Job Satisfaction Analysis at an R&D Center in the Mexican Automotive Industry

by

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SUBMITTED TO THE SYSTEM DESIGN AND MANAGEMENT PROGRAM
IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF

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ABSTRACT

Over the recent years, the automotive industry in Mexico has grown significantly. Technical tasks are becoming more complex which is driving engineers to specialize further in their field of work. They are turning into the most valuable asset and harder to replace. Company AZE, which is one of the top Automotive R&D centers in Mexico, is used in this thesis as a business case. The Company has recognized the value of their engineering workforce and is focusing more in maximizing employees' tenure by identifying the drivers that either push employees to leave or stay at the company. Data was collected through a survey applied with the purpose of understanding what level of engagement, motivators and frustration factors are affecting the company's engineers. Analysis was conducted using cross tabulation and linear regression tools; attrition variable correlation with key variables had an R^2 of 0.33. Results of the research show that 12.6% of engineers are planning to quit their job in the following two years. Additionally, 15.7% of engineers are not completely convinced of staying inside the company. Workforce is on average satisfied with their Jobs. The most likely reason is because the company is still growing; growth influences positively all employees' mood and creates a good working environment. However, is necessary to keep an eye on factors that may make the employees dissatisfied such as: Personal Development, Level of engagement, Work responsibility and salary. Recommendations of how to improve job satisfaction are provided as the conclusion of this thesis.

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INTRODUCTION

Company AZE is a technology center dedicated to develop new vehicle system and components; located in Mexico City and dependent upon a global enterprise located in the US. It has been in constant growth during recent years hiring over 600 engineers and it is expected that this growth will last another 4 years until the target of approximately 1400 engineers is reached. Sometime over the next five years, this plan –or in fact any feasible plan- will result in a strong growth deceleration.

At the dawn of Company AZE's growth rate deceleration, the risk of losing valuable engineers is increasing. Low and Mid-level management open positions will eventually be full, creating reduced opportunity. Engineers will need to wait longer to be promoted, which may create frustration and demoralization. Considering the imminent upcoming scenario, management will have to adapt quickly and take actions to prevent attrition. Experienced engineers are usually working on the firm's most critical tasks, losing them may affect the organization's capability and therefore, delay or even thwart Company AZE's strategic plans.

Many efforts by management and Human Resources (HR) have been pursued inside the company to understand the engineers' engagement - level of personal connection and commitment the employee feels toward the firm and its mission – and motivators. Throughout the work reported in the thesis, I want to continue these efforts and help my company to create strategies to prevent excessive attrition of engineers in future years. I will attempt to achieve this by gaining an intimate understanding of their level of engagement, motivators and the issues which can become frustrating for them; ranking them by priority and to suggest possible solutions of the most important ones.

MOTIVATION

I decided to dedicate my research to analyze employee attrition because I have experienced what it can do to a good working team. On my first job, many good engineers quit their jobs; annual turnover rate was above 20%. The average employee tenure was less than 3 years; if any given employee stayed longer than 3 years, they were considered senior engineers. As can be expected, the work environment was not optimal. It was usual that working days lasted 13 to 15 hours without overtime, and due to employee shortage and an unskilled team, programs were delayed and tasks were not delivered on time.

Now that I am working for Company AZE, I would like to help to prevent this type of scenario from happening again. In order to do that, I will attempt to enlighten my company about the issues which frustrate engineers. The advantage of me doing this study is that I am part of the same personnel that I am analyzing; therefore, some of the issues I know well. I also recognize that this advantage contains a disadvantage as I am among the ones who I am trying to design pleasing policies for and this introduces a possible non-objective motivation which I have strived to minimize.

Due to the sensitive information treated in this thesis, it was decided to anonymize the information to unlink any relationship to the Company that I gathered data from and used as the business case.

The issue addressed in this thesis is important for Company AZE to keep steadily growing by maximizing the engineers' experience and tenure. If engineers stay longer working for the company, the accumulated knowledge increases and more complex tasks can be solved in less time. It is my hope that the work done will aid the company I solving this issue. The proposed

method to increase the employee tenure is by gaining a better understanding of their level of job satisfaction.

I started my work by analyzing the Automotive Industry in México. I wanted to understand who the key players are, their workforce size and what the forecast in the near future is, i.e. is the industry expanding or not?

Automotive engineering work stream is growing in México, more and more complex tasks are been assigned to the local R&D centers; however there are not enough engineers to fill all vacancies. Currently there are 11 main Research and Development Centers that are in need of skilled employees to keep up with the assigned projects, leading to companies to "fight" for experienced engineers.

