Boosting Productivity and Retention: An HR Analytics Project for SmartEye

Content

Executive summary

This HR analytics project aimed to provide workforce and performance insights to aid SmartEye's human resources planning and management.

1. The analysis uncovered **three key issues**:

• Sales department underperformance

• Lower retention for certain employee cohorts

• Decreasing employee numbers since July 2015

2. To address these challenges, the **top recommendations** are:

• Boost sales department performance through training programs and incentives

• Improve retention by focusing recruiting on low turnover channels like LinkedIn

• Continue hiring ~40 employees per year to maintain workforce levels in the next 4-5 years

The project provides an overview of employee demographics, performance, retention and turnover through the interactive dashboard. Moreover, this analysis uncovered the root causes of poor performance, predictors of turnover, workforce reduction projections, and at-risk employee segments.

Key recommendations for the Management and the Human Resources specialists include boosting sales performance through training and incentives, improving employee engagement and satisfaction, reducing lateness, developing low performers, transitioning out costly low performers, continuing hiring approximately 40 employees per year to maintain workforce levels in the next 4-5 years, and focusing recruiting on low turnover channels like LinkedIn.

The data-driven insights identify issues hindering productivity and retention. The targeted recommendations will aid SmartEye HR in maintaining an engaged, high-performing workforce. Enacting these solutions would improve workforce stability, boost productivity, ensure critical roles remain filled, and provide a positive employee experience.

This rigorous analysis provides SmartEye HR with actionable, empirically-supported guidance. Follow-up work with expanded data would further validate findings and allow ongoing optimization of the workforce.

1. Introduction

SmartEye is a fictional technology company that produces smart home security cameras and software. Founded in 2006, SmartEye has been operating for over 12 years, providing innovative home monitoring products and services to customers.

SmartEye's core offering is an AI-powered security camera that customers can install in their homes. The camera uses advanced computer vision algorithms to detect suspicious activity and send alerts to the customer's smartphone. If any motion or intrusion is detected, the SmartEye app immediately alerts the customer via push notification so they can take action. Customers can view live or recorded video footage from the SmartEye cameras through the app. The video feeds are encrypted for privacy and stored securely in the cloud. Customers can log in to the app at any time from their phone to check feeds and receive alerts from any location.

From its beginnings in 2006, SmartEye has grown to be a leading provider of smart home security solutions. The company sells products in the United States both directly to consumers through its website and also through partnerships with electronics and home security retailers. After over a decade in business, SmartEye aims to maintain its growth through continued product innovation and providing the best experience for its customers. The company culture emphasizes using advanced technology to give people peace of mind by making their homes safer and more secure.

1.1 Project background

With rapid growth, SmartEye had expanded to 207 active employees by 2018. This sizable workforce meant the Human Resources department needed a more systematic approach to track and analyze key workforce metrics like demographics, performance, and turnover. To enable ongoing monitoring of these workforce indicators, the HR and management teams requested the creation of an interactive dashboard that would consolidate and surface key employee data in a central, up-to-date view.

Additionally, HR outlined the need for data-driven insights to inform SmartEye's human resources planning and guide employee performance management strategies.

1.2 Project objectives

To address the needs outlined by the Human Resources department, the project aimed to achieve the following objectives:

1. Develop an interactive dashboard in Google Looker to track key workforce metrics including demographics, performance, and turnover.
2. Analyze main performance indicators to uncover drivers of poor performance and identify opportunities for improvement.
3. Examine key retention and turnover metrics, model future workforce scenarios, and determine predictors of employee turnover.

2. Methodology

2.1 The data

The data for the analysis was downloaded from Human Resources Data Set | Kaggle. This data was created by Dr. Carla Patalano and Dr. Rich Huebner for learning and teaching purposes.

The core data set contains information about employees: names, date of birth, age, gender, marital status, date of hire, reasons for termination, department, whether they are active or terminated, position title, pay rate, manager name, performance score, number of absences, employee engagement score, number of times being late in the past 30 days, etc. The full data dictionary and description of variables can be found in Data dictionary. The dataset contains one data file with 36 columns and 311 rows. The dataset covers the timeframe from 2006 to 2018.

Overall, the dataset was very clean with no obvious outliers, duplicates, inconsistencies, or problematic missing values. The data quality checks indicated this was a high-quality dataset appropriate for further analysis.

2.2 The main analysis methods

• Correlation analysis

enabled identifying relationships between key variables like performance and engagement in a simple, interpretable manner. This revealed useful connections aligned with scientific research.

Correlation coefficients and statistical significance were calculated using IBM SPSS Statistics 26.0.

• Cohort analysis

Cohort analysis brought novelty by evaluating trends over time across employee groups. Segmenting by tenure provided nuanced insights into changing retention rates.

See the analysis sheet Employee Retention (%).

• Employee Segmentation

Employee segmentation provided a granular view by dividing employees into meaningful categories based on performance, tenure and cost. This allowed tailored strategies to be formed.

A full description of each segment is available in Employee segments.

