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The Scale of Causes of *Churning*: Elaboration and Validation for Portuguese Human Resources

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Abstract: The present study has, as its objective, the construction and validation of a scale of causes of *churning*. Through both literary review and the results obtained through the performance of interviews in a previous study, a scale composed of 35 items was elaborated. This scale was applied online, through Google Forms, via Linkedin Corporation in the period ranging from June to September 2021. The validity of the scale was conducted through first and second order factor analysis so to confirm its hierarchical structure. After validation by exploratory factor analysis (n = 349), its structure was verified, and the model was subsequently adjusted by confirmatory factor analysis (n = 452) using structural equations. The reliability and internal consistency of the instrument was also tested with values in all dimensions above 0.7. Thus, it is concluded that this new instrument holds nine items and three dimensions, which possesses acceptable validity and reliability, and can be used to diagnose the causes of *churning* of human resources.

Keywords: scale of churning; working conditions; churning; causes of churning

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1. Introduction

Within the context of the current economic globalization and ongoing technological innovation, the concept of *churning* has been gaining relevance in the field of human resources due to increasing competitiveness in the labour market, inspiring workers to leave their current organizations for competing companies (Zhao et al. 2018). However, there is an enormous complexity related to its operationalization in the management of human resources.

In light of the currently ongoing technological, social, and economic changes that organizations have been faced with, it becomes imperative for organizations to act with preventative measures to counter the increasing competitiveness.

Due to the multiplicity of definitions stemming from the concept of *churning*, and considering the existing literature and its subsequent complexity (Burgess et al. 2000; Duhautois et al. 2016), we chose to adopt, as a premise of this concept, the costs associated with voluntary departures, which are directly associated with new hirings that have to be made to cope with personnel changes (replacements); with the costs associated with the loss of investment in workers' training and the loss of knowledge and skills, given that workers departing from these organizations take these with them to other competing organizations. This amounts to added value for the latter and a loss to the former (Pirrolas and Correia 2021).

Pirrolas and Correia (2022a, 2022c) report that although churning is related to turnover, there are differences; while turnover is related to employee turnover and churning follows the same approach, churning is mainly focused on the costs associated with employee replacements arising from voluntary departures, i.e., churning is only related to the costs of hiring that result from the process of replacement.

The elaboration and validation of a scale of *churning* aims to, in addition to its applicability in and for future studies, assess what are the main factors that affect the occurrence of *churning*, what is the relationship between the variables under study and how organizations could avoid any unexpected exits.

The occurrence of *churning* in human resources is a crucial issue due to its negative impacts, namely, the difficulty in finding suitable substitutes in order to cope with any voluntary exits that might occur, especially from those who were more experienced and had obtained higher qualifications. The substitution process is time consuming, requires a lot of effort and is very expensive. This process leads to an unfair distribution of workload and consequently, to dissatisfaction among workers who remain in the organization and among customers or other involved stakeholders (Saradhi and Palshikar 2010). In this sense, predicting the occurrence of *churning* becomes fundamental for organizations (Alamsyah and Salma 2018). Given that this phenomenon is related to economic cycles, in periods of recession there is a decrease of job vacancies, so the rate of *churning* is reduced; conversely, in periods of economic upturn, where job offers tend to increase, the rate of *churning* also tends to increase (Burgess et al. 2000).

The main reason for the occurrence of *churning* is related to workers' dissatisfaction in terms of working conditions and the unattainability of personal and professional goal fulfilment. Thus, the elaboration and validation of a scale of the causes of *churning* aims, in addition to its applicability in future studies, to assess what are the main factors that affect the occurrence of *churning*, what is the relationship between the variables under study and how organizations could prevent any unexpected exits. This research focused on the voluntary churning of human resources, that is, workers who leave the organization on their own initiative; departures that can be substantiated by several reasons: positive reasons, which include the provision of better conditions (work, salary, benefits, career progression, better leadership roles, location, etc.) and by negative reasons, which include conflicts with supervisors or colleagues, lack of recognition, demotivating work, lack of ambition, low wages, poor working conditions, etc.

When workers decide to depart from a given organization, departure interviews provide good insight into the causes, however, there is a need to infer that the reasons invoked should be corroborated by other means, such is the case of the analysis of performance records of said workers.

1.1. Preventative Measures of Churning

Churning of Human Resources is a notorious problem for most industries since the loss of talented human resources affects both revenue/profit and brand image, in addition to all of the difficulties that arise from the need to find substitutes. Despite the complexity of definitions about talent, talent management is a complex and difficult process for organisations to manage due to it being considered as an over investment, given the costs that come from implementing measures and policies required to keep the most competent and experienced workers in the organisation (Pirrolas and Correia 2022b). In this sense, the creation of forecasting models of *churn* could be useful in the elaboration of human resources' retention plans. The occurrence of *churning* leads to disruptions in organizations in terms of dissatisfaction of workers remaining in the organization, to dissatisfaction of customers, to the time and effort spent in finding substitutes and in the training of new personnel.

It is a fact that *churn* of human resources, that is, workers who choose to leave an organization on their own account, is also known as friction. This translates to a serious problem for all organizations, notably for organizations belonging to the high-tech and services industries due to their enormous complexity. Nonetheless, the loss of a highly skilled worker becomes a problem due to several reasons: the difficulty in finding suitable substitutes, specifically those who have the right amount of experience and appropriate skills; the process of recruiting new workers requires time, effort, and money. The loss of human resources negatively affects ongoing projects and services, leading to dissatisfaction

of workers and all involved parties. It takes time and effort for new workers to reach the same level of expertise and productivity as those who departed; thus, the loss of human resources costs money (Saradhi and Palshikar 2010).

Predictive models of *churn* in human resources would be useful to understand the root causes of the occurrence of *churn*, for the elaboration of retention-strategy plans, recruitment plans, and for the improvement in team management.

Not all workers have the same level of performance, for example, workers who consistently demonstrate excellence in performing specific tasks and who possess unrivalled expertise are the most valuable assets of a given organization (Saradhi and Palshikar 2010). Thus, predictive models of *churn* in human resources focus on accurately identifying the occurrence of *churning* amongst the most valuable workers within a company, given that those are the ones considered the most valuable to them. Based on the foregoing considerations, a life model, that is, the prediction of the length of stay of a worker in the organization would be beneficial.

From this perspective, the deconstruction of the concept of *churning* by resorting to the variables that comprise the construct of working conditions follows. These are considered the main causes for the occurrence of *churning* of human resources, which helped elaborate a questionnaire which could enable ascertainment of the main causes of *churning* of human resources.

