 (18%)	59.88
	47–50	698 (16%)	61.15
	≥51	462 (11%)	69.05
Graduate	Doctorate	17 (~1%)	86.17
	Post-Graduate	768 (18%)	57.58
	Graduate	3345 (78%)	58.10
	Associate	88 (2%)	62.27
	High School	59 (1%)	60.98
Occupation	Manager	1273 (30%)	78.59
	Assistant Manager	2860 (67%)	49.31
	Assistant	144 (3%)	55.87
General		4277	58.00

Table 2
Kruskal–Wallis test results.

Data: happiness by Age	Kruskal–Wallis chi-squared = 86.516, df = 6, p-value <2.2e-16
data: happiness by Occupation	Kruskal–Wallis chi-squared = 448, df = 2, p-value <2.2e-16
data: happiness by Gender	Kruskal–Wallis chi-squared = 91.552, df = 1, p-value <2.2e-16
data: happiness by Graduate	Kruskal–Wallis chi-squared = 6.7651, df = 4, p-value = 0.1488

Table 3
Happiness–performance relationship.

Performance Score	Employee Number	Happiness Rate (%)
<40	1014	52.16
40–50	831	56.31
50–60	961	60.54
60–70	816	61.37
70–80	439	63.19
≥80	216	62.25
General	4277	58.25

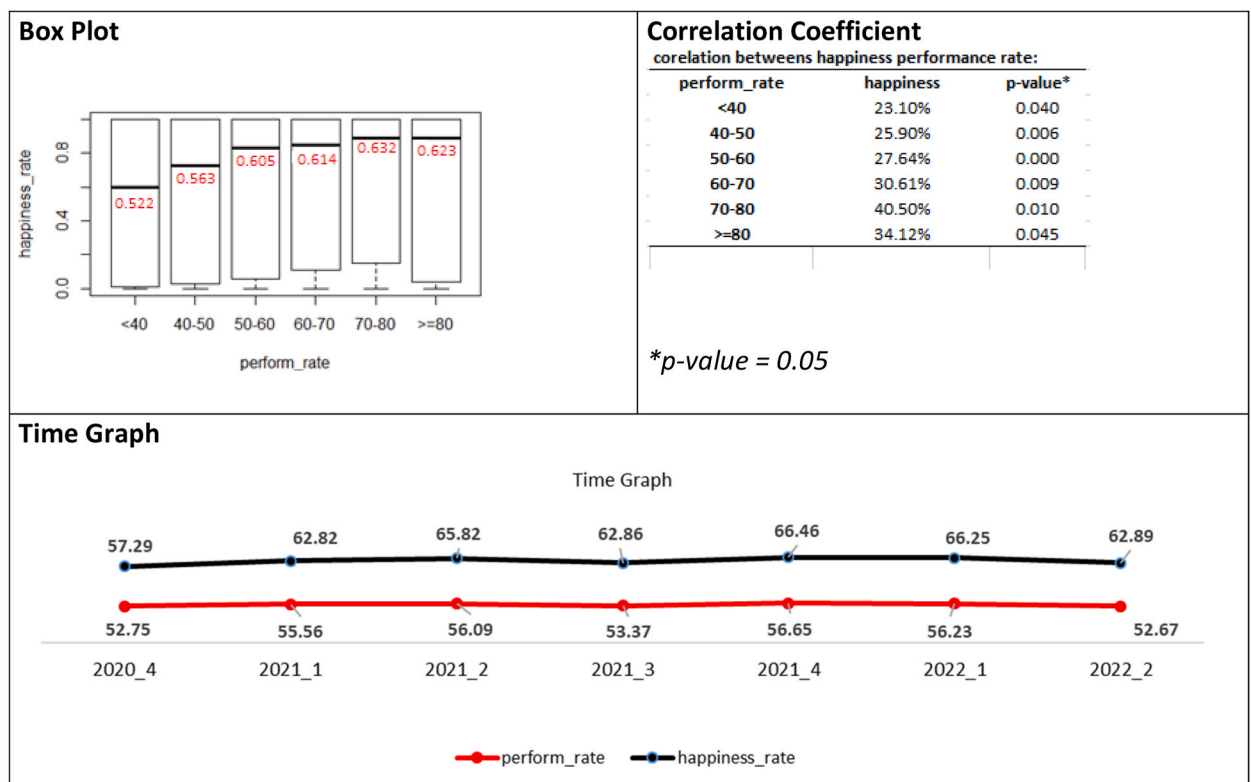


Fig. 4. Performance and happiness scores' box plot chart, correlation coefficients, and time graph.

coefficients' parameters are assumed constant throughout the observed units. However, this assumption may not hold in cases in which the data do not comply [48]. Random coefficient or fixed effects models are used in modeling such phenomena in many fields, including industry, finance, economics, health, and sociology [49]. Panel data analysis combines cross-sectional data with a time series. Therefore, it provides more illuminating data, greater variability, fewer linear connections between variables, more degrees of freedom, and greater efficiency [50]. The panel dataset has two dimensions: cross section and time (N units and T observations corresponding to each unit). Together, these two dimensions provide more information and increase the degrees of freedom. An increase in the number of observations adds more variability to the measured relationship, thereby eliminating the multicollinearity problem. Another advantage of using panel data analysis is that it allows unobservable effects over time and units to be included in the model [51].