• Predictive modeling

Logistic regression modeling predicted employee turnover probability based on key indicators like tenure and absences. Quantifying turnover likelihood allows SmartEye HR to focus retention efforts on high-risk employees. Saving current employees with targeted initiatives is typically more affordable than hiring new replacements.

• Workforce forecasting

Workforce forecasting delivered valuable simulations of future workforce size under hiring changes. Modeling different scenarios provided insights to guide planning.

Models were built using Google Sheets Employee Retention (prediction)

• Data visualization

in Google Sheets and Google Looker enabled data insights to be communicated through interactive dashboards, graphs, and charts.

3. Results

3.1 The dashboard overview

• First of all, an interactive SmartEye HR Analytics dashboard was created to track and analyze employee demographics, performance and turnover.

• The dashboard consists of these interactive pages:

— **Employee Demographics**
Provides breakdowns of workforce by department, gender, location, role, and ethnicity. Enables tracking diversity and representation.

— **Employee Performance (1)**
Displays performance level distribution, correlates performance to engagement, and shows various relevant metrics (e.g. number of absences) by performance level. Surfaces insights on drivers of high/low performance.

— **Employee Performance (2)**
Compares average salary by performance level and tenure. Relates performance to satisfaction. Shows relevant performance metrics (e.g. instances of being late) by department and position. Uncovers performance issues by area.

— **Employee Segments**
Exhibits strategic employee segments based on performance, tenure, and cost. Provides key stats for each segment like number of employees, average tenure, absences, and more. Enables tailored actions per employee segment.

— **Employee Turnover**
Tracks turnover rates over time, growth trends, top recruitment channels, and reasons for turnover. Identifies retention problem areas and opportunities.

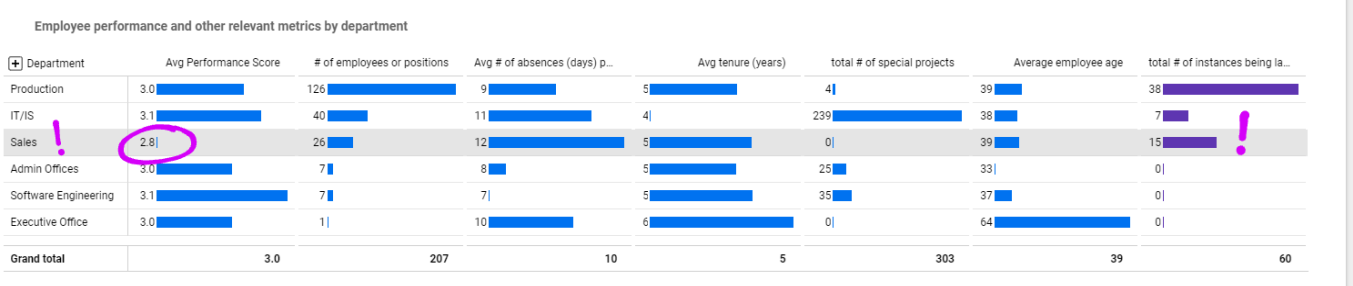
• The dashboard enables easy filtering of results using dropdown menus at the top of each page. Users can filter by criteria like employment status, department, position, and year of hire. Cross-filtering is enabled, allowing users to click on data points within visualizations to filter and reveal additional insights.

3.2 Employee performance overview

• **3.2.1 Most employees meet their performance expectations, but there are some areas for improvement.**

As the graph above shows, most active employees currently (N=161) meet performance expectations (Performance Level 3). However, some employees perform very poorly (N=9), not meeting expectations (Performance Level 1). Additionally, some employees need improvement (N=8) with a Performance Level of 2.

• **3.2.2 Sales department underperformance**



Department	Avg Performance Score	# of employees or positions	Avg # of absences (days) p...	Avg tenure (years)	total # of special projects	Average employee age	total # of instances being la...
Production	3.0	126	9	5	4	39	38
IT/IS	3.1	40	11	4	239	38	7
Sales	2.8	26	12	5	0	39	15
Admin Offices	3.0	7	8	5	25	33	0
Software Engineering	3.1	7	7	5	35	37	0
Executive Office	3.0	1	10	6	0	64	0
Grand total	**3.0**	**207**	**10**	**5**	**303**	**39**	**60**

Of all departments, Sales has the lowest average performance score at 2.8 (see the graph above). The department has the second

highest number of late arrivals in the past 30 days compared to other departments. Three Sales employees out of 26 total are not meeting expectations, with one additional employee needing improvement.