1.2. The Deconstruction of the Concept of Churning—The Creation of Variables Related to the Causes and Strategic Measures of Churning

Based on the various concepts of *churning* and the contexts in which they can be applied, it was possible to identify the main dimensions of *churning*. The criteria used for the selection of the main variables leading to *churning* in human resources, that is, the most discussed in the literature, were variables that: (a) addressed the theme of *churning* in human resources; (b) referred to the causes of *churning*; (c) discussed the theme of human resources retention; and (d) were based on empirical studies.

The establishment of the selected variables for the present study was carried out through a process broken down in three distinct phases. The first phase, proceeding from the theoretical-conceptual study, resulted in the selection of the main dimensions of *churning* of human resources, namely: Work Environment; Leadership; Recognition; Relationship with management and colleagues; Flexible Hours; Wage; Career Progression; Responsibility; and Retention of Human Resources, which gave rise to the elaboration of a script for the semi-structured interviews conducted.

In the second phase, through the results obtained from the latter interviews, it was possible to identify the main variables that compose the construct of *churning* (Figure 1).

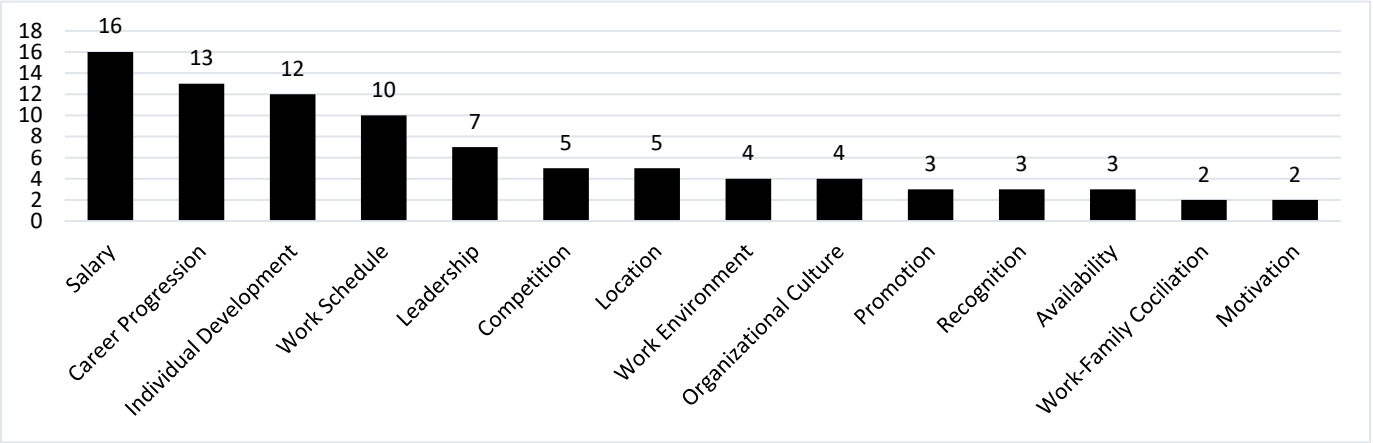

Figure 1. Dimensions of Churning. Source: The authors.

Through the results obtained from the previous phases, it was possible to deconstruct *churning* into 14 variables related to the perceptions that workers have regarding satisfaction, which would cause them to stay in the organization. In this sense, we were able to pinpoint all variables that would comprise the questionnaire applied in the present study.

Vis-a-vis the fourteen variables identified in Table 1 regarding working conditions, nine were the selected variables that, after being compiled, allowed for the elaboration of a scale regarding working conditions for measuring *churning* of human resources, which arose from the principle of parsimony. The aforementioned were grouped together in a single construct termed Progression. The concepts of Individual Development and Promotion were been compiled in a single construct termed Working Schedule; Availability and Work–Family Conciliation were grouped together in a single construct termed Work Environment, that is, Organizational Culture.

Table 1. Variables designed to measure the perceptions of the causes of *churning* of Human Resources.

Framework	Variable	Source and Concepts of Reference
Working Conditions	Monetary amount earned in exchange for the work performed (specific concept: Salary)	Elaboration by the authors based on the concept of salary (Milkovich and Newman 2013; Pitts et al. 2011)
	Opportunity for employees to progress professionally (specific concept: Career Progression)	Elaboration by the authors based on the concept of Career Progression (Horwitz et al. 2003; Kroon and Freese 2013)
	Employees' opportunities to ascend to their personal and professional goals (specific concept: Individual Development)	
	Employees' opportunities for career advancement (specific Concept: Promotion)	
	Job type and time spent by employees in the organization (specific concept: Work Schedule)	Elaboration by the authors based on the concept of Work Schedule (Kamalaveni et al. 2019)
	Strict timetables, shifts and the existence of prevention scales (specific concept: Availability)	
	Work-family life balance (specific concept: Work-Family Conciliation)	
	The place where the organization is located (specific concept: Location)	Elaboration by the authors based on the concept of location (Saradhi and Palshikar 2010; Dolatabadi and Keynia 2017)
	Environment where an employee performs his given tasks and where well-being and safety become fundamental for the performance of said tasks (specific concept: Work Environment)	Elaboration by the authors based on the concept of Work Environment (Rossberg et al. 2004; Horwitz et al. 2003)
	Set of shared procedures within an organization so to guide behaviours in the workplace (specific concept: Organizational Culture)	Elaboration by the authors based on the concept of Organizational Culture (Cui and Hu 2012; Belias and Koustelios 2014)
	Professional valorisation for the work performed (specific concept: Recognition)	Elaboration by the authors based on the concept of Recognition (Rahman et al. 2020)
	Leadership ability to inspire, provide guidance to and deal with employees in an unbiased manner, providing for motivation, well-being and organizational effectiveness (specific concept: Leadership)	Elaboration by the authors based on the concept of Leadership (Miranda et al. 2016; Kamalaveni et al. 2019; Alkhawaja 2017)
	Attract highly skilled employees from competing organizations in the same sector of activity (specific concept: Competition)	Elaboration by the authors on the basis the concept of Competition (Miranda et al. 2016)
	Sense of achievement for the work performed, that induces improved performance and satisfaction (specific concept: Motivation)	Elaboration by the authors based on the concept of Motivation (Miranda et al. 2016; Rahimic et al. 2012).

Notes: Authors own elaboration of concepts based on the cited references.

The criteria giving rise to the choice of the nine selected variables aimed to ensure that the main key-concepts were represented in, at least, one of the items. From a conceptual point of view, whenever within the 14 initial variables a concept was represented by a set of variables addressing the same theory, the choice fell upon those considered the most relevant. The following Table 2 presents the latter listing.