In this part of the study, the happiness rates and performance scores of the employees for the seven periods between the 1st quarter

of 2020 (q1) and the 2nd quarter of 2022 (q2) were modeled, and the effect of happiness on performance change was measured. The RStudio application plm package was used to analyze the data [52,53]. In the modeling phase, least squares with dummy variables and within-group estimation methods are applied [54]. The scientific suitability of the models and model requirements (stationarity, autocorrelation, and varying variance tests) were tested after model selection.

The modeling process followed in the study is summarized in Fig. 5's flowchart. As it can be seen from Fig. 5, the appropriate model is determined, and the model assumptions are tested before the final model is established. The continuation of the study includes detailed tests and hypotheses. The framework of the model is as follows:

$$performance\ score = \alpha_0 + happiness_{it} + dummy_t + \epsilon_{it}$$

$i = 1, 2, \dots, 4277; t = 1, \dots, 7$; α_0 represents the constant term, ϵ_{it} represents the i th unit's error rate at t time, dummy represents the quarterly time variable.

In Table 4 coefficients and test results for fixed-effects and random-effects models are shown.

When the three fixed-effects models are examined in Tables 4 and it is observed that the explanatory power of the time-fixed model is higher ($R^2 = 0.67$). The same model structure was tested in the random effects model, and the best explanatory model was selected according to Hausman test statistics. Model selection for panel data should be based on information about individual-specific components and the externalities of the independent variables. The following three hypotheses were used to select the correct model. The first is whether the model includes fixed or random effects. For this purpose, the Hausman test is the most widely used test statistic. The other two tests are autocorrelation and cross-sectional dependence tests [55]. After model selection, hypotheses for the other two assumptions are tested.

3.2.1. Hausman test statistics

To determine the model suitable for the data structure, the following hypotheses regarding the Hausman test were tested and the results are presented in Table 5.

H0: Model has random effects.

H1: Model has fixed effects.

Because the p -value > 0.05 , random effects were present. Therefore, the study continued with a random effects model.

Because the panel data also include time series, serial correlation, and cross-section dependency [56] tests should also be performed to evaluate the accuracy of the model. As the presence of either or both of these dependencies increases the standard error of the estimations, the model should be interpreted after corrections are made. **3.2.2. Autocorrelation Test:**

Serial correlation tests whether sequences are temporally related to each other. Serial correlation [57], in other words, is the test of whether there is autocorrelation; if there is autocorrelation, that is, a serial dependency, it needs to be corrected. In this context, the following hypotheses were tested and the results are shown in Table 6.

H0: There is no serial correlation.

H1: There is serial correlation.

Because $p < 0.05$, we can discuss the serial correlations. Arellano [58] correction was applied to the model to solve autocorrelation and heteroskedasticity problems. The Arellano method uses a consistent covariance matrix as the estimator, and the coefficient estimates are obtained using this consistent covariance matrix. When autocorrelation/heteroskedasticity exists, the Arellano method can be used for coefficient estimation.

When the model coefficients are examined in Table 7, it is observed that they are significant for the model, and there is no change when the model coefficients are estimated using the Arellano method.

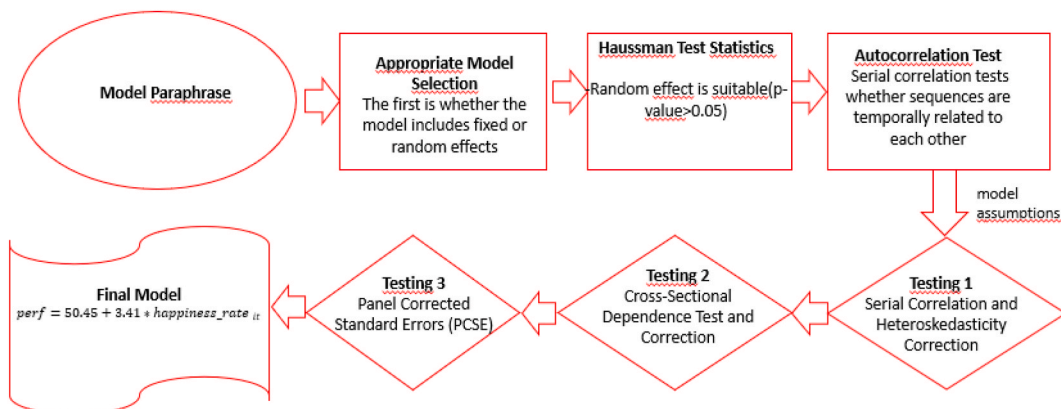


Fig. 5. Modeling process Flow.

