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Implementation of personnel evaluation systems in Chilean companies, an initial stage to measure their impact on company management

Implementación de sistemas de evaluación de personal en empresas chilenas, etapa inicial para medir su impacto en la gestión de la empresa

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Abstract

The implementation of performance evaluation systems requires a permanent review; In this regard, the lack of audit of human resources in organizations affects this specific area. The main objective of this work was to identify the variables that influence the stage of implementation of the process of measuring the performance of workers. It is an analytical, observational cross-sectional study, which was conducted using a specific evaluation´ instrument to evaluate the implementation stage of the performance evaluation system, which included the evaluation of 22 variables and the application of 61 specific audit procedures and that It was carried out in 116 companies, public and private, of different industries. For the exploratory factor analysis were applied. The principal factors that influence the process of implementing the process of evaluating the performance of workers in the present study are; Information, Evaluation, Training, Appeal, Feedback and Application. These components are the initial source for the construction of an index that allows measuring the impact of performance evaluation in the management of the company.

JEL Code: M12, J24, M42
Keywords: human resource auditing; performance evaluation and implementation of performance evaluation

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Resumen

La implementación de sistemas de evaluación del desempeño cada vez requiere de mayor revisión, en este aspecto existe una falta de auditoría de recursos humanos en las organizaciones, en esta área específica. El objetivo principal de este trabajo fue reducir la dimensionalidad de las variables que influyen en la etapa de "implementación" del proceso de medición del desempeño de los trabajadores. Es un estudio analítico, observacional de corte transversal, que incluyó la evaluación de 22 variables y la aplicación de 61 procedimientos de auditoría específicos en 116 empresas, públicas y privadas, de diferentes rubros. Para el análisis se aplicó técnicas de análisis factorial exploratorio. Los resultados muestran que los factores en la implementación del proceso de evaluación del desempeño de los trabajadores en el presente estudio son Información, Evaluación, Capacitación, Apelación, Retroalimentación y Aplicación. Dichas componentes son una fuente inicial para la construcción de un índice que permita medir el impacto de la evaluación de desempeño en la gestión de la empresa.

Código JEL: M12, J24, M42
Palabras clave: auditoria de recursos humanos; evaluación del desempeño e implementación de la evaluación del desempeño

Introduction

Evaluating workers' performance in companies is something that both companies and workers consider of utmost importance. Authors such as Milkovich and Boudreau (1994), Werther and Davis (2013), Ariza, Morales, and Morales (2004), Ulrich and Brockbank (2007), Luecke (2007), Dolan, Valle, Jackson, and Schuler (2007*)*, Sánchez (2014), and Chiavenato (2017) clearly state the importance of performance evaluation for the organization and of performing it as a systemic process. It will always be necessary for companies to evaluate the performance of their personnel. Sastre and Aguilar (2003), Ramlall (2006), Wright, Dunford, and Snell (2001), Kliksberg (1998), Gruman and Saks (2011), Valle (2004), and Bock (2015) assert that organizations must evaluate the performance of their workers if they want to ensure that they meet their strategic objectives. The achievement of the strategic objectives of organizations is directly related to the performance of the staff. Companies today need relevant information that their performance evaluation systems should provide. One of the most important reasons organizations should implement a system of evaluations and management control of their staff is to determine if their workers effectively contribute to achieving the objectives. Sánchez and Alvear (2018) state the need to carry out adequate planning of the performance evaluation system, especially in the implementation stage. Similarly, Manjarrés, Castell, and Luna (2013) and Kehoe and Wright (2013) state that the performance evaluation must be aligned with the strategic direction of the company, the organizational processes, and with the objectives and indicators that are to be achieved throughout the organizational operation. For Sánchez and Calderon (2012), Parent, Sloan, and Tsuchida (2015), and Sánchez and Ramirez (2017), the current

performance, and especially the potential and future performance of workers in the future, should be one of the most relevant variables in the management of people.

The problem detected is that the implementation stage of performance evaluation systems in organizations is generally something not often studied; this justifies the undertaking of this work, as human resources audits are increasingly required (Sánchez & Rojas, 2014). In the planning stage of the evaluation system, all aspects related to the variables that may affect its implementation must be considered (Sánchez & Alvear, 2018). The main objective of the research was to identify the variables that influence the implementation of the process of measuring workers' performance. To achieve the above, specific human resources audits were conducted in the implementation stage of personnel evaluation processes in organizations of different types, lines of business, and sizes. The evidence found in the audits carried out in 116 Chilean organizations demonstrated that none fully complied with the requirements for a good implementation stage of their evaluation systems. It is necessary to continue working on this aspect, and it is proposed that future research should focus on only six variables.