Table 2. Selected variables to assess perceptions of the causes of *churning* of human resources.

Framework	Variable	Source and Concepts of Reference
Working Conditions	Monetary amount earned in exchange for the work performed (specific concept: Salary)	Elaboration by the authors based on the concept of salary (Milkovich and Newman 2013; Pitts et al. 2011)
	Opportunity for employees to progress professionally (specific concept: Career Progression)	Elaboration by the authors based on the concept of career progression (Horwitz et al. 2003; Kroon and Freese 2013)
	Job type and time spent by employees in the organization (specific concept: Work Schedule)	Elaboration by the authors based on the concept of work schedule (Kamalaveni et al. 2019)
	The place where the organization is located (specific concept: Location)	Elaboration by the authors based on the concept of location (Saradhi and Palshikar 2010; Dolatabadi and Keynia 2017)
	Environment where an employee performs his/her given tasks and where well-being and safety become fundamental for the performance of said tasks (specific concept: Work Environment)	Elaboration by the authors based on the concept of work environment (Rossberg et al. 2004; Horwitz et al. 2003)
	Professional valorisation for the work performed (specific concept: Recognition)	Elaboration by the authors based on the concept of recognition (Rahman et al. 2020)
	Leadership ability to inspire, provide guidance to and deal with employees in an unbiased manner, providing for motivation, well-being, and organizational effectiveness (specific concept: Leadership)	Elaboration by the authors based on the concept of leadership (Miranda et al. 2016; Kamalaveni et al. 2019; Alkhawaja 2017)
	Attract highly skilled employees from competing organizations in the same sector of activity (specific concept: Competition)	Elaboration by the authors based on the concept of competition (Miranda et al. 2016)
	Sense of achievement for the work performed, that induces improved performance and satisfaction (specific concept: Motivation)	Elaboration by the authors based on the concept of motivation (Miranda et al. 2016; Rahimic et al. 2012)

Notes: Authors own elaboration of concepts based on the cited references.

1.3. Elaboration of the Scale regarding Working Conditions for the Measurement of Churning of Human Resources

For the elaboration of the items of the scale, the recommendations of Hair et al. (2014) were followed when stating that a Likert scale must have an odd number of classes of measurement, whose central point is considered a neutral point and whose extremes are opposite and symmetrical. In this sense, a scale of 10 points was designed with the option "does not know/does not answer", being that point 1 corresponds to the lowest score of the scale (very low) and 10 corresponds to the highest score of the scale (very high).

The choice for a 10-point Likert scale ensures that the distribution of results around the average scores becomes more diffuse, resulting in a wider distribution, providing for a greater discriminating power and, consequently, a more reliable ability to isolate good and bad performances (Allen and Willburn 2002).

From the point of view of modeling and model development, particularly of the structural models of *churning*, 10-point Likert scales are preferred over 5- or 7-point scales. A 10-point Likert scale approach tends to present greater predictive capacities than others, including binary scales, namely at the level of the coefficient of determination[1] (R^2) (Dawes 2012).

Due to the heterogeneity of the dimensions that make up the scale, which can cause problems in relation to reliability and validity, a minimum of three items per dimension were considered (Hair et al. 2014).

For the elaboration of the items of the scale, the criteria of Pasquali (2010) was considered when stating that the items must allow for a clear and precise action; to become understandable to all strata of the targeted population, they must be objective, simple, and they must avoid negative and excessively technical and ambiguous expressions. The criterion of relevance regarding pertinence and credibility was also considered.

In view of the above considerations, Table 3 presents 35 items that make up the scale used in the research.

Table 3. Items of the Scale of Working Conditions for Measurement of Churning of Human Resources.

Variables	Current Code	Item
Work Environment (WE)	WE1	Satisfaction with facilities, equipment, and business support services (notably: parking, occupational health, transportation, sanitary facilities)
	WE2	Satisfaction with Management and colleagues
	WE3	Satisfaction with socialization programs (social, cultural and sports activities, promoted by the organization)
	WE4	Comfort and physical well-being in the workplace (notably: room temperature, working area, cleanliness)
	WE5	Degree in which one considers it is a conflict-free work environment setting within the organization
Salary: (S)	S6	Feeling that one is being paid fairly.
	S7	A sense of justice regarding salary earned when compared with other colleagues in a similar situation within the organization (notably: regarding performed tasks, seniority, qualifications, and performance)
	S8	Salary as a decisive factor for staying in the organization
	S9	Satisfaction with all benefits granted by the organization (e.g., protocols, health insurance, vacations, sick leave, etc.)
	S10	The desire to leave the organization due to poor remuneration
Recognition (R)	R11	The way the organization recognizes all work performed, dedication and efforts made by the employee
	R12	Frequency in which management praises good performance to its employees
	R13	Regular acquisition of information regarding one's own performance in the organization
	R14	Degree of satisfaction with performance assessments
Career Progression (CP)	CP15	Career progression opportunities within the organization
	CP16	Feeling satisfied regarding the occupational training one receives
	CP17	Feeling that employees who are granted with a promotion are those who, effectively, demonstrate the best performance and potential to take on the assigned position
Motivation (M)	M18	Overall satisfaction with the organization, considering overall work experience in the latter
	M19	Feeling that one works in a stable organization that ensures prospects
	M20	Sense of belonging to a prestigious organization
	M21	Personal fulfillment for one's assigned role within the organization
	M22	Feeling that one's entrusted tasks are positively challenging
Leadership (L)	L23	Sense of autonomy that is given to plan, execute and evaluate one's job performance
	L24	Effective methods for planning work within one's Management team/Department
	L25	Accessibility to and the receiving of information which one considers to be useful to perform one's tasks
	L26	A sense that one can expect to find support from one's immediate superiors
Competition (C)	C27	Feeling that one is working for an innovative and bold organization, one that is constantly improving
	C28	Frequency of employment proposals from other companies in the same sector of activity
	C29	Looking for new job opportunities outside the organization
Work Schedule (WS)	WS30	Degree of satisfaction with the assigned work schedule
	WS31	Degree of satisfaction concerning balance between personal and professional life
	WS32	The possibility to adjust one's working schedule when needed
Location (LC)	LC33	Degree of satisfaction with one's commute
	LC34	The option to change organizations due to location
	LC35	Transportation provided by the organization

2. Method

Data Collection Tools

For the present study a sociodemographic questionnaire was used to collect sample data (age, gender, educational qualifications, function/role performed, seniority, contractual agreement, type of work, work schedule practiced, salary, type of organization, sector of activity, and size of the organization). The designed questionnaire regarding working conditions comprises a set of 35 items, namely, 5 items for Work Environment, 5 items for

Salary, 4 items for Recognition, 3 items for Career Progression, 5 items for Motivation, 4 items for Leadership, 3 items for Competition, 3 items for Work Schedule, and 3 items for Location (Table 3).