Figure 1 shows an overview of how engineers are distributed among the most important Automotive R&D centers located in Mexico as of May-2013. The list will increase with the imminent arrival of Audi, Honda and Mazda manufacturing plants in the near future (Ferdman, 2013) which might unbalance the figures shown. From a geographic perspective, Ford, GM Chrysler, Nissan and VW are contained in the same geographic zone, which makes it easier for engineers to move between companies without the need of changing their residence and therefore, their lifestyle.

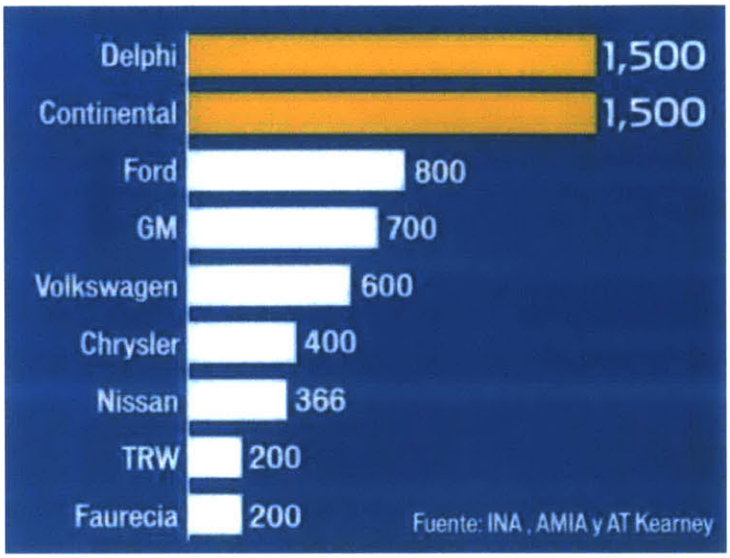

Figure 1: Number of engineers per Automotive Company in México[1]

Why are so many brands coming to Mexico and hence trying to get the most experienced engineers? One possible reason is due to the vehicle manufacturing booming in Mexico – production in April 2013 increased 15.6% compared to the same month a year earlier- (Ferdman, 2013). Figure 2 shows the increasing vehicle annual volume that leads companies to have local R&D centers that can support promptly the production team when issues arise.

Takeaways from Industry overview: The industry is expanding, more brands are forecasted to arrive, therefore more engineers will be required and talent competition among the incumbents will be more furious over the next years.

[1] (Cantera, 2013)
Source:http://www.negociosreforma.com/aplicaciones/Articulo/Default.aspx?id=122054&urlredirect=http%3A%2F%2Fwww.negociosreforma.com%2Faplicaciones%2FArticulo%2FDefault.aspx%3FId&v=11

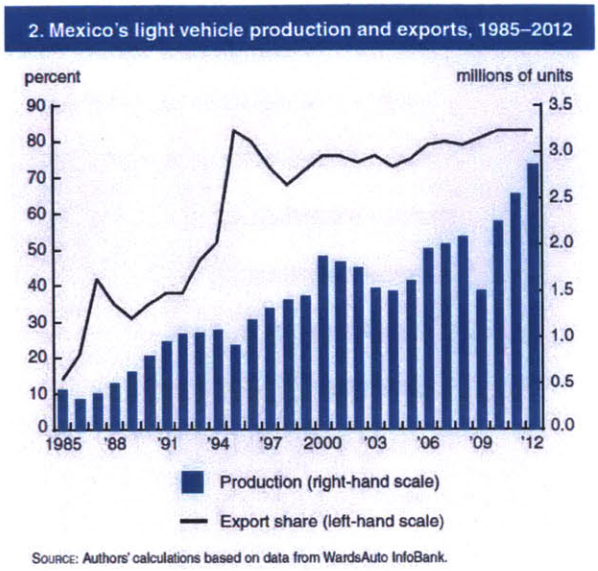

Figure 2: México's light vehicle production and exports, 1985-2012[2]

Another key factor to be considered by the Mexican automotive companies is the US employers headhunting. The automotive industry in the US is struggling to find appropriate engineers who can develop vehicle sub-systems and components. Since 2011, Auto part companies are creating more demand for skilled personnel than the market can provide (Nishimoto, 2011) (Green, et al., 2012). To satisfy the demand, US companies are looking to Mexican engineers as a viable option to fill the workforce gap.