Theoretical framework

Performance evaluation

There are different views on the issue of performance and its evaluation. For example, Dessler and Varela (2011) define evaluation as the assessment of a worker's current or previous performance compared with the standards. Similarly, Mondy and Noe (2005) associate it with a system of review and evaluation of individual or teamwork performance. For Pereda and Berrocal (2011), performance evaluation is the systematic and periodic process of objectively measuring the level of effectiveness and efficiency of an employee or team. In their work, Gómez-Mejía, Balkin, and Cardy (2008) add to this by saying that performance appraisal involves identifying, measuring, and managing people's performance in an organization. For their part, Sastre and Aguilar (2003) postulate that it is a systematic and structured process of monitoring the employee's professional work to assess his performance and the results achieved in the performance of his position, as do Fombrun, Tichy, and Devanna (1984). For Salgado and Cabal (2011), the purpose of performance evaluation is to systematically and objectively assess the performance of employees in the organization. It is the degree to which the employee meets the requirements of his position (Trillo, 2001) or how a worker performs the functions and tasks assigned to them (Salgado and Cabal, 2011). For their part, Pérez, Leyva, Bajuelo, and Pérez (2015), Alles (2014), and Valdés, Garza, Pérez, Gé, and Chávez (2015) add to the above by saying that the performance evaluation must be in

accordance with the mission and objectives set by the company and the decisions related to their fulfillment. On the other hand, Sánchez and Bustamante (2008) relate it to added value and state that organizations need to know how employees perform their work to identify those who effectively add value and those who do not. These authors further state that it is necessary to discriminate between effective and ineffective employees.

It is essential to know how human resources are used in organizations and whether they contribute to the organization. Accordingly, it is necessary to evaluate their performance. However, as Sánchez and Calderón (2012) mention, evaluation was historically restricted to the boss's simple unilateral judgment regarding his employee's work. Still, as human resources management has evolved, generations of evaluation models have been established to the point that fourth-generation evaluation models can be found today.

Implementation of the performance evaluation process

The implementation process for the performance appraisal process should follow a pre-established structure. For Fernandez, Cubiero, and Dalziel (1996), the steps to evaluate workers' performance are first to clearly determine the reason for implementing the process, and the organization must decide the results it needs to obtain through the process. Second, it is necessary to design a process adapted to those purposes. It is very likely that within the same organization, the process will have to vary to reflect the different functions and jobs and provide adequate training to all staff. Finally, it is important to review the impact of the process continuously.

It should be noted that according to Pereda, Berrocal, and López (2002), there are a series of principles that should be respected when implementing a performance appraisal program. Performance evaluation is a system, not a technique. Therefore, the evaluation method should be chosen according to the organization's characteristics and the system's objectives. Performance evaluation is not a disciplinary system, and one of its most important purposes is to promote employee development. The program should be approached as an opportunity to improve individuals and the organization. All persons who are to act as evaluators should be trained in the objectives of the program and the techniques to be used. It is also necessary that the employees, who are to be evaluated, receive parallel training, both in the aspects of self-evaluation and in the objectives of the program and in the system to be followed. All those involved must be committed and participate in the evaluation system, so it will be necessary that the program's objectives have been clearly defined and communicated beforehand. In no case will the person being evaluated be compared with other colleagues since the objective of the evaluation is to determine each employee's performance, not to compare one with another. Finally, since the evaluation systems work based on good

superior/subordinate communication, they are more effective when there is a participative management style in the organization.

Employees should be given all the information about the complete process of implementing the evaluation system, i.e., they should be informed about when they will be evaluated, who will evaluate them, and how it will be done, so that there are no surprises when the evaluation is being carried out and so that they are not on the defensive (Maristany, 2007). One of the essential problems that occur in the process, according to Werther and Davis (2013), is the evaluator's understanding of the process and its compatibility with the system adopted, for which some organizations have chosen to develop detailed manuals in which the methods and policies in force, guidelines for conducting evaluations, as well as definitions of essential parameters are described in detail. It is also important to mention that the training of evaluators should be an ongoing process to ensure consistency and accuracy, including how to conduct evaluation interviews and give and receive feedback (Mondy & Noe, 2005). Another aspect to consider in the implementation is the recording of information. Although keeping a continuous record of observed and reported incidents can be a tedious task for supervisors, it is essential when it is desired to conduct an evaluation that provides useful information (Mondy & Noe, 2005). The supervisor must report on the evaluations given to their immediate boss so that there is more than one opinion regarding the employee's performance (Maristany, 2007). Documentation of all standards in implementation is vital; if the standards are based on subjective concepts, the evaluation will require interpretation and will contain less clear personal judgments and decisions (Harris, 1993). If standards have been met, the worker is rewarded for their efforts. Rewards may be given to support good performance. Sometimes sanctions are applied to end poor performance and stimulate improvement. The use of positive and negative motivation techniques can be very effective if applied to influence worker performance (Harris, 1993).