The participants had to provide answers to each affirmation regarding their own professional experience on a 10-point Likert scale (Very low = 1; very high = 10).

The questionnaire was drafted resorting to the platform Google Forms (online) and its implementation was possible through the app LinkedIn-Corporation, given this is a professional network, making it possible to reach a more diversified population from various sectors of activity, as well as professional backgrounds. When accessing the questionnaire, participants had access to the aim of this study. A disclosure was made concerning the anonymity and confidentiality granted when filling the questionnaire. Additionally, the instructions needed to complete the questionnaire were provided. The estimated average time for completing the questionnaire was approximately 20 min. In order to suppress any possible biases of sample variance resulting from the common method, Podsakoff et al. (2003) guidelines were taken into consideration during the elaboration of the final version of the questionnaire.

3. Sample

The sample was selected by means of a random, convenient, and non-probabilistic sampling, where participants belonged to a plethora of varied companies and sectors of activity. Table 4 illustrates the distribution of the population data.

In the Exploratory Factor Analysis (EFA), the sample consisted of 349 survey respondents, of which, 47.4% were men and 52.6% were women, aged between 20 and 67 years old, mostly married (58.3%), with higher education qualifications (65%), who held technical (43.4%), operational (18.2%), management (15.3%), and leadership positions (12.7%), and 10.4% performed administrative assistant functions. With regards to seniority, the highest percentage of workers had been in the organization for 2 to 10 years (38.6%) with a permanent contract (70.5%); 14.2% of the respondents had a fixed-term contract, 7.5% had a temporary contract, and 7.8% were self-employed. Regarding working hours, 98.6% worked full-time and 1.4% worked under a part-time regimen; 56.4% of the survey respondents worked under a fixed schedule, followed by 25.1% working under a flexitime regimen, and 18.5% worked in shifts. Most of the respondents earned a wage between €1100 and €1400 (26.4%).

With regards to the type of organization, 46.2% worked in multinational companies, 41.9% worked in national companies, 10.7% worked in state-owned companies, and 1.2% worked in non-governmental organizations. With regards to the activity sector, it was possible to ascertain that most workers (25.7%) belonged to the industrial sector in companies employing more than 250 workers (64.7%).

The CFA was carried out based on a sample consisting of 452 respondents, where 45.8% were male and 54.2% were female, with ages between 20 and 74 years old, most of which were married (63.9%) and had higher education qualifications (64.1%), of which 36.6% had technical functions, 21.3% were operational workers, 15.1% had managerial functions, 14.4% had leadership positions, and 12.6% performed administrative assistant tasks. With regards to seniority, the biggest percentage of workers had been working in the organization for 2 to 10 years (34.3%), with a permanent contract (64.4%); while 19.2% worked on a fixed-term contract basis, 8.9% worked under a temporary contract, and 7.6% were self-employed. Concerning working hours, 98.9% of the respondents worked a full-time job, followed by 1.1% that worked part-time, of which 52.9% had a fixed schedule, where 26.7% worked on a flexitime regimen, and 20.4% worked in shifts. It was also possible to ascertain that the highest percentage of workers (27.8%) earned a salary averaging between €1100 and €1400.

Regarding the type of organization, 41.8% worked in national companies, 40.3% worked in multinational companies, 15.3% worked for state-owned companies, and 2.7% worked for NGOs. With regards to the activity sector, it was possible to ascertain that most

of the respondents (28.4%) worked for the industrial sector, in organizations employing more than 250 workers (65.4%).

Table 4. Distribution of Population Data with EFA and CFA.

Variable		EFA Participants	CFA Participants
		Minimum/Maximum	Minimum/Maximum
Age		20/67	20/74
Variable	Category	Frequency	Frequency
Gender	Male	165	206
	Female	183	244
	No information	1	2
Civil state	Single	100	116
	Married/Non-Marital Partnership	203	288
	Divorced	43	47
	Widow(er)	2	0
	No information	1	1
Academic Qualifications	Primary Education	24	20
	Secondary Education	98	141
	Higher Education	227	287
	No information	0	4
Job Function	Management	44	68
	Leadership position	53	65
	Technical	150	165
	Administrative Assistant	36	57
	Operational	63	96
	No information	3	1
Seniority	<2 years	65	104
	2 to 10 years	134	155
	11 to 20 years	55	71
	>20 years	93	122
	No information	2	0
Labour Contract/Contractual Relationship	Fixed-term Contract	49	86
	Open-ended Contract/Permanent Contract	244	289
	Contract of unspecified duration/Temporary Contract	26	40
	Other	27	34
	No information	3	3
Job type	Full-time Job	341	443
	Part-time Job	5	5
	No information	3	4
Working Hours	Fixed Schedule	195	238
	Flexible Schedule/Flexitime	87	120
	Shifts	64	92
	No information	3	2

Table 4. *Cont.*

Variable		EFA Participants	CFA Participants
		Minimum/Maximum	Minimum/Maximum
Salary	€665	23	30
	€700–€1000	84	122
	€1100–€1400	91	125
	€1500–€1800	58	60
	€1900–€2200	28	22
	€2300–€2600	19	25
	€2700–€3000	17	27
	>€3000	25	38
	No information	4	3
Type of Organization	National Company	145	189
	Multinational Company	160	182
	Government Agency/Sate-owned Company	37	69
	Non-Governmental Organization	4	12
	No information	3	0
Activity Sector	Agriculture	4	5
	Fishing	39	61
	Manufacturing Industry	89	128
	Energy Sector (Electricity, Gas and Water)	3	5
	Construction Industry and Public Works Sector	8	6
	Trade	17	21
	Catering Industry and Hospitality Sector	6	8
	Transport Sector and Communications Industry	15	10
	Education	18	22
	Business Service Sector	46	44
	Healthcare and Social Services	16	22
	Financial Sector	24	31
	Other Activities	61	88
	No information	3	1
Size of the Enterprise/Organisation	<10 employees	25	42
	10 to 50 employees	46	59
	50 to 250 employees	52	55
	>250 employees	223	295
	No information	3	1

Source: Research Data.