- **3.2.3 Managers with low performers**

Employee performance and other relevant metrics by department

Department	Manager Name	Avg Performance Score	# of employees or positions	Avg # of absences (days) p...	Avg tenure (years)	total # of special projects	Average employee age
Production	Brannon Miller	1.3	3	9	4	4	40
	Michael Albert	1.7	3	5	5	0	32
	Amy Dunn	1.0	2	12	4	0	40

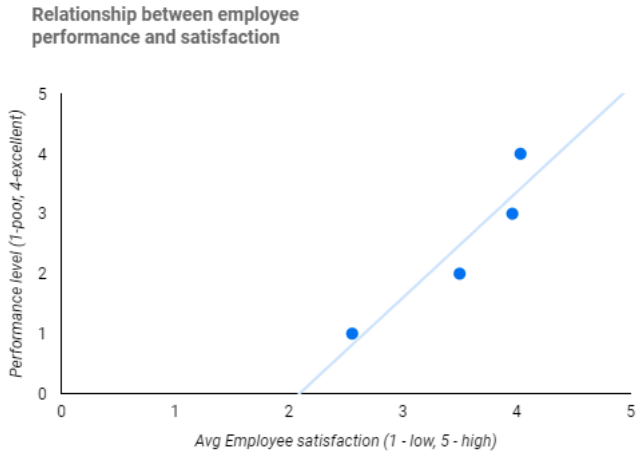
Of all managers, Brannon Miller and Michael Albert have the most poorly performing employees on their teams, with 3 each.

3.3 What is related to poor performance (Performance level 1 and 2)?

- **3.3.1 Poor performance correlates with lack of engagement**

First, there is a correlation between performance level and employee engagement (r=0.545, p<0.01). Higher average engagement scores relate to higher average performance levels. This finding aligns with the scientific literature indicating a relationship between employee engagement and performance (Bakker & Leiter, 2010). Thus, poor performance correlates with low engagement. To illustrate, employees with Performance Levels 1 and 2 have an average engagement score of just 2.6, compared to the 4.1 average among all employees.

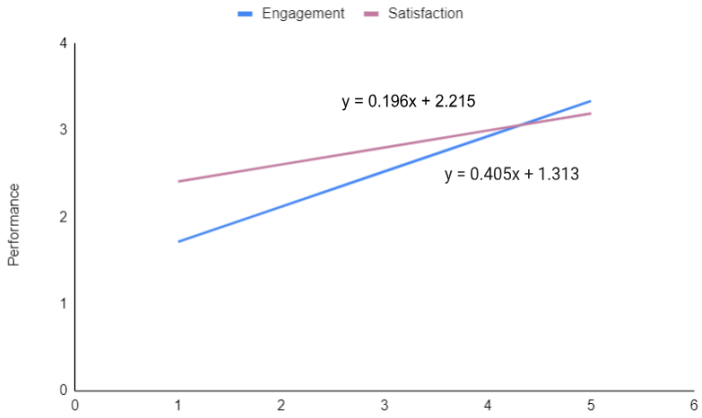
- **3.3.2 Poor performance is related to lower job satisfaction**



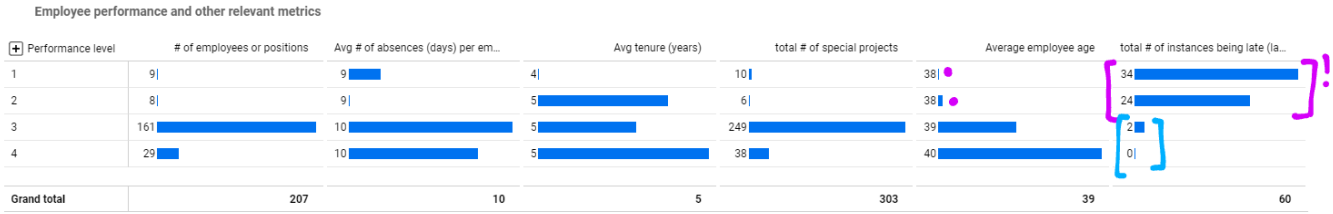
Secondly, performance level correlates with employee satisfaction (r=0.304, p<0.01). The higher the average satisfaction score, the higher the average performance level. This finding also aligns with the scientific literature indicating a relationship between employee job satisfaction and performance (Judge et al., 2001). Therefore poor performance is related to lower than average satisfaction. The average satisfaction score of employees whose performance level is 1 and 2 is only 3, compared to the average engagement score of all employees - 3.9.

- **Where to focus: engagement or satisfaction?**

Analysis of the trends reveals a steeper slope between employee engagement and performance (0.405) compared to the relationship between job satisfaction and performance (0.196) (see the graph below). This indicates small improvements in engagement generate larger performance gains than equivalent increases in satisfaction. As such, boosting employee engagement may be more impactful for increasing performance versus solely raising satisfaction levels.



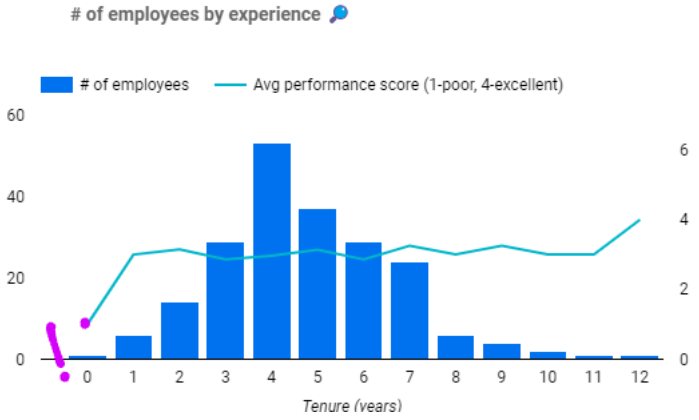
- **3.3.3 Poor performance correlates with lateness**



Performance also negatively correlates with more lateness (r=-.753, p<0.01). The higher the performance, the less lateness there is. In other words, poor performance correlates with more frequent lateness. For instance, employees with Performance Levels 1 and 2 were late 58 times in the last 30 days, compared to only 2 total late days for higher performers. This result aligns with the scientific literature indicating the relationship between lateness and performance (Koslowsky et al., 1997).