The use and management of forms are essential to conduct a good evaluation. Once the evaluation is done, the forms are returned to human resources. It is then time to analyze the contents, detect the conflicts in the evaluation, and determine which human resources should help. Additionally, data on potential, career, training, and remuneration should be included (Maristany, 2007). Furthermore, the proper use and handling of forms are key for process controllers and other administrative personnel, who must receive the information to coordinate individual efforts with the needs of the company (Harris, 1993).

If the company does not have a formal complaint procedure, it should develop one that permits employees to challenge evaluation results that they consider inaccurate or unfair. They should have a procedure for presenting their complaints and have them addressed objectively (Mondy & Noe, 2005).

If, in addition to evaluating performance, an assessment of potential is made, graphs of potential by organizational units also provide interesting information to find out which units should be emphasized

for talent development. The above would be represented in an organizational chart where, with a color code, the level of potential achieved in each organizational unit can be identified (Sastre & Aguilar, 2003).

Finally, it is necessary that before the final evaluation interview, a copy of the evaluation results is given to the employee for review before the interview, in case the organization wants the employee to have a prepared reaction without surprises, at least one day in advance. Maristany (2007) states that in this way, the employee will have time to think about the situation, which will improve communication afterward.

To understand the complexity of a performance implementation process, there is enough experience in the field of education, especially in the public sector in Chile; there are several authors who address the topic, including Assael and Pavez (2008), Horton (1999), Quaas and Crespo (2003), Avalos, B. and Assaél, J. (2006), Inzunza, J. (2008) and Rueda, M., Elizalde, L. and Torquemada, A. (2003). The difficulties in implementing the academic evaluation process are multiple, complicated to address, and difficult to solve (Luna & Torquemada, 2008; Montenegro, 2003; & Zabalza, 2003). A vision that integrates the public and private worlds would relate an appropriate and necessary implementation of the system with the organization's compensation system (Sánchez, Pizarro, Alvarez, Castillo, & Alfaro, 2017).

In the business environment, documentation on the implementation process of personnel evaluation systems is much scarcer. Authors such as Siegfried (1965), Alles (2013), and Chiavenato (2017) propose successful reviews of the implementation steps of personnel evaluation processes. On the other hand, other authors suggest that the risks associated with the evaluation process in companies should be rigorously assessed (Sánchez, 2013; Sánchez & Rojas, 2014).

Audit and human resources

For Pérez and Oreo (2006), the auditing of human resources looks for deficiencies and contributes to improving the processes in the company, including each of the workers of the organization. The audit helps to evaluate each employee to see if they are the right person for the position and to review what they can improve to contribute more to their job (Sanchez & Rojas, 2014). The scope of action of a human resources audit is very broad. In fact, Garcia (2003) states that this audit is applicable not only to the internal training of a management team but also to its values, management style, and orientations.

There are other positions, such as that of Sánchez and Rojas (2014). They define the human resources audit as a systematic evaluation process that will validate human resources policies, practices, and programs in terms of their contribution to the objectives of the company as an organization. Moreover, it will conclude with a report containing the strengths and weaknesses of the activities carried out, as well

as indications for improvement. By conducting a human resources audit, some benefits are obtained, including identifying the contribution that the human resources department makes to the organization; improving the professional image of the human resources department; encouraging human resources personnel to assume greater responsibility and act at a higher level of professionalism; clarifying the responsibilities and duties of the HR department; facilitating the uniformity of HR practices and policies; highlighting latent, potentially explosive problems; ensuring compliance with legal requirements; reducing HR costs through improved practices; promoting necessary organizational changes, and identifying critical issues. Contained within those problems is the audit risk involved in reviewing company performance, as stated by Sánchez (2017). Accordingly, the human resources audit is oriented toward evaluating the strategic management of human resources (De Quijano & Navarro, 1999, Sánchez & Bustamante, 2008; Nevado, 1988). The audit of human resources management encompasses three elements: human resources specialists, line managers, and workers (Alfaro de Prado, A., Rodriguez, L. & Román, M. 1999). A more strategic view of the human resources audit, which considers the interrelation between the organization's objectives with the personnel area's policies and strategies, is the one expounded by Sánchez Pérez (2014) and Martinez, Fernandez, and Tarazona (2016).