As evidence to support the phenomenon just explained, more than 30% of employees who quit Company AZE in 2013 accepted another job in a US-based automotive company.

[2] (Klier, et al., 2013)
Source:http://www.chicagofed.org/digital_assets/publications/chicago_fed_letter/2013/cflmay2013_310.pdf

So what if Company AZE does not bother in retaining their employees and instead, it concentrates in keep hiring young and unskilled engineers to train them? Attrition affects negatively to companies in cost and time because of the investment in each employee to achieve the needed competence. Based on experience, an employee in the automotive industry, requires around 2-3 years from hiring until they crossover to productivity being greater than their total cost (including training and supervision). Additionally, according to R. Blake, to replace an employee can cost the company about 30-50% of the annual salary of the employee (Blake, 2006). Figure 3 reflects in a chart, what the cost to value of an employee is for a company. Therefore, all the investment done in employees will not result in profit for the company and higher level tasks will not be completed on time since all the knowledge gained leaks until it depletes to unusable levels.

The path explained in the previous paragraph was followed by my former employer, the result: Unhappy workforce left the company at the first opportunity of getting out. The vision developed in 2006 of designing the upper body of a vehicle completely by themselves by 2015 had to be delayed a couple of years due to experience reasons.

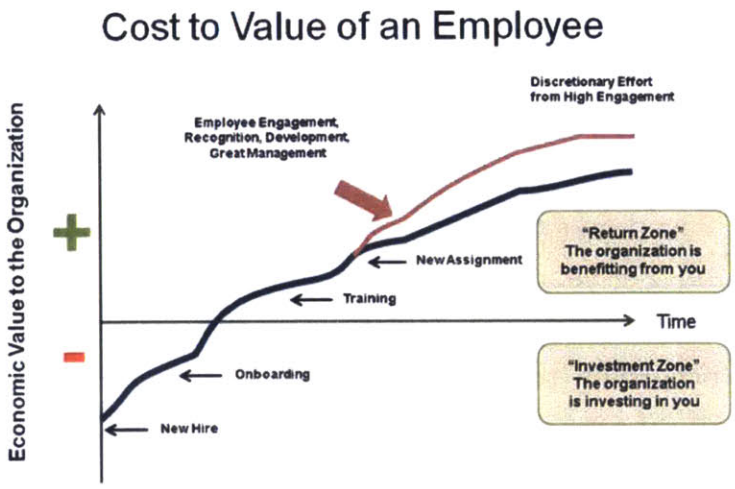

Figure 3: Generic chart of Cost to Value of an Employee[3]

Company AZE workforce is composed of different subgroups who enrich the company knowledge and expertise. The breakdown is exhibited in Table 1. The salaried band is the one most diversified compared to the rest of the bands (management bands), its ranks is formed by senior engineers, engineers with launch experience, engineers with international assignment experience and junior engineers. Age and experience are the major factors to have a diversified mindset which hinders the efforts of coming with an effective retention strategy that can encompass all the employees. Therefore, in support to the company AZE management, the contents and analysis of this thesis will mainly target the salaried employee band who, based on the 2013 attrition rate report, are the most prone to leave the company.

[3] (Bersin, 2013) Source: http://www.linkedin.com/today/post/article/20130816200159-131079-employee-retention-now-a-big-issue-why-the-tide-has-turned