Additionally, we can see from this table above that poor performers tend to be slightly younger and less experienced, with lower tenure at the company versus good performers.

- **3.3.4 Poor performance might be related to insufficient experience**



Very poor performance appears potentially related to insufficient experience at the company. Employees with up to one year of tenure (tenure=0) have the lowest average performance score of 1. It is possible that job tenure could contribute positively to performance (Schmidt et al. 1986; McDaniel, Schmidt, and Hunter 1988).

3.4 How to increase employee performance?

• **First**, the company could address underperformance in the Sales department, where some employees need improvement. Potential actions include training if skills are lacking (Arthur et al., 2003), or implementing sales incentives if motivation is low (Chung, 2015).

• **Second**, managers with many low performers could receive training on performance management and motivation to help reduce the number of low-performers in their teams (Aguinis & Kraiger, 2009).

• **Third**, improving employee engagement and satisfaction may increase performance, as psychological research indicates (Markos & Sridevi, 2010; Melián-González et al., 2015). Here are some strategies to improve employee engagement and satisfaction:

— Offering benefits like remote work options, flexible schedules, paid time off, parental leave, etc. Giving employees flexibility and work-life balance can increase satisfaction (Bloom, 2014).

— Providing opportunities for career development through training, mentoring programs, or tuition assistance. Investing in growth keeps employees engaged (Kuvaas & Dysvik, 2010).

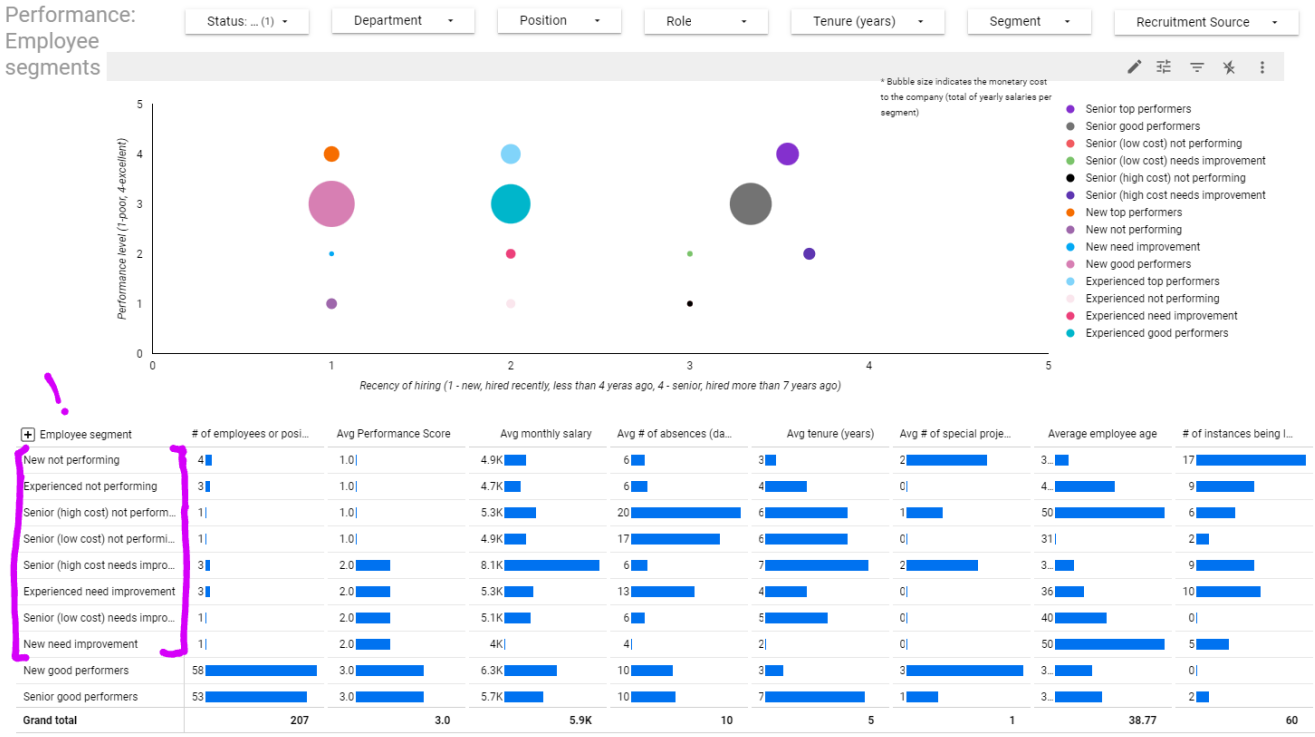
— Fostering an inclusive, collaborative culture through team building activities. Nurturing community and belonging boosts engagement (Fortuna, 2022).