Methodological Options in Data Processing and Analysis

The methodological procedures of this study were performed in two stages, namely, the validation of the questionnaire in relation to the sample and the analysis of the proposed model, considering the correlation between the constructs.

For the validation of the questionnaire, an Exploratory Factor Analysis (EFA) was carried out, followed by a Confirmatory Factor Analysis (CFA) (Bentler 1995; Hair et al. 2014), having resorted to the main axis factorization method (Principal Axis Factoring) using Kaiser criterion (Eigenvalue > 1) with a Promax rotation, and where the scale consistency was measured based on Cronbach's Alpha coefficient.

For the validation of the proposed model, we resorted to the Structural Equation Model (SEM), given that it allows for the estimation of the structural relations between the latent variables.

Several goodness-of-fit indicators were also used to identify the model with the highest degree of adjustment.

Following the recommendation of Hair et al. (2014) to confirm the convergent validity, three measures were used: factorial loads $\geq$0.50 (having been removed factors with inferior factorial loads), extracted variance (EV) that would have to be $\geq$0.5, and a reliability of construct (RC) that had to be superior to 0.7 (with 0.6 being considered acceptable).

For the second part, Confirmatory Factor Analysis (CFA) was performed through the Lisrel 11 statistical program, through which, the hierarchical structure obtained in the previous analysis was ratified, and where the 16 items were divided in the same way regarding the aforementioned dimensions.

For the validation of the proposed model, Structural Equation Modelling was used since it allows for the estimation of the structural relationships between variables and the validity of the proposed model.

Various pointers of goodness-of-fit used in the present model, namely *Root Mean Square Error of Approximation* (RMSEA $\leq$ 0.08), *Comparative Fix Index* (CFI $\geq$ 0.90), *Normed Fit Index* (NFI $\geq$ 0.90), *Goodness-of-Fit Index* (GFI $\geq$ 0.90), *Standardized Root Mean Residual Square* (SRMR), and *Akaike Information Criterion* (AIC). The χ^2/df was also used, with values lower than 3 indicating an adequate adjustment.

Taking the two samples into consideration, a multi-group analysis was conducted to verify whether the groups presented statistically significant differences.

4. Analysis and Presentation of Results

4.1. Validation of the Instrument in View of the Sample and Validation of the Proposed Model

Taking into consideration the above mentioned, having secured the validity and legibility of the questionnaire, from the 35 initial items that made up the first version of the questionnaire, 16 items were removed, resulting in the final version of the latter, demonstrating its hierarchical structure through the completion of the factor analysis. To this end, the quantitative data was analysed by means of application of the questionnaire into two different stages. In the first period, an Exploratory Factor Analysis (EFA) was carried out by resorting to the statistical software SPSS (version 27), by taking into account all elements of the questionnaire (all 35 items), which were then reduced to 16 items, organized in three different dimensions (Leadership, composed of four items; Recognition, composed of three items; Working Environment, composed of four items; Salary, composed of two items; and Working Hours, composed of three items). Lastly, for the forced model for extraction of three factors through the EFA, KMO Bartlett presented values of >0.5 (0.911) and a null significance index. The third factor explains 70.080% of the total variability.

As a result of the analysis of the six models, the previously mentioned set of 16 factors emerged, from which, items with loadings below 0.5 were removed (Table 5). After this analysis, the final solution emerged with three factors that explain 63.972% of the common variance (Table 6).

Taking into consideration the Exploratory Factor Analysis (EFA) conducted, the final model was tested by resorting to a Confirmatory Factor Analysis (CFA), which, after its renaming, kept nine of the factors, from which, three latent variables have surfaced: Professional Performance Conditions, Satisfaction with Working Conditions, and Schedule (each one composed of three items).

Cronbach's Alpha coefficient values range from 0.945 (Professional Performance Conditions), 0.842 (Satisfaction with working conditions), and 0.886 (Schedule).

Table 5. Results of the EFA regarding the Scale of Causes of *Churning* (Final Solution).

Items	Factors			Communalities
	Professional Performance Conditions (PPC)	Satisfaction with Working Conditions (SWC)	Schedule (S)	
L_24_PPC	0.828	0.819	0.558	0.743
L_25_PPC	0.802	0.804	0.547	0.706
R_12_PPC	0.694	0.883	0.542	0.786
L_26_PPC	0.686	0.771	0.527	0.605
R_13_PPC	0.694	0.880	0.456	0.782
L_23_PPC	0.718	0.700	0.525	0.555
WE_2_PPC	0.732	0.762	0.572	0.623
R_14_PPC	0.650	0.787	0.360	0.638
WE_1_SWC	0.583	0.481	0.371	0.339
WE_4_SWC	0.689	0.581	0.553	0.496
WE_3_SWC	0.681	0.680	0.486	0.508
WH_6_SWC	0.696	0.602	0.467	0.487
WH_9_SWC	0.618	0.528	0.383	0.383
WH_30_S	0.493	0.433	0.896	0.817
WH_31_S	0.569	0.528	0.863	0.746
WH_32_S	0.534	0.501	0.743	0.559

Table 6. Factor Correlation Matrix.

Factor	Factor		
	Professional Performance Conditions (PPC)	Satisfaction with Working Conditions (SWC)	Schedule (S)
Professional Performance Conditions (PPC)	1.000	0.827	0.640
Satisfaction with Working Conditions (SWC)	0.827	1.000	0.590
Schedule (S)	0.640	0.590	1.000

In terms of correlations (Table 6), these were high and moderate. The dimension of the Professional Performance Conditions (PPC) was highly correlated with Satisfaction with Working Conditions (SWC) (r = 0.827), as well as Professional Performance Conditions in relation to Schedule (WH) (r = 0.640), which also showed an equally significant correlation between Satisfaction with Working Conditions and Schedule (r = 0.590).

This three-factor structure was tested through a Confirmatory Factor Analysis (CFA), and its results suggested that this model had an adequate goodness-of-fit with the previously mentioned nine remaining items, (when in comparision with the original 16 in this specific domain). The Measurement Model of the Causes of *Churning* brought forward an adequate goodness-of-fit: χ^2(df = 24) = 35.08; χ^2/df = 1.461; RMSEA = 0.054; GFI = 0.973; SRMR = 0.0276; NFI = 0.974; CFI = 0.996; AIC = 1058.298 (Figure 2).

The goodness-of-fit of the model was within the recommended values (Table 7) and it was superior to the index of the initial solution.

Table 7. Goodness-of-Fit Indicators of the Final Measurement Model regarding Causes of *Churning*.