From the point of view of technical processes, one of the first published audit programs, although very rudimentary, is of Brazilian origin (Siegfried,1965). There is also a classic that, from the very start, dared to design an audit program (Chiavenato, 2017). There is a great difficulty in designing an audit program to evaluate human resources, and this is due to the combination of two very different areas, auditing and human resources. An adequate evaluation, therefore, must consider both theoretical frameworks. The construction of the audit program published by Sánchez and Rojas (2014) has as theoretical support both frameworks, one that comes from the school of classical auditing with authors starting with Paton (1943), Mautz (1970), to more contemporary works such as those of Arens, Elder, and Beasley (2007), PriceWaterhouseCoopers (2007) and Fonseca (2013). It is also important to mention that in the interim of those decades, there were contributions in the area of auditing by Coopers and Lybrand (1984), Slosse *et al.* (1991), Arens and Loebbecke (1996), Téllez (2004), and Whittington and Pany (2005). In the case of contributions in the area of human resources, something similar happened, starting with the influence of some authors in the eighties and nineties, such as Miranda, Torras, and Gonzalez (1982), Bentley (1993), Valle and Weiss (1995), Rodriguez and Ramirez (1997), Dolan, Schuler, and Valle (1999), to more recent influences such as Werther and Davis (2013), Sánchez (2013), Alles (2014), Sánchez-Perez (2014), and Chiavenato (2017). However, it is also very important to recognize the contributions of authors in the decade of the 2000s, such as Reyes (2002), Sastre and Aguilar (2003), Ariza, Morales, and Morales (2004), and Mondy and Noe (2005). In this research, the evaluation

instrument that Sánchez and Rojas (2014) developed was used since it considers all the influences of both fields (Auditing and Human Resources).

The human resources audit is performed under risk conditions. Therefore, it is essential to analyze, evaluate, and scale the various risks that arise in its execution. These risks should be the basis of the audit procedures (Sánchez & Ramirez, 2017). In short, a strategic audit should be performed on the people management function to adequately fulfill the organization's objectives (Martinez, Fernandez, & Tarazona 2016). For each attribute reviewed and evaluated in the human resources audit, the technical concept that can generate a risk for the auditor should be analyzed in detail (Sanchez, 2019).

In this context, this work aims to identify the structure of the relationships between a group of variables associated with the "implementation" of the employee performance evaluation process in various organizations in Chile.

Material and methods

Study design

This is an analytical, observational, cross-sectional cohort study of 116 Chilean public and private companies. In terms of the size of the companies, they consist of 46 large companies, 60 medium or small companies, and 10 micro-companies. The companies under study correspond to the following sectors: Agriculture 5, Mining 1, Manufacturing 2, Supplies 21, Construction 4, Commerce 8 Hotels and Restaurants 9, Transportation 4, Financial Intermediation 10, Public Services 20, Gaming and Communication 2, Teaching 21 and Services 9 companies. Of the 116 organizations evaluated, 25 are public organizations, and 91 are private organizations.

Data were collected directly by the working group between June 2016 and July 2017. Statistical analysis was performed with SPSS version 22.

Reliability of the instrument

Based on an instrument developed by Sánchez and Bustamante (2008), which was reviewed by experts and subsequently presented for review at several international congresses (XLIII Annual Assembly of the Latin American Council of Management Schools, held in Mexico in 2008, CLADEA 2009, held in Ecuador, and CLADEA 2011, held in Puerto Rico). The instrument was applied in all stages of the implementation process of the performance evaluation system, as presented in Figure 1.

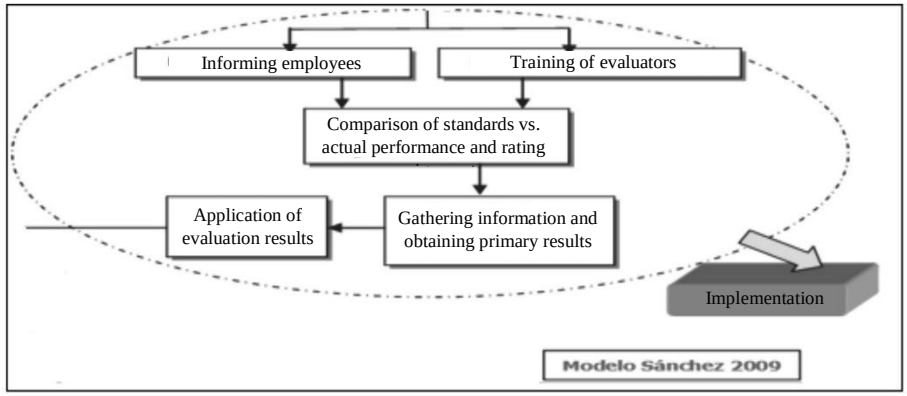

Figure 1. Flowchart of the performance implementation process in the organization.
Source: Sánchez, J. (2014). *Control de gestión del desempeño de los recursos humanos*. P. 120. Spain: Editorial Apyce.

An audit team recorded the data. An electronic form was used to reduce bias and to prevent inaccurate values, which were recorded by people who did not participate in the analysis. The electronic form (Microsoft Office), designed based on the selected instrument, contains twenty-two variables to be evaluated.

Variable definition

These are the procedures carried out, divided by variables, applied to each of the 116 companies, whose rating is as follows:

1. 0-57 points Poor
2. 58-72 points Fair
3. 73-86 points Good
4. 87-100 points Very good

VAR01. Employee briefing: Make inquiries with process owners about conducting briefings for employees and their representatives. Obtain confirmations from employees or their representatives that briefings will be held. Review documentation such as invitations to attend the briefings. Review records showing employee attendance at such sessions and request employees to explain the evaluation system applied to them.