— Ensuring managers are supporting employees by training them on leading with empathy. Good managers increase retention and engagement (Vayability, 2022).

— Setting up mechanisms like surveys, focus groups, or one-on-one meetings to regularly gather employee feedback. Acting on this input demonstrates care and increases employee satisfaction (*How to Improve Employee Satisfaction*, n.d.).

• **Fourth**, reducing lateness could help, as being late may hinder meeting deadlines and requirements (Koslowsky et al., 1997).

• **Finally, low-performing employee segments, especially costly ones, should be targeted:**



Employee segment	# of employees or posi...	Avg Performance Score	Avg monthly salary	Avg # of absences (da...	Avg tenure (years)	Avg # of special proje...	Average employee age	# of instances being l...
New not performing	4	1.0	4.9K	6	3	2	3...	17
Experienced not performing	3	1.0	4.7K	6	4	0	4...	9
Senior (high cost) not perform...	1	1.0	5.3K	20	6	1	50	6
Senior (low cost) not performi...	1	1.0	4.9K	17	6	0	31	2
Senior (high cost needs impro...	3	2.0	8.1K	6	7	2	3...	9
Experienced need improvement	3	2.0	5.3K	13	4	0	36	10
Senior (low cost) needs impro...	1	2.0	5.1K	6	5	0	40	0
New need improvement	1	2.0	4K	4	2	0	50	5
New good performers	58	3.0	6.3K	10	3	3	3...	0
Senior good performers	53	3.0	5.7K	10	7	1	3...	2
Grand total	**207**	**3.0**	**5.9K**	**10**	**5**	**1**	**38.77**	**60**

— • **New need improvement**: given low tenure, the company should focus on developing these employees to improve performance. For example, the company could provide training, mentoring, and clear guidance on performance goals. Managers of these employees should check in regularly on progress and development areas.

— • **New not performing**: may be good to transition new low performers out before tenure builds or investigate whether the employee might need training. In addition, the company could put them on a performance improvement plan with clear targets and deadlines. If no improvement, HR could move them into a more suitable role or transition them out.

— • **Experienced need improvement**: the company should look for opportunities to improve performance. Additionally, these employees could have skip-level meetings with senior leaders to gain visibility. Lastly, the company could look at potential burnout and the need for reduced responsibilities or a developmental transition.

— • **Experienced not performing**: The company could use 360 reviews to identify issues, and address poor management or work environment factors impacting this group. Lastly, it might be beneficial to move these employees into less critical roles or transition them out completely in case their performance does not improve over time.

— • **Senior (low cost) needs improvement**: the company should look for performance improvement opportunities. For example, the company could leverage their experience to mentor newer employees. This might provide project leadership opportunities that could re-engage and motivate them.

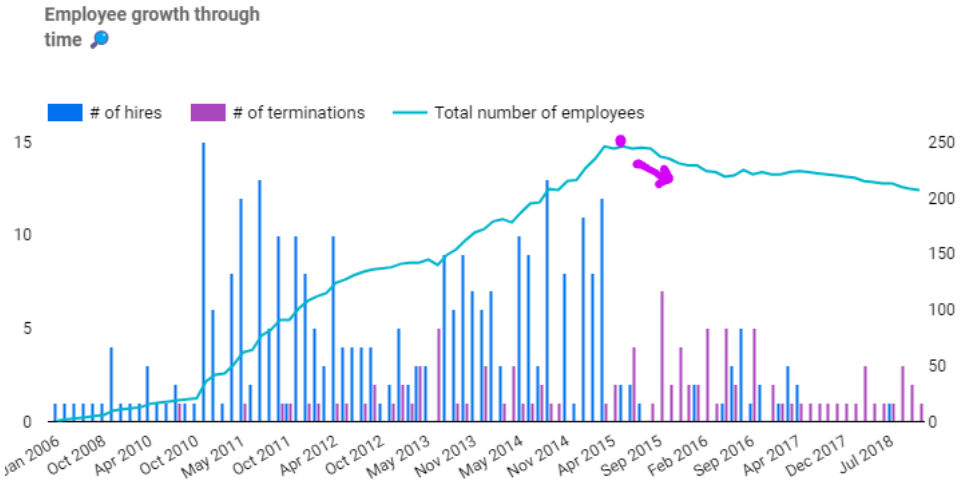
— • **Senior (low cost) not performing**: the company should consider performance management or transitioning them out. Another solution could be to move them into roles better suited to their strengths and interests or reduce responsibilities that are no longer a good fit.

— • **Senior (high cost) not performing**: the company should consider performance management for improvement or transitioning them out. Regarding performance management, the managers should give clear and structured feedback about the performance gaps of these employees and communicate clearly about the future consequences of their underperformance. As these employees cost a lot to the company, another solution would be to reducing the salary by transitioning to a lower-level role in case there is no improvement shortly.

— • **Senior (high cost) need improvement**: the company should look for opportunities to improve performance or reduce salary through transition to lower level role. To motivate these employees the company could try to openly discuss their future aspirations and professional development goals, and provide tailored training and growth opportunities.