	χ^2	df	*p*-Value	RMSEA	GFI	SRMR	CFI	NFI	χ^2/df	AIC
Reference				**(≤0.08)**	**(≥0.90)**	**(≤0.09)**	**(≥0.92)**	**(≥0.90)**	**(≤3.0)**	**(Smaller)**
I.M.M.	442.99	101	0.00000	0.121	0.817	0.0498	0.945	0.930	4.386	774.417
F.M.M.	181.83	62	0.06722	0.094	0.905	0.0414	0.973	0.974	2.933	1186.068

Notes: I.M.M. (Initial Measurement Model), F.M.M. (Final Measurement Model).

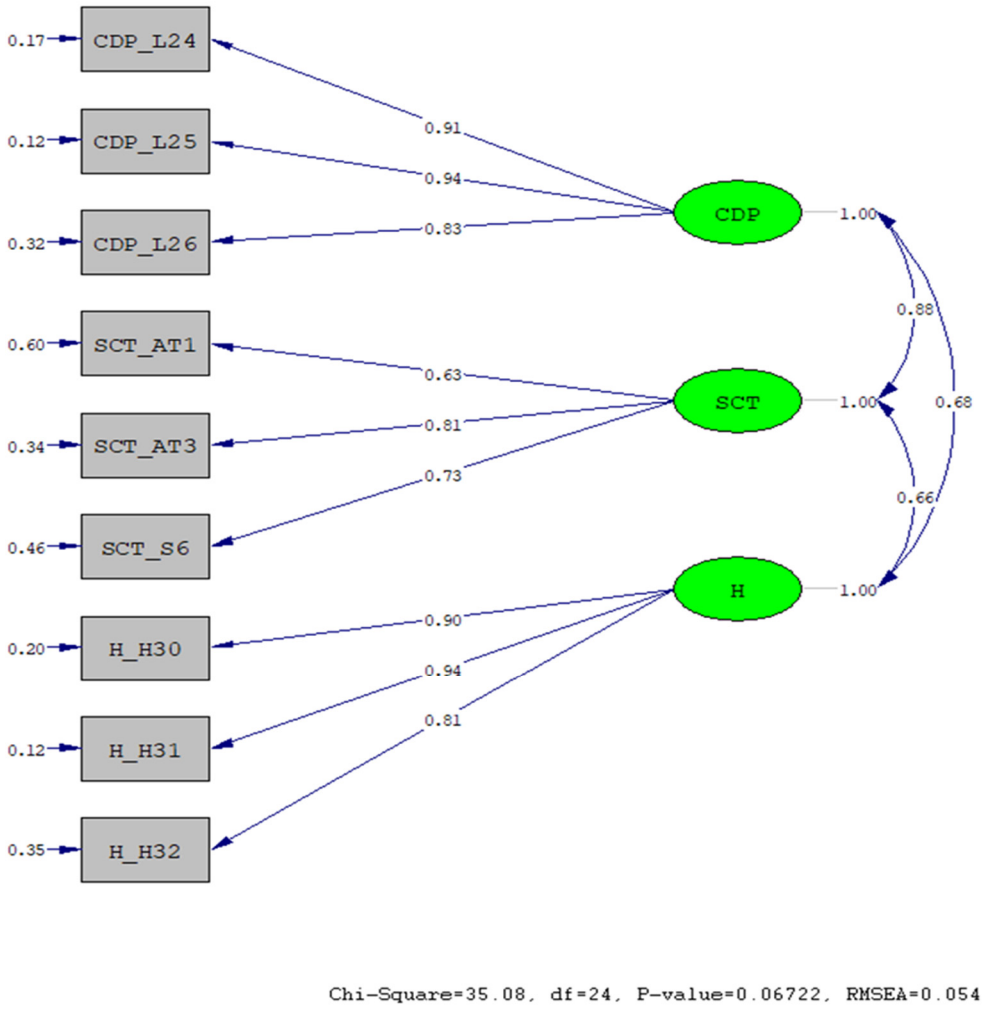

Figure 2. Diagram of the Final Model of the Scale of Causes of churning. Notes. CDP (PPC): Professional Performance Conditions; SCT (SWC): Satisfaction with Working Conditions; H (S): Schedule.

Finally, the variance of the common method was analyzed based on the common factor test (Podsakoff et al. 2003). From this model, a slightly better adjustment in the goodness-of-fit followed (χ^2 = 12.31, df = 15, CFI = 1.000 and RMSEA = 0.000).

However, this model was not perceptible enough to explain the obtained results when compared to the three-factor model (χ^2 = 181.83, df = 62, CFI = 0.973 and RMSEA = 0.094). The sum of total variance explained by the common factor was 7%, below the 25% rate suggested by Williams et al. (2020) and Podsakoff et al. (2003). Thus, we argue that the skewing/bias of the same source cannot be considered a threat for the results of this study.

4.2. Analysis of the Stability of the Measurement Model of the Causes of Churning

In order to check the stability of the final measurement model, a multi-group analysis was performed resorting to two random subsamples. If the stability of the Measurement Model of the Causes of Churning was confirmed, then no major differences should be found between the two subsamples (Hair et al. 2014).

In the first phase, a multi-group analysis was performed between the two random subsamples without restricting the structural coefficients. Subsequently, a second multi-group analysis was carried out, in which, the structural coefficients of the second group were restricted to the equality of those of the first group. Finally, the null hypothesis of invariance (H_0) of the structural relations between the two groups was analysed through the Test of χ^2 (Hair et al. 2014). In the case of H_0 not being rejected, then, it could be assumed

that the Measurement Model of the Causes of Churning is equipped with acceptable structural stability. Otherwise, if H_0 was rejected, then it could be assumed that the stability would not be acceptable on the basis that the model found for group 1 is different of the one used for group 2.

It was found that the $\delta\ \chi^2$ value$_{(\Delta df=6)}$ = 13.06, p = 0.05; (26.296) was 43.69, therefore, the equality of H_0 was rejected.

Standing on the threshold of acceptability, by rejecting the null hypothesis with a margin of error of 5% ($1 - \alpha = 0.95$), by using a margin of error of 7.5% ($1 - \alpha = 0.975$), the null hypothesis would no longer be rejected. These results are aligned with those established by Rosnow and Rosenthal (1992), who questioned the validity of rejecting null hypotheses with small differences in relation to the criterion value of a given significance. In fact, they stated: "That is, we want to underscore that, surely, God loves the 0.06 nearly as much as the 0.05. [questioning] Can there be any doubt that God views the strength of evidence for or against the null as a fairly continuous function of the magnitude of p?" (Rosnow and Rosenthal 1992, p. 1277).