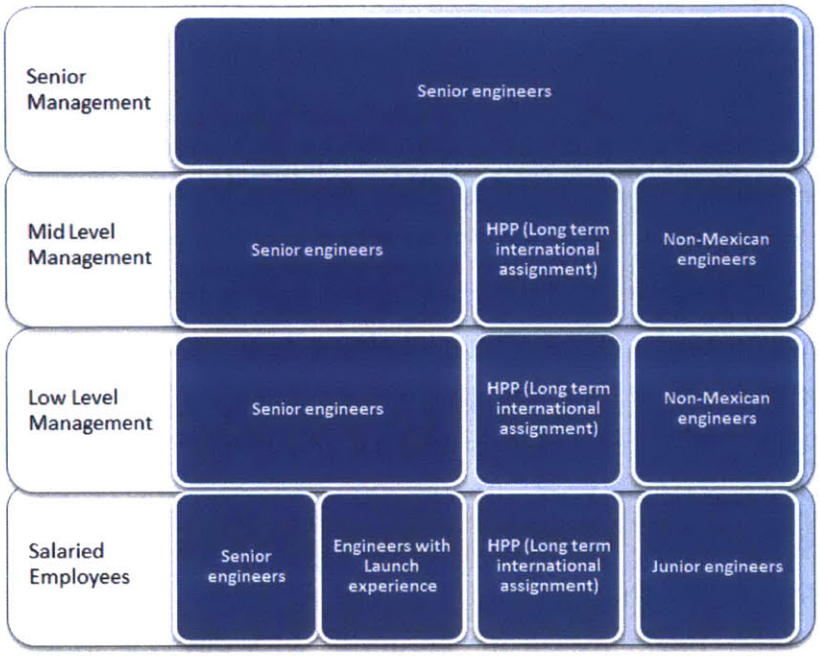

Table 1: Company AZE workforce composition

LITERATURE REVIEW

The main intellectual foundation of this thesis is linked to Herzberg's job satisfaction analysis. F. Herzberg studied & classified work stimulators that affect employees. Positive stimulators are called "motivators"; they are intrinsic to the job (achievement, responsibility, etc...) and the more they are present, the more satisfied employees will feel about their jobs. On the other hand, "hygiene" factors are extrinsic to the job (company policy, supervision, working conditions, etc...); they are feelings that can lead to job dissatisfaction. Is important to remark that the lack of satisfaction factors is not equal dissatisfaction and vice versa. The lack of satisfaction is just that: no satisfaction at all. In other words, we have motivators trying to increase job satisfaction and hygiene factors that if present can increase job

dissatisfaction. The main goal in this theory is to improve motivators as much as possible and reduce the presence of hygiene factors (Herzberg, 1987).

This is not the first work based on Herzberg's theory; similar attempts as the one intended in this thesis have been done in the past for other industries. Derek Beck in his MIT SDM thesis "An Analysis of Retention Issues of Scientists, Engineers, and Program Managers in the US Air Force" used an online survey to capture the officers opinion about job satisfaction inside the Deparment of Defense and then performed an statistical analysis of the data. He found that job satisfaction is one of the key problems to retain junior officers inside the US Air Force (Beck, 2005).

Beck discovered that retention at the Air Force can be improved by 1) providing better flexibility on assignments, 2) improving job satisfaction by creating more opportunities for deployments, 3) considering reinstituting something similar to an engineering bonus to improve morale and 4) improve education for the lower ranks (Beck, 2005). All of these are good ideas which can be taken as reference for the work done in this thesis.

Besides the study of job satisfaction, there has been an attempt to measure work engagement as a driver of retention (Schaufeli, et al., 2003). Work engagement is the assumed oppsite of burnout and is defined as a positive, fulfilling, work-related state of mind that is characterized by vigor, dedication, and absorption. In order to measure work engagement, W. Schaufeli & A. Bakker created a tool in the form of questionnarie called Utrecht Work Engagement Scale (UWES) that focuses on the three characteristics mentioned before (vigor, dedication and absorption). This tool is used in this thesis to understandhow well engaged engineers are with their jobs. Additionally, engagement data will be compared to people thoughts of quitting to possibly find any correlation between the variables.

Another factor to consider is the transition of generations happening in all industries and understand its impact on management. Millennials are replacing baby boomers as the largest group inside the workforce (Shah, 2013) and are defined as the people born in the 80's who are taking over working positions in all levels of the organization. According to Dharmesh Shah, they are more eager for access to information; additionally, they look for getting quicker and more frequent feedback about their work. That means millennials' motivation is more sensitive compared to other generations; if they do not get proper recognition or feedback on time, they are more prone to leave their job. Company AZE must pay special attention since they are experiencing the phenomenon due to the ongoing workforce renovation; most of the new hires are under 27 years old, which means the traditional methods of recognition inside the company might not be sufficient to retain the talent; new ways of feedback and rewards might need to be implemented according to the necessities of the new workforce.

JOB SATISFACTION FACTORS

In this section, the motivators and hygiene factors used by F. Herzberg in his Job Satisfaction analysis are explained. Each one of the factors is defined next and they were used as reference to create a survey customized for Company AZE employees.

MOTIVATORS

- Achievement –"I feel proud of what I do"

  It encompasses any feeling about a job well done at work, i.e. solutions to problems, vindication and seeing the results of one's work.

- Recognition – "My talent is recognized by others"

  Relates to any type of act of recognition an employee received by a peer, supervisor, upper management, etc...

- Work itself – "I like to do the tasks assigned to me"

  People feel good or bad about doing the tasks assigned due to their job position and project assigned.