VAR02. Validity of information: Ask those responsible for delivering the information to specify what information was given to employees and analyze their statements to verify that all the necessary points were covered. Ask employees to answer whether they are aware of the following aspects of the

system, which should have been covered in the briefing, to verify that they are familiar with them (objective pursued by the system; performance expectations; dimensions; scales used; timeliness and periodicity of application; who will be their evaluators; what each of them will evaluate; possible actions and consequences according to the results obtained, and when the application begins). Verify that an evaluation information document was given to the employees by observing the document or the delivery confirmation. Compare the information the employees have with that provided by the process leaders.

VAR03. Evaluator training: Inquire with those responsible for the process whether training was conducted for the evaluators. Confirm the completion of such training with the evaluators. Review written invitations sent to the evaluators asking them to participate in the training. Review documents showing expenses related to the training, e.g., facility rentals, equipment expenses, food, and trainers' salaries, and review records showing employees' attendance at the training.

VAR04. Timeliness of training: Verify that training was conducted before the evaluation period through inspection of records and inquiries with staff.

VAR05. Validity of training: Inquire with the evaluators to determine their knowledge of the relevant aspects of the evaluation process (Explanation of the objective pursued by the system; dimensions; scales used; performance expectations; timeliness and periodicity of the application; how to apply the evaluation, regarding the parameters, possible problems and how to overcome them; how to conduct interviews and provide feedback; possible actions and consequences, according to the results obtained; when to start its application, and to conduct evaluation exercises, and use of instruments). Verify the delivery of an evaluation manual containing all relevant aspects of the process explained in detail by following the manual. Evaluate the expertise or knowledge of the subject of the personnel that conducted the training. Verify the curriculum, that they have experience in the subject of performance evaluation, that they have experience in previous training in the company and the performance of previous activities related to the subject.

VAR06. Information symmetry: Perform a comparison between the information available to the employees and the information available to the system evaluators and verify that they match.

VAR07. Evaluators' acceptance of the system and its advantages: conduct inquiries with evaluators to determine if they consider the system to be effective and contribute to performance improvement; review forms or other records demonstrating the use of the system by evaluators, and review historical evaluations to determine the evolution of performance and inquire with personnel regarding the time dedicated to conducting evaluations.

VAR08. Existence and documentation of continuous supervision: review documents or files containing records of supervisions or employee performance; verify the existence of reports delivered by workers to their superiors and determine by the existence of annotations or signatures the review of the

same; review dates recorded in documents; verify that these are periodic; inquiry into records to verify that the documentation of the supervision is carried out; review the files to verify that the complementary method defined by the company is being used; inquire with the employees about the performance supervision or review; and examine letters or similar documents, where the employee is informed about their performance, in periods previous to the one established for the formal evaluation and in the current period.

VAR09. Conduct interviews: Conduct inquiries with workers to verify if they receive constant feedback. For a representative sample of workers, identify deficiencies or outstanding ratings in the evaluations and ask the supervisor when they perceived such deficiencies or excellent performance; consult with the employees involved when they were made personally aware of it by their manager and determine the time elapsed between the two events; and review informal records showing meetings between supervisors and those being evaluated, containing, for example, the topics discussed in those meetings.

VAR10. Compatibility between the objectives of the evaluator and those of the organization: inquire with the evaluators about the purpose for which they conduct the evaluations and compare what the evaluator pursues and the objective of the system stated by the organization; inquire with those evaluated about their opinion of the objective pursued by the evaluator; make inquiries to determine what the conclusions of the interviews are, and verify if these conclusions are related to the objective stated by the organization.

VAR11. Formal evaluation documentation: review documentation or files corresponding to formal evaluations.

VAR12. Uniformity in the application of the standards of the position: know the standards; review the evaluations made of a sample of employees in the same position and see to the application of such standards; perform independent calculations of the ratings that should have been given to the employees of the same position, and verify that they correspond to those given by the evaluator.

VAR13. Evaluation review: select a sample of evaluations and analyze them for evidence of review and inquire with the evaluator's superiors regarding the review of evaluations given by the evaluator.

VAR14. Accuracy of rating: for a sample, redo the mathematical calculations.

VAR15. Timely delivery of information: check with the employee the date of delivery of the information and compare it with the date established for delivery; review the employee's signature on the evaluation or observation sheet as compliance with an administrative compliance procedure.

VAR16. Employee copy of appraisal: verify that employees were given a copy of their appraisal and check that the copy was given in sufficient time for them to review it before the interview.

VAR17. Appeals: obtain a description of the appeals process; check that all appraised staff can decide whether to appeal the outcome of their appraisal; identify employees who appealed and follow up on their cases to determine if they were followed up on concerning the appeals procedures.