Thus, it was considered that the model found is able to measure the construct of the causes of churning, giving consistency to the latter, since a measurement model was obtained whose correlation between variables does not change significantly between the two random groups (subsamples).

5. Conclusions

5.1. Discussion of Results

This study aimed to design and validate a scale of causes of *churning*.

For the validation of this scale, six distinct models were tested, having been specified until a final solution with adequate goodness-of-fit was obtained.

In an early stage, we resorted to an EFA to test the latest version of the scale of working conditions to measure *churning* of human resources (with 35 items) (Table 3). The result of the test of Kaiser–Meyer–Olkin (KMO Bartlett) presented a value of 0.946, confirming an excellent relation between the manifested variables, complying with the recommended values of Hair et al. (2014).

As a result of the analysis of the six models, a set of 16 factors emerged (Table 5), in which, items with a loading factor lower than 0.5 were removed.

After removing the aforementioned items, a bundling of variables and denomination of factors was made. Factor 1 comprised by Leadership, Recognition and Work Environment was renamed Professional Performance Conditions (PPC); Factor 2, initially comprised by Work Environment and Salary was renamed Satisfaction with Working Conditions (SWC) and Factor 3, comprised by Working Hours was renamed Schedule (Table 6).

In terms of extracted variance (EV), values were above the reference values (Hair et al. 2014): Professional Performance Conditions (0.80), Satisfaction with Working Conditions (0.53), and Schedule (0.78).

Regarding convergent validity, the reliability of construct was above reference values set by Hair et al. (2014), presenting (0.92) for Professional Performance Conditions, (0.77) for Satisfaction with Working Conditions, and (0.91) for Schedule.

A multi-group analysis was carried out to verify the existence of statistically significant changes regarding the variability of the samples studied (Baron and Kenny 1986). The latter analysis confirmed the consistency of the model, given that a measurement model was obtained and correlation between variables did not change between the two random groups.

5.2. Study Contributions

5.2.1. Theoretical and Practical Contributions

Taking into consideration theoretical implications, it was found that results from the last validation of the questionnaire did not replicate the proposed factorial structure

since there were original factors being removed that presented factorial loads below the recommended values.

In this sense, a new approach was adopted to follow the one initially proposed by organizing the dimensions into macrodimensions (professional performance conditions, satisfaction with working conditions, and working hours) composed of nine items and three dimensions, possessing acceptable validity and reliability, allowing for it to be used to diagnose the causes of *churning* of human resources.

This study allowed for the expansion of the theoretical framework through the usage of a questionnaire regarding causes of *churning* of human resources. It is assumed that it is the first time the latter was conceived and validated in Portugal, and due to its absence from studies in the foreign literature, it can be predicted that it is the first time that this scale has been elaborated and validated to measure the causes of *churning* of human resources.

The structure of the three factors reveals a model with an adequate goodness-of-fit, with nine items, compared to the original sixteen in this specific domain, and the indicators of goodness-of-fit are within the desired parameters.

In terms of its applicability for the management of human resources, this is appropriate at moments of decision-making and implementation of more effective and sustainable human resources policies and practices.

Given that no studies regarding a relationship between the three factors were found in the literature, a strong correlation between professional performance conditions (PPC) and satisfaction with working conditions (SWC) was observed, even though the correlation between professional performance conditions (PPC) and schedule (S) presented lower values. It is in the correlation between satisfaction with working conditions (SWC) and schedule (S) that the weakest values were verified; however, all correlations are positive, within the parameters considered valid, that is, those having acceptable validity and reliability, which can be used to diagnose the causes of *churning* of human resources.

Thus, it can be predicted that the model resulting from the present study becomes useful for both theoretical and practical purposes.

In terms of contributions for its organizational practice, this study presumes that the questionnaire of the causes of *churning* (in Portugal) offers the capacity to attribute advantages for the implementation and/or improvement of the practices and policies of human resources on a national level, having the potential to provide for a substantiated tool aimed at carrying out a survey of the needs for the improvement of working conditions whilst evaluating conditioning aspects.

Finally, through the application of the scale of *churning* of human resources and by considering the conclusions derived from this study, it will be possible to foment a change in organizational paradigms, allowing for the promotion of better working conditions and contribute for the reduction of the percentage of *churning* and, thus, reduce costs.

5.2.2. Limitations of the Study and Future Studies

The present study presents some limitations, with emphasis on a possible problem related to the variance of the common method, since the data was collected on a single occasion, meaning, a cross-sectional study. The fact the questionnaire was applied only to one sample, can also lead to an error in the common variance, thus, proposing that in future studies it should be applied to different samples.

Another limitation refers to the fact that it would be better to use different data collection methods. In accordance with Heale and Forbes (2013) the combination of different data collection methods (qualitative and quantitative) can be important so to compare results from different perspectives. Yet another limitation was found given a single data collection tool (the questionnaire) was applied. This could lead to a potential problem of skewing of common methods, given that the same source of retraction of data was used. So, to minimize this issue regarding results gathered from the present study, statistical remedies were used, such was the case of the application of the latent method factor which results showed its usage would not put the results gathered from this study at stake.

Notwithstanding, the potential problem of bias of the common method could be mitigated in future studies by resorting to data collection from multiple sources.

5.3. Concluding Remarks

The present study purported to elaborate and validate a Measurement Model of the Causes of *Churning* of human resources in Portugal and to verify in which way the factorial results found, in relation to the sample, would correspond to the adopted model.

It should be noted that, insofar as it is known, this was the first time a questionnaire of the causes of *churning* was designed and validated in Portugal.

Considering constant social changes and competitiveness within the labour market, this measuring tool could very well provide for a way for organizations to keep up to date with the latest policies and practices in the management of human resources and, based on the findings obtained, act with corrective measures so to minimize the impact of *churning*.

Aiming for its applicability, we take as our premise that the conclusions retrieved from the results gathered from this study will eventually help enrich the issue at hand, and that by pairing it with the aforementioned questionnaire regarding the causes of *churning* of human resources, this could become a tremendous asset in organizational terms, as well as in its adaptation to a reality most organizations have been dealing with, *churning*.

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Note

[1] The coefficient of determination can be understood as the amount of total information, contained in each data set, that is explained by a given model.

References

Alamsyah, Andry, and Nisrina Salma. 2018. A Comparative Study of Employee Churn Prediction Model. Paper presented at 2018 4th International Conference on Science and Technology (ICST), Yogyakarta, Indonesia, August 7–8; pp. 1–4. [CrossRef]

Alkhawaja, Arwa. 2017. Leadership Style and Employee Turnover a Mythical Relationship or Reality? *M.A. in Leadership Studies: Capstone Project Papers* 16. Available online: https://digital.sandiego.edu/solesmalscap/16 (accessed on 22 November 2022).