- Responsibility – "Management trusts me"

  The person obtained satisfaction from being given responsibility for his own work or for the work of others or being given new responsibility.

- Personal Development – "My job allows me to improve myself constantly"

  The job each person performs allowed them to either learn new skills or advance in his own skills and in his profession.

- Job opportunity – "Ease to move to other job positions or being promoted"

  It captures the perception of likelihood that the individual would be able to move onward and upward within his organization.

HYGIENE FACTORS

- Company policy – "Personnel related policies (Performance Review, vacations, business trip, etc...)"

  This category describes those components of a sequence of events in which some over-all aspect of the company was a factor.

- Management aid – "I receive accurate technical feedback when needed"
  It encompasses any event related to the competence or incompetence, fairness or unfairness of the supervisor that affected any of the employees.

- Supervisor – "I get along with my management"
  Employees approach their upper management because they see them as trustworthy when personal or work issues arise. The employees feel they are backed up by their supervisors when work issues are escalated.

- Working conditions – "I have the right set of tools to do my work"
  This category relates to all the physical condition to perform the daily tasks as well the appropriate set of tools to do it; e.g. computers, proper software, etc.

- Salary – "I receive a fair compensation for what I do"
  It includes all feelings or events where compensation is involved.

- Relationship with colleagues – "I get along with my peers"
  It encompasses all the non-work interactions among employees that can make pleasant the office environment.

The most recent effort inside the company to know and understand employee motivation dates from May-2013. The information comes from a survey annually applied about job satisfaction; it attempts to collect data about workload, job opportunity, feeling valued by the company. However, the annual survey lacks descriptive and specific questions that, I believe, are needed to understand further the groups inside the company and the employees' mindset; specifically, it is not asked if they have intentions of quitting the company, or what pay grade they have. Additionally, two factors

drove me to only keep the contents of this survey as reference in this work: 1) The number of respondents was less than 20% of the total of employees, and 2) Since the questionnaire is sponsored by management; engineers may tend to respond more positively than they actually feel. Despite these caveats, the answers provided are insightful and were used as one of the starting points to create the hypotheses investigated on this thesis.

Figure 4 shows the summary of hygiene factors found on the survey responses to question: *What is one thing that you like the least about the Company?* The response is open, which means engineers can say anything. Each answer was analyzed, catalogued into the most suitable hygiene factor and sorted in order to produce the pie chart.

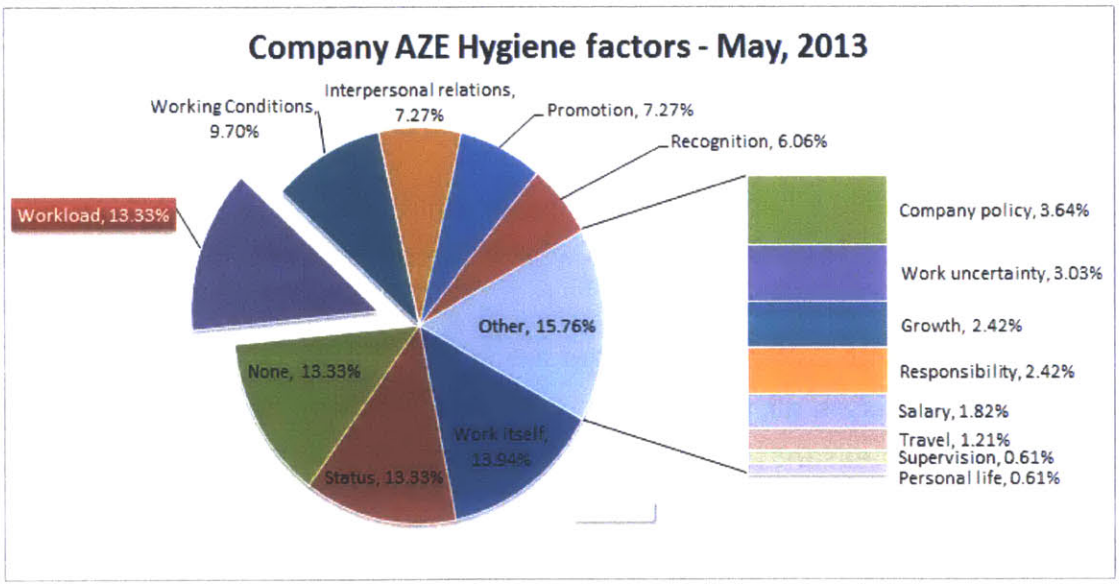

Figure 4: Company AZE annual survey results (may-2013)

Many of the results shown previously were expected and considered during the early development of the thesis; however there is one item that was not foreseen to stand out among the top list: workload. This was preconceived as a minor issue by upper management inside the company. Given the impact

that the item has, it will be further analyzed and included as part of the hypotheses.