VAR18. Effectiveness of the appeals process: follow up on evaluations that were reconsidered and analyze the causes; inquire with the worker if they considered the appeals process effective; and inquire with the evaluator if they considered the resolution of the appeal pertinent.

VAR19. Application of predefined actions: identify what uses were made of the assessments, compare performance with those predefined, analyze assessments located at the extremes, and follow up and assess whether the actions taken are effective.

VAR20. Privacy and integrity of information: determine the existence of controls to ensure limited access to documentation and verify that evaluations from previous periods (that may still be needed) are held by the human resources department in a secure location.

VAR21. Adequacy of resources and time: compare the total time covered by the implementation process with the time allocated for it; compare the evaluation time used per worker with the defined time; make inquiries with personnel regarding the adequacy of resources and reconcile the actual expenses with those budgeted.

VAR22. Performance of the evaluation process: compare the performance of the process with the planning made by the organization concerning the various items (previously defined activities and their sequence; time used to perform the various activities; dates established; frequency of evaluations, and personnel responsible). Make sure that all workers have been evaluated by comparing the payroll for the period with the number of evaluations performed and with the attendance records and, for a sample of workers, ensure that the evaluated worker exists through inquiry and observation tests and that they rendered their services in the period under evaluation.

The data analyzed in this research are from primary sources collected through documentary analysis techniques, non-participatory direct observation, and process analysis. Of a total of 116 companies evaluated, 105 which met the inclusion criteria were included, representing 91% of the total. The inclusion criteria are mainly related to the completeness of all the information requested in the instrument applied.

Factor analysis

The audit procedures applied were analyzed based on exploratory factor analysis. That is, to find those factors that explained the maximum variability and were structured with variables (items) specific to the factor (Vivanco, 1999; Garmendia, 2007).

First, an analysis of the correlation matrix was performed. For the analysis of the eigenvalues and eigenvectors of the correlation matrix, 105 cases were used, and 11 cases contained missing values. The instrument's reliability was evaluated through the analysis of its internal consistency by calculating Cronbach's Alpha coefficient. An Alpha equal to or greater than 0.7 was considered satisfactory.

Generation of the correlation matrix

A matrix of correlations between the 22 variables under study was obtained, and two statistical tests were applied: Kaiser - Meyer - Olkin Coefficient (KMO) with an acceptance level higher than 0.5 and Bartlett's Test of Sphericity with an acceptable significance level of less than 5%, to evaluate the efficacy of carrying out a factorial analysis.

Factor extraction

The method used to extract the initial factors from the autocorrelation matrix is the Principal Component Analysis method. The new factors will be a linear combination of the original variables and are not correlated. First, the model looks for the factor that explains the greatest amount of variance in the correlation matrix, and second, a line combination, which seeks to explain the maximum proportion of the remaining variance. Factors whose variance is greater than 1 are incorporated.

(Garmendia, 2007). Linear combinations of the type:

$$Y_k = a_{k1} x_1 + \ldots + a_{kp} x_p = \sum a_{kj} x_j,\ k = 1,\ldots,p,$$

Calculation of communalities

It is determined by calculating the multiple determination squared coefficient and taking values between 0 and 1. If a factor has a low eigenvalue, then it contributes little to the explanation of the variance of the variable. (Garmendia, 2007).

Determination of the number of factors

For the study, those factors whose eigenvalue is greater than 1 will be taken, complemented by the sedimentation graph that shows how the eigenvalues decrease, selecting the number of factors corresponding to the point where the graph curve becomes horizontal (Garmendia, 2007).

Rotation of factors

The orthogonal system was used, which maintains the independence between the rotated factors. Among the methods offered by this system, the varimax method was applied, generating a matrix of rotated components that indicates the correlation between each variable and its corresponding factor (Garmendia, 2007).

Evaluation of model fit

For this, the initial correlation matrix will be compared with the matrix generated from the latent variables. The resulting factors are interpreted by assigning them a name considering the original variables included in each factor (Garmendia, 2007).

Results and discussion

A Cronbach's Alpha of 0.884 was obtained, thus proving the reliability of the instrument applied. The sample adequacy test (KMO) is 0.808; the other variables perfectly predict each variable; that is, the relationship between the variables is high. Following the above, Bartlett's test of sphericity is significant ($p = 0.000$), thus confirming suitability for factor analysis. Also, of the 462 correlations in the correlation matrix, 272 (59%) are significant at the 0.01 level.

Table 1
KMO and Bartlett's test

Kaiser-Meyer-Olkin measure of sampling adequacy (KMO)		.808
Bartlett's test of sphericity	Approx. chi-squared	1481.823
	gl	231
	Sig.	.000

Table 2 presents the 6 factors extracted from the initial matrix using the principal components method. These six factors have an eigenvalue greater than 1. Factor 1 accounts for 35.19% of the variance, and the six factors, in general, account for 72.6% of the total variability, suggesting that these six components would adequately explain the variability of the data.