Allen, Derek, and Morris Willburn. 2002. *Linking Customer and Employee Satisfaction to the Bottom Line*. Milwaukee: American Society for Quality.

Baron, Reuben, and David Kenny. 1986. The moderator-mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology* 51: 1173–82. [CrossRef] [PubMed]

Belias, Dimitrios, and Athanasios Koustelios. 2014. Organizational Culture and Job Satisfaction: A Review. *International Review of Management and Marketing* 4: 132–49. [CrossRef]

Bentler, Peter. 1995. *EQS Structural Equation Program Manual*. Encino: Multivariate Software, Inc.

Burgess, Simon, Lane Julia, and Stevens David. 2000. Job Flows, Worker Flows, and Churning. *Journal of Labor Economics* 18: 473–502. [CrossRef]

Cui, Xiaoming, and Junchen Hu. 2012. A Literature Review on Organizational Culture and Corporate Performance. *International Journal of Business Administration* 3: 29–37. [CrossRef]

Dawes, John. 2012. Do data characteristics change according to the number of scale points used? An experiment using 5 point, 7 point and 10 point scales. *International Journal of Market Research* 50: 61–77. [CrossRef]

Dolatabadi, Sepideh, and Farshid Keynia. 2017. Designing of Customer and Employee Churn Prediction Model Based on Data Mining Method and Neural Predictor. Paper presented at the 2017 2nd International Conference on Computer and Communication Systems (ICCCS), Krakow, Poland, July 11–14; pp. 1–4. [CrossRef]

Duhautois, Richard, Fabrice Gilles, and Héloise Petit. 2016. Decomposing the Relationships between Wage and Churning. *International Journal of Manpower* 37: 660–83. [CrossRef]
Hair, Joseph, William Black, Barry Babin, and Rolph Anderson. 2014. *Multivariate Data Analysis*, 7th ed. London: Pearson Education Limited.
Heale, Roberta, and Dorothy Forbes. 2013. Understanding triangulation in research. *Evidence Based Nursing* 16: 98–98. [CrossRef]
Horwitz, Frank, Chan Heng, and Hesan Quazi. 2003. Finders, Keepers? Attracting, motivating and retaining knowledge workers. *Human Resource Management* 13: 23–44. [CrossRef]
Kamalaveni, M., S. Ramesh, and T. Vetrivel. 2019. A Review of Literature on Employee Retention. *International Journal of Innovative Research in Management Studies (IJIRMS)* 4: 1–10.
Kroon, Brigitte, and Charissa Freese. 2013. Can HR Practices Retain Flexworkers with Their Agency? *International Journal of Manpower* 34: 899–917. [CrossRef]
Milkovich, George, and Jerry Newman. 2013. *Compensation*, 11th ed. New York: McGraw-Hill Education.
Miranda, Rafaella, Bruna Avelino, and Renata Takamatsu. 2016. Relationship between Job Satisfaction and Financial Performance of Companies. *Accounting, Management and Governance* 19: 336–55.
Pasquali, Luca. 2010. Tests related to construct: Theory and models of construction. In *Psychological Instrumentation: Fundamentals and Practices*. Edited by L. Pasquali. Porto Alegre: Artmed.
Pirrolas, Olga, and Pedro Correia. 2021. The Theoretical-Conceptual Model of Churning in Human Resources: The importance of its operationalization. *Sustainability* 13: 4770. [CrossRef]
Pirrolas, Olga, and Pedro Correia. 2022a. As Principais Causas de Churning de Recursos Humanos. In *Temas Emergentes em Ciências Empresariais: Novas abordagens nas áreas científicas dos Recursos Humanos, Marketing e Turismo, Empreendedorismo e Inovação*. Lisboa: Edições Sílabo, vol. 2.
Pirrolas, Olga, and Pedro Correia. 2022b. Literature Review on Human Resource Churning—Theoretical Framework, Costs and Proposed Solutions. *Social Sciences* 11: 489. [CrossRef]
Pirrolas, Olga, and Pedro Correia. 2022c. About Churning. *Academia Letters* 1: 5114. [CrossRef]
Pitts, David, Marvel John, and Fernandez Sérgio. 2011. So Hard to Say Goodbye? Turnover Intention among US Federal employees. *Public Administration Review* 71: 751–60. [CrossRef]
Podsakoff, Philip, Scott MacKenzie, Jeong-Yeon Lee, and Nathan Podsakoff. 2003. Common method biases in behavioral research: A critical review of the literature and recommended remedies. *Journal of Applied Psychology* 88: 879–903. [CrossRef] [PubMed]
Rahimic, Zijad, Emina Resic, and Amra Kozo. 2012. Determining the Level of Management Competences in the Process of Employee Motivation. *Procedia—Social and Behavioral Sciences* 41: 535–43. [CrossRef]
Rahman, Zoeb, Syed Ali, and Farhana Hussain. 2020. The Critical Elements Determining Employee Retention in the BPO Sector of Bangladesh. *International Journal of Scientific and Technology Research* 9: 2580–88.
Rosnow, Ralph, and Robert Rosenthal. 1992. Focused Tests of Significance and Effect Size Estimation in Counseling Pyschology. *Journal of Counseling Psychology* 35: 203–08. [CrossRef]
Rossberg, I., O. Eiring, and S. Friss. 2004. Work environment and job satisfaction. A psychometric evaluation of the working environment scale-10. *Social Psychiatry Psychiatr Epidemiology* 39: 576–80. [CrossRef]
Saradhi, Vijaya, and Girish Palshikar. 2010. Employee Churn Prediction. *Expert Systems whith Applications* 38: 1999–2006. [CrossRef]
Williams, Beverly Rosa, F. Amos Bailey, Patricia S. Goode, Elizabeth A. Kvale, Laurie A. Slay, Marie A. Bakitas, and Kathryn L. Burgio. 2020. "Online Training Is Great but Human Interaction Is Better": Training Preferences of VA Interdisciplinary Palliative Care Consult Teams. *American Journal of Hospice and Palliative Medicine* 37: 800–8. [CrossRef] [PubMed]
Zhao, Danling, Bingfeng Ge, and Jichao Li. 2018. Optimization Adjustment of Human Resources Based on Dynamic Heterogeneous Network. *Physica A* 503: 45–57. [CrossRef]