Table 4
Random and fixed effect models results.

	Individual Fixed Effects	Time Fixed Effects	Two-way Fixed Effects	Random Effect
Happiness (Intercept)	1.08	3.42***	1.12	3.41***
R ²	0.20	0.67	0.20	0.65
Adj. R ²	0.17	0.53	0.17	0.55
Num obs.	29,939	29,939	29,939	29,939

***p<0.001; **p<0.01; *p<0.05

Table 5
Hausman test statistics results.

Lagrange Multiplier Test - time effects (Honda) for balanced panels
data: performance_score ~ happiness_score
normal = 1.3943
p-value = 0.08161
Alternative hypothesis: significant effects

Table 6
Autocorrelation test results.

Breusch-Godfrey/Wooldridge test for serial correlation in panel models
data: performance_score ~ happiness_score
Chisq = 2386.5
df = 7
p-value <2.2e-16
Alternative hypothesis: serial correlation in idiosyncratic errors

Table 7
Serial correlation and heteroskedasticity correction.

	Random Effect Model	Random Effect Model (with Arellano)
(Intercept)	50.46*** (0.37)	50.46*** (0.52)
Happiness	3.41*** (0.44)	3.41*** (0.57)
R ²	0.65	
Adj. R ²	0.55	
Num obs.	29,939	

***p<0.001; **p<0.01; *p<0.05

3.2.3. Cross-sectional dependence test and correction

Another check that should be performed when working with panel data is the test for cross-sectional dependence. Here, dependence is an indicator of stationarity and reveals the necessity of conducting unit-root tests. If there is cross-section dependence, the model needs to be re-run by making the necessary corrections. The Pesaran CD [59] test was used to test whether there was cross-section dependence. The Pesaran test provides better results when the number of N observations is larger than the T time data. The following hypotheses were used for cross-sectional dependence, and the results shown in Table 8 were obtained.

H0. There is no cross-sectional dependence in panels

H1. There is cross-sectional dependence in panels

Because the p-value is < 0.05, the H₀ hypothesis is rejected, and it is understood that there is stationarity. To correct for this

Table 8
Cross-sectional dependence results.

Pesaran CD test for cross-sectional dependence in panels
data: performance rate ~ happiness
Z = 2.2523
p-value = 0.02431
Alternative hypothesis: cross-sectional dependence

situation, the panel-corrected standard error method was used [60]. The results are shown in Table 9.

After all tests were conducted and assumptions were made, the model interpretation phase was initiated. As a result of the analysis performed with the 7-quarter panel dataset, it was determined that a 1% increase in the happiness rate caused an increase of 3.41 points in the performance score.

At any time t , the i th employee's performance score can be estimated by the following equation:

$$\text{performance score} = 50.45 + 3.41 * \text{happiness_rate}_i$$

Table 10 summarizes the Statistical Modeling section. The appropriate model, which is the random effects model, was chosen for the study, and modeling assumptions with panel data, Autocorrelation Test, Serial Correlation, and Heteroskedasticity Correction were tested. The Cross-Sectional Dependence Test and Correction were applied, and the most significant state of the model coefficients was created using Panel Corrected Standard Errors (PCSE). Finally, a final model was established to determine the degree to which an increase in employee happiness affects success.

4. Results

For several years, research has focused on the correlation between happiness and success. Studies have been conducted to investigate whether happiness has a positive impact on success or performance. In the last two decades, research on the positive effects of happiness on individuals has increased, emphasizing the significance of investigating this topic. Except for a few studies, employee happiness has not been extensively discussed in academic research, and studies have been conducted in the last two decades focusing on positive attitudes and positive feelings about some forms of happiness or experiences related to positive emotions in the organizational environment. However, extensive research on happiness at work is limited. On the other hand, happiness, which can be regarded as the life purpose of every human being, cannot be explained only in terms of objective and material elements. Considering that the working person spends most of his or her life in the workplace, the relationship between job satisfaction and happiness will draw attention.