Table 2
Percentage of total variance explained

	Initial eigenvalues			Extraction sums of squared loadings			
Component	Total	Variance %	Accumulated %	Total	Variance Accumulated %		%
1	7.744	35.198	35.198	7.744	35.198	35.198	
2	2.379	10.814	46.012	2.379	10.814	46.012	
3	1.980	9.000	55.012	1.980	9.000	55.012	
4	1.696	7.710	62.722	1.696	7.710	62.722	
5	1.159	5.267	67.989	1.159	5.267	67.989	
6	1.021	4.641	72.630	1.021	4.641	72.630	
7	.839	3.812	76.443				
8	.824	3.744	80.186				
9	.726	3.301	83.487				
10	.656	2.983	86.470				
11	.478	2.175	88.645				
12	.437	1.988	90.633				
13	.376	1.710	92.343				
14	.330	1.502	93.845				
15	.302	1.374	95.219				
16	.233	1.060	96.279				
17	.217	.986	97.264				
18	.166	.755	98.019				
19	.138	.629	98.648				
20	.126	.573	99.221				
21	.106	.480	99.701				
22	.066	.299	100.000				

Source: research data, SPSS

The sedimentation or eigenvalue graph presents a steep curve up to point 6 (axis number of factors) and then continues as a straight line. Thus, according to this method, six principal components are also inferred. Figure 2.

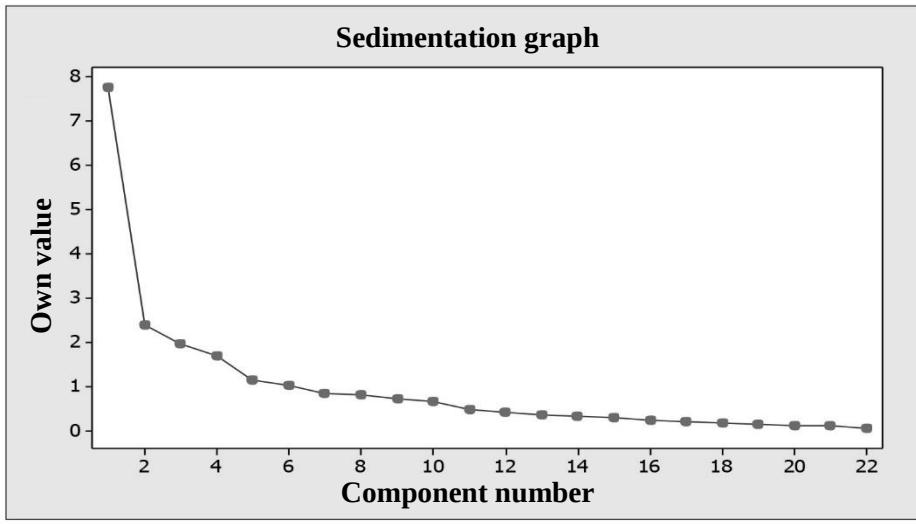

Figure 2. Cattell (1966) sedimentation or eigenvalue graph.
Source: research data, SPSS.

For the data on the implementation of personnel evaluation systems in Chilean companies, the component matrix is defined using the principal component extraction method. Component 1 presents variables that have high saturation in each factor.

Table 3
Component matrix

	Components					
	1	2	3	4	5	6
VAR00001	.723	.001	-.440	-.019	-.088	-.071
VAR00002	.774	-.003	-.388	-.063	-.156	-.165
VAR00003	.528	-.716	.200	.088	-.020	.037
VAR00004	.507	-.784	.159	.084	.084	-.003
VAR00005	.577	-.718	.160	.134	-.123	-.043
VAR00006	.742	.082	-.369	-.189	-.007	.006
VAR00007	.848	.169	.175	-.169	.023	-.024
VAR00008	.605	.398	.296	-.029	-.054	.043
VAR00009	.493	.195	-.100	.047	-.144	.690
VAR00010	.740	.061	-.124	-.189	-.109	.182
VAR00011	.656	.352	.229	-.057	-.098	-.317
VAR00012	.347	-.111	-.001	-.402	.698	.248
VAR00013	.630	.358	.338	-.063	-.103	-.175
VAR00014	.296	.224	.475	-.140	.532	-.134
VAR00015	.798	.076	-.163	.002	.222	.077
VAR00016	.700	-.133	-.007	.068	-.105	-.127
VAR00017	.248	.249	-.241	.725	.226	-.258
VAR00018	.148	.079	.084	.816	.258	.121

VAR00019	.479	.156	.486	.381	-.166	.334
VAR00020	.526	.111	.396	-.053	-.220	-.037
VAR00021	.293	.188	-.574	.146	.053	.117
VAR00022	.700	-.152	-.241	.034	.148	-.183

Source: research data, SPSS

Axis rotation was performed to select a simpler and more interpretable solution. The Varimax rotation method was used, making it possible to reduce the number of variables with high saturation in each factor. The normalization method used was Kaiser. The rotation converged in six iterations.