3.5 Employee Retention and Turnover analysis

• **3.5.1 How was the employee number changing over time?**



The number of hires and terminations fluctuated throughout the years, but the total number of employees was steadily increasing until July 2015, when it started to decrease slightly. The decrease could be explained by the fact that after March 2015 there was very little new hiring compared to the period (2010 - March 2015). It might be that the company reached the final growth state (resource maturity) and the rapid growth stopped because of that (Churchill & Lewis, 1983).

• **3.5.2 How was employee retention changing over time across different cohorts?**

Employee Retention (%)

cohort_by_year	y0_pct	y1_pct	y2_pct	y3_pct	y4_pct	y5_pct	y6_pct	y7_pct	y8_pct	y9_pct	y10_pct	y11_pct	y12_pct
2006-01-01	100	100	100	100	100	100	100	100	100	100	100	100	100
2007-01-01	100	100	100	50	50	50	50	50	50	50	50	50	
2008-01-01	100	100	100	100	100	100	100	67	67	67	67		
2009-01-01	100	100	100	100	86	86	71	71	71	57			
2010-01-01	100	78	78	78	78	78	67	67	67				
2011-01-01	100	89	80	67	55	42	36	29					
2012-01-01	100	91	89	78	71	67	64						
2013-01-01	100	95	93	86	86	84							
2014-01-01	100	97	93	93	88								
2015-01-01	100	86	83	81									
2016-01-01	100	100	100										
2017-01-01	100	100											
2018-01-01	100												
Average	100	95	92	83	79	76	70	64	71	68	72	75	100

On average, it seems that employee retention in the first 2 years is very good. Generally, companies seek to have a retention rate of 90% or higher (Walker, n.d.).

However, an analysis of retention rates by employee cohort (segmented by year of hiring) revealed lower retention for those hired in 2007, 2010-2012, and 2015 relative to other cohorts.

• **3.5.3 Differences between cohorts**

How do poor retention cohorts differ from the cohorts with better retention (2008, 2009, 2013, 2014, 2016)?

— 3.5.3.1 Comparing the number of terminations for a cause between good and poor retention groups

# of employees by recruitment source and employment status — POOR RETENTION

Recruitment Source	Voluntarily Ter...	Terminated fo...	Active	Grand total
			Employment Status / # of employees	
Indeed	15	4	23	42
Google Search	23	3	13	39
LinkedIn	12	1	19	32
Diversity Job Fair	14	-	6	20
CareerBuilder	9	-	8	17
Employee Referral	-	2	13	15
Website	1	-	7	8
On-line Web applic...	1	-	-	1
Grand total	**76**	**10**	**89**	**175**

# of employees by recruitment source and employment status — GOOD RETENTION

Recruitment Source	Voluntarily Ter...	Terminated fo...	Active	Grand total
			Employment Status / # of employees	
LinkedIn	3	2	39	44
Indeed	2	-	35	37
Employee Referral	2	1	13	16
Google Search	2	2	6	10
Diversity Job Fair	2	-	7	9
CareerBuilder	1	1	4	6
Website	-	-	5	5
Other	-	-	1	1
Grand total	**12**	**6**	**110**	**128**

Cohorts with poor retention had **10** cases of termination for cause, while the good retention cohorts had **6** cases.

— 3.5.3.2 Comparing the most frequent recruitment channels of good and poor retention groups

of employees by recruitment source and employment status — POOR RETENTION

Recruitment Source	Voluntarily Ter...	Terminated fo...	Active	Grand total
			Employment Status / # of employees	
Indeed	15	4	23	42
Google Search	23	3	13	39
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CareerBuilder	1	1	4	6
Website	-	-	5	5
Other	-	-	1	1
Grand total	**12**	**6**	**110**	**128**

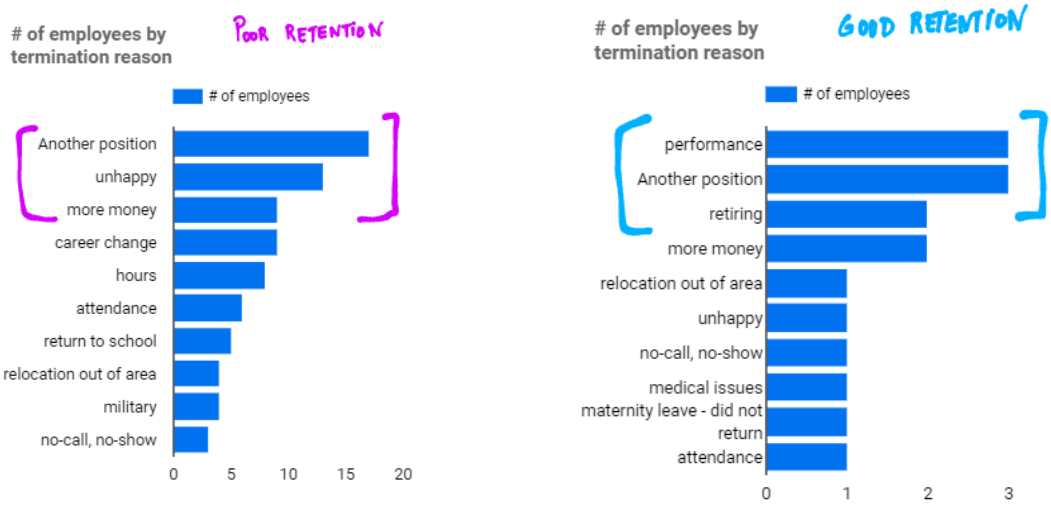
Most employees from the cohorts with poor retention were hired through Indeed and Google Search, whereas most employees from the good retention cohort were hired through LinkedIn and Indeed. Therefore, it appears that more employees were hired through high termination rate employment channels in the poor retention cohorts than in the good retention cohorts.