Happiness in the workplace is affected by many factors, and, as an output, happy employees produce performance proportional to their happiness levels. Identifying factors affecting happiness and increasing levels of happiness will result in institutions with positive performance. Especially in the financial sector, where competition is intense, the importance of having happy employees is even more important today.

The literature on the correlation between performance and happiness indicates a positive relationship. However, some of the studies have been criticized for having inadequate sample sizes. In contrast, our study benefits from a large dataset collected over a long period (21 months, spanning seven terms) and analyzed for 4277 participants. Our approach of using panel data analysis with a large dataset strengthens the reliability of our findings compared to previous studies in the literature.

The present study investigated the role of happiness in business life in the relationship between performance and workplace happiness. The research findings indicate that the explanatory power of happiness at work on performance is high and that there is a positive relationship. In particular, when performance scores were at a medium level, the effect of happiness on success was higher. It is seen that the speed of happiness declines, although the positive relationship continues, when a certain level of success is exceeded. While workplace happiness maintains its importance as a precursor to success, it also confirms Fisher's thesis on happy-productive employees. As far as we have established, a 1-unit increase in employee happiness contributes to a performance score of 3.41 points. In other words, if an institution provides a 1 unit increase in happiness, its performance will increase by 3.41 points, and, in this case, it will be reflected in the profitability of the institution.

5. Discussion and conclusions

This study has yielded a significant finding: improving employee happiness should not be perceived as a cost, as it can result in a performance increase of three units, compared to just one unit in the absence of such efforts. In other words, the benefits of investing in employee happiness outweigh the costs, and can result in increased income for the organization. The present study has provided valuable insights into the relationship between happiness and performance, and the strength of this relationship. As a result, it is recommended that institutions should measure employees' happiness, identify the causes of dissatisfaction among employees, and create a happy working environment as a prerequisite for formulating their annual development strategies.

In conclusion, developing strategies to create happy employees that contribute to both the employees and the institution and understanding employees' desires will remain a critical element for institutions in the coming years. It is important to investigate in detail what factors affect happiness and whether it can be increased through training and behavior. Therefore, future research topics should include:

1. Identifying specific factors that affect employee happiness, such as personality traits.
2. Measuring the role of leadership in creating a positive work environment that fosters employee happiness and well-being.
3. Examining how different types of training and behaviors can positively impact employee happiness and performance.

By addressing these research topics, organizations can develop evidence-based strategies to create happier, more productive, and more successful workplaces.

Table 9
Panel corrected standard errors (PCSE).

	Estimate Std.	Error	t value	Pr (> t)
(Intercept)	50.45792	0.51230	98.4927	<2.2e-16***
<i>happiness_rate</i>	3.40934	0.55844	6.1051	1.04e-09***

Signif. Codes: 0'***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 '1'

Table 10
Summary of analytical modeling.

Models and Assumption	Test	Result
Choosing Model Effect (Random or fixed)	Hausman test statistics	p-value>0.05, random effects are present
Model Assumptions	Serial correlation tests whether sequences are temporally related to each other.	p-value <0.05, serial correlations is existing so should be resolved.
1. Autocorrelation Test	Arellano correction is applied to the model to solve autocorrelation and heteroskedasticity problems.	Arellano method can be used for coefficient estimation.
2. Serial Correlation and Heteroskedasticity Correction	The Pesaran CD test is used to test whether there is cross-section dependence	p-value is < 0.05. There is a stationarity.To resolve this problem, PCSE is used.
3. Cross-Sectional Dependence Test and Correction	To correct stationary problem, the panel-corrected standard error method is used	p-value is < 0.05. The new coefficients of the model is determined.
4. Panel Corrected Standard Errors (PCSE)		
Model After Assumption Corrections	<i>performance score</i> = 50.45 + 3.41 * <i>happiness_rate_{it}</i>	

Annex: Definitions used in the study; Performance score; consists of the points that the employees receive from groups, such as sales of banking products, acquiring new customers, and maintaining existing customers, which are given as targets every three months [61].

Questionnaire; "How happy are you when you think about your working life?"

Author contribution statement

Ayfer Erkoç: Conceived and designed the experiments; Performed the experiments; Analyzed and interpreted the data; - Contributed reagents, materials, analysis tools or data; Wrote the paper.

İlker Met: Conceived and designed the experiments; Performed the experiments; Analyzed and interpreted the data; - Contributed reagents, materials, analysis tools or data; Wrote the paper.

Birtan İpek: Performed the experiments; Contributed reagents, materials, analysis tools or data; Wrote the paper.

Nefise Atakara Kızıldere: Performed the experiments; Contributed reagents, materials, analysis tools or data; Wrote the paper.

Data availability statement

The data that has been used is confidential.

Declaration of competing interest

The authors declare no conflict of interest.

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