Table 4
Rotated component matrix

	Component					
	1	2	3	4	5	6
VAR00001	.809	.186	.183	.045	-.025	.066
VAR00002	.819	.284	.218	-.009	-.071	-.002
VAR00003	.132	.095	.896	-.003	.074	.076
VAR00004	.145	.017	.931	.019	.150	.004
VAR00005	.198	.135	.921	.016	-.045	.033
VAR00006	.784	.253	.108	-.075	.133	.122
VAR00007	.459	.682	.213	-.035	.252	.148
VAR00008	.208	.708	-.030	.073	.126	.228
VAR00009	.341	.171	.009	.028	.051	.800
VAR00010	.586	.370	.190	-.134	.110	.318
VAR00011	.326	.773	.017	.058	.031	-.107
VAR00012	.222	-.023	.137	-.133	.862	.110
VAR00013	.217	.794	.026	.036	.066	.029
VAR00014	-.125	.491	-.003	.117	.628	-.137
VAR00015	.635	.331	.201	.171	.328	.186
VAR00016	.461	.386	.412	.086	-.018	.027
VAR00017	.299	.072	-.082	.836	-.076	-.144
VAR00018	-.066	.031	.113	.852	.019	.195
VAR00019	-.103	.566	.238	.328	-.056	.525
VAR00020	.075	.649	.218	-.060	-.031	.137
VAR00021	.600	-.144	-.173	.221	-.016	.167
VAR00022	.635	.200	.352	.148	.174	-.092

Source: research data, SPSS

The criterion for selecting the items in each factor is a saturation level higher than 0.7 (Garmendia, 2007). This saturation level is presented in the rotated components matrix, and with the selected items, the next step is to label each of the six main factors. The following are at the level of analysis of the main components:

- For PC 1, the "Information" variable is inferred, representing a variance of 7.7437 and explaining 35.2% of the total variance in the data. It is observed that it has a higher positive correlation

with information provided to employees (0.8), validity of information (0.81), symmetry of information (0.78), and there is a low correlation with the rest of the variables.

- The "Evaluation" variable corresponds to PC2, which presents a variance of 2.3790, and explains 10.8% of the total variance in the data. It is observed that it has a higher positive correlation with the variable existence and documentation of continuous supervision (0.70), formal evaluation documentation (0.77), and evaluation review (0.79), and there is a low correlation with the rest of the variables.
- The "Training" variable corresponds to PC 3, which presents a variance of 1.9800 and explains 9% of the total variance in the data. It is observed that it has a higher positive correlation with the variables training of evaluators (0.89), timeliness of training (0.93), validity of training (0.92), and there is a very low correlation with the rest of the variables.
- The "Appeal" variable corresponds to PC 4, which presents a variance of 1.6962 and explains 7.7% of the total variance in the data. It is observed that it has a higher positive correlation with the variables appeal (0.83) and efficiency of the appeals process (0.85), and there is a very low correlation with the rest of the variables.
- The "Feedback" variable corresponds to PC 5, which presents a variance of 1.1588 and explains 5.3% of the total variance in the data. It is observed that it has the highest positive correlation with the interviewing variable (0.86) and a very low correlation with the rest of the variables.
- The "Application" variable corresponds to PC 6, which presents a variance of 1.0210 and explains 4.6% of the total variance in the data. It is observed that it has the highest positive correlation with the variable uniformity in applying the standards of the position (0.8), and there is a very low correlation with the rest of the variables.

Items 9, 10, 16, and 19 are the items that obtained low discrimination among the six factors.

It can be inferred that with the identification of this component for each of the processes of employee performance evaluation, it would be possible to construct an index to measure the impact that employee performance evaluation would have on the company's management. Therefore, this study contributes to this area of study by identifying the factors for the first "implementation" process. Siegfried (1965), Alles (2013), and Chiavenato (2017) state that documentation on the systems implementation process is much scarcer at the enterprise level. On the same topic, the authors Manjarrés, Castell, and Luna (2013) and Kehoe and Wright (2013) state that strategic definition and subsequent follow-up are essential. Therefore, this work contributes to the establishment of the "implementation" stage of personnel evaluation processes.

Conclusions

Twenty-two variables were studied and covered by applying 61 specific audit procedures, which were aimed at evaluating the entire process of implementing the performance evaluation of workers.

In this study, the factors identified in implementing the employee performance evaluation process are information, evaluation, training, appeal, feedback, and application. These components are the source for constructing an index to measure the performance evaluation of workers in the company's management.

These factors could be measured across the board in companies belonging to the education and culture sectors, non-profit institutions, utilities, retail, services, transportation, financial, agriculture, construction and real estate, health, meat producers and processors, and automotive industries.

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