It is known that employees hired through LinkedIn and Indeed have only moderate termination rates, but employees hired through Google Search have one of the highest termination rates.

SUM of # of employees	Employment Status					
Recruitment Source	**Active**	**Terminated for Cause**	**Voluntarily Terminated**	**Total terminated**	**Grand Total**	**% terminated out of total hired**
CareerBuilder	12	1	10	11	23	47.8
Diversity Job Fair	13		16	16	29	55.2
Employee Referral	26	3	2	5	31	16.1
Google Search	19	5	25	30	49	61.2
Indeed	66	4	17	21	87	24.1
LinkedIn	58	3	15	18	76	23.7
On-line Web application			1	1	1	100.0
Other	1		1	1	2	50.0
Website	12		1	1	13	7.7
Grand Total	**207**	**16**	**88**	104	**311**	33.4

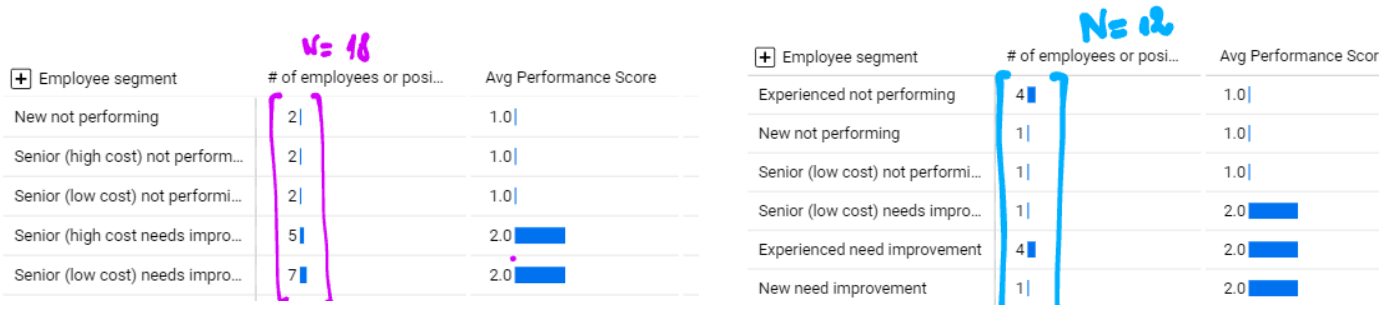
Moreover, the table above reveals that hiring through employee referral and the company website has one of the lowest turnover rates. Therefore, promoting these recruitment sources at the company could be beneficial in increasing employee retention (Friebel et al., 2019).

— 3.5.3.3 Comparing termination reasons between the good and poor retention employee groups.



It seems that the most common termination reasons differ between poor retention cohorts (see the graph on the left) and good retention cohorts (see the graph on the right). The most common termination reasons of employees from good retention cohorts include poor performance, seeking another position, retirement or needing more money. The most common termination reasons of employees from poor retention cohorts include seeking another position, being unhappy, and needing more money.

— 3.5.3.4 Comparing the number of low-performing employees in good versus poor retention groups



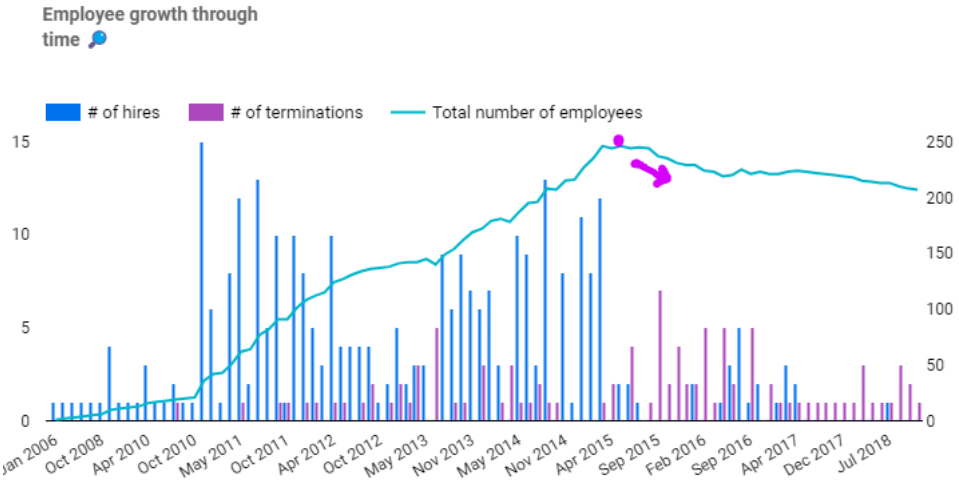
Poor retention cohorts (see the table on the left) have slightly more employees from low-performing segments (N=18) than good retention cohorts (N=12) (see the table on the right).

— 3.5.3.5 Differences between cohorts (In summary)

poor retention cohorts had more terminations for cause, were more frequently hired through high turnover channels like Google Search, had different common termination reasons including being unhappy, and contained slightly more low performers compared to good retention cohorts. This suggests retention challenges may be driven by hiring practices, fit/engagement issues, and performance problems within these groups.

3.6 Modeling future workforce scenarios

- **3.6.1 Why is there a need to predict workforce scenarios? When did the hiring slow down?**



It was observed that after March 2015 there was very little new hiring compared to the previous period (2010 - March 2015).

Due to the slowed hiring rates, HR wanted to know what would happen in 5 years if the hiring would stop completely.

- **3.6.2 How many employees would there be left after 1-5 years?**

How many new employees should the company hire each year to retain approximately the same workforce size in the upcoming years?

	Year	# of employees (if no new hires)	# of employees (if on avg 24 new hires yeach year)	# of employees (if on avg 50 new hires yeach year)	# of employees (if on avg 40 new hires yeach year)
after # of years :	2018	207	207	207	207
1 y13	2019	152	176	202	192
2 y14	2020	107	153	207	187
3 y15	2021	73	140	224	194
4 y16	2022	48	134	247	207
5 y17	2023	33	137	275	227

The table above illustrates projected workforce numbers in 5 years under different hiring scenarios and a 21.22% average annual attrition rate. With no new hiring, there would be significant workforce reductions. However, acquiring an average of 24 new hires per year would lessen the decline. To maintain the current workforce size of approximately 207 employees over the next 4-5 years, hiring an average of 40 employees annually would be needed to offset attrition.

3.7 Turnover predictors

What factors could help us predict whether an employee will terminate or not?

The final logistic regression model (R-squared = 0.234) was built to predict employee termination with 73% precision based on three key factors:

• 1. **Hiring source** - Being hired from a diversity job fair increases the likelihood of termination. The odds of a person being terminated are 3.035 (95% CI [1.065, 8.649]) times higher for someone who was hired from the diversity job fair, all other factors being equal.

• 2. **Absenteeism** - More missed work days correlate with higher termination probability. For every extra 1 day of being absent, the odds of the employee terminating increases by a factor of 1.062 (95% CI [1.006, 1.12]), all other factors being equal.

• 3. **Tenure** - Longer company tenure decreases the chance of termination. For every extra 1 year of tenure, the odds of the employee terminating decreases by a factor of 0.664 (95% CI [.566, .779]), all other factors being equal.

The formula: Z= 1.11 x FromDiversityJobFair + 0.06 x Absences - 0.409 x tenure
If Z>0, then we assign the employee to "will terminate" group.

To check the prediction results on employee termination, go to Employee termination prediction result

Recommendations and further actions

Based on the analysis, here are some key recommendations for HR regarding workforce planning and performance management:

• **Workforce Planning**:

— Continue hiring new employees to offset attrition and prevent significant workforce declines. Target hiring approximately 40-50 new employees per year to maintain workforce levels in the upcoming years.

— Focus recruiting efforts on channels with lower employee turnover like LinkedIn rather than high turnover channels like Google Search.

— Proactively model and forecast future workforce numbers under different hiring scenarios to aid planning.

• **Performance Management**:

— Address underperformance in the Sales department through training programs or incentives.

— Provide management training for managers with many low performers.

— Improve employee engagement and satisfaction to boost performance.

— Reduce lateness through policies or incentives as it correlates with lower performance.

— Target development opportunities and retention efforts toward valuable but lower-performing segments like Experienced Need Improvement.

— For costly but low-performing segments like Senior High Cost Underperformers consider performance management or transitioning them out.

Limitations

First, the future workforce prediction is based on the assumption that past turnover rates will persist. However, real-world data may reveal more complexity as retention change over time due to internal initiatives or external influences.

Secondly, statistical models like regression have inherent limitations in capturing all real-world complexities. Though directionally useful for prediction, the model outputs likely deviate from actual future results due to the undiscovered factors impacting individual decisions that cannot be fully incorporated.

Another limitation of this analysis is the narrow set of variables available in the dataset. While useful insights were uncovered, the addition of qualitative employee data through variables like skills, qualifications, career goals, and motivations could have provided richer and more contextualized findings. For example, emerging trends like increased desire for remote work or new skill demands are hard to predict without qualitative data on employee priorities. Furthermore, solely relying on quantitative metrics limited the analysis' ability to fully explain the human factors behind workforce issues.

For the future research, conducting qualitative research through interviews, focus groups, or case studies with employees and managers could add crucial perspective and narrative context around the personal experiences underlying retention and performance challenges. For a more holistic understanding, blending quantitative data with in-depth qualitative insights might help to not just identify workforce problems but also reveal the human stories and real-world impacts behind the data points.

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