HYPOTHESES

- *In Company AZE, the lack of a clear promotion system leads to lower job satisfaction*

Personnel perceive annual performance review with supervisors as not entirely thorough. If supervisors' feedback is not detailed enough, it might lead engineers to feel frustrated of being misguided of how to be promoted and lower their job satisfaction.

Additionally, management tends to develop technical skills but no personal skills. The company provides the engineer a detailed roadmap of technical aspects he must master to become an expert in the field. However, there are no similar guidelines about personal skills; they are essential if the engineer aspires to be promoted to managerial positions. Personal skills examples can be: give clear and concise presentations to an audience, clearly communicate an idea, coach other engineers, etc...

- *In Company AZE, high levels of workload leads to lower job satisfaction*

There is an ambiguous response from the engineers about workload in the last survey performed in May-2013 by the company. At 13%, it was one of the highest ranked answers to the open-answer question of the thing they like the least from the company (question A). Later in the survey, engineers were asked if "their workload does not interfere with their ability to do a quality job" (question B) with a four-level Likert scale answer. From the respondents that answered "workload" in question A, only 40% answered "disagree" in question B. This may suggest the way the questions are asked is biasing engineers' response. Experienced engineers complain about long

working days and new engineers say they don't have tasks to work on (which may reflect their low competence to work on their own) but there is no clear data to confirm their comments.

- *In Company AZE, wages is key factor but not the most important*

Engineers do not complain much about salary; however, nowadays it is the principal cause of personnel turnover according to the company's attrition record which is less than 4%. Engineers are accepting jobs in other companies that offer ~25% increase in pay and benefits. Since the attrition rate is low, it may suggest three options: 1) Personnel feel they are getting a fair salary for what they do, 2) Personnel love the company and want to work here even if they slightly sacrifice their salary or 3) Personnel is still in the company only because they haven't found another good job opportunity. Concern flag must be raised at the company if option 3 is predominant because attrition levels will increase dramatically when competitors' offerings become abundant and with the right amount of pay.

- *In Company AZE, high level of engagement leads to lower attrition rates*

Engaged employees have a sense of energetic and effective connection with their work activities and they see themselves as able to deal well with the demands of their job (Schaufeli, et al., 2003). Usually, engaged people enjoy working more than the average employee; this type of behavior may lead to like more their jobs and as a result, lower attrition rates. Management should focus their efforts to understand what motivate engaged engineers and excel those motivators to keep them in such benefic mental state.

- *High potentials are prone to leave the company due to lack of opportunities*

Like in any given Company, High potentials are the first to leave the company in bad situations (Schmidt, et al., 2010). They are the people who might have the key to overachieve the company's performance expectations but they have to be treated properly to keep them engaged. Intention is to keep as many of the selected group as the Company AZE can.

METHODOLOGY

The method followed in this thesis was to collect data from major sources such as Literature review, Company AZE's previous job satisfaction data, Interviews with HR and Managers, and online survey for Company AZE's personnel. The purpose of reviewing the literature and Company AZE's previous job satisfaction data was to create a customized survey that can best fit to the Company's AZE population.

To continue improving the survey, interviews with supervisors, managers and HR representatives inside Company AZE were carried out. Interviews with Managers and Supervisors were helpful since they provided good insights because of how they perceived their team job satisfaction issues, which is different from how engineers notice them. Interviews with HR representatives helped not only to keep improving the survey but also as a checkpoint to confirm that questions in the survey were not asking for confidential data from the engineers such as their pay grade or tenure that might allow them to be identified rather than be truly anonymous; nevertheless I was granted to keep on going under the premise that the survey was anonymous. Additionally, I participated in a series of skip levels between engineers and mid-level managers. In these meetings, engineers are able to freely express their motivations, frustrations and concerns; by

listening to their inputs, I was able to check if questions were going in the right direction and kept enhancing the survey.

The online survey data collection was possible by using the survey website www.surveymonkey.com. Prior to officially dispatch the survey to the entire personnel, a trial was performed by sending it to a group of 35 engineers with the intent of confirming the survey contents, pace and type of data collected. The official survey was required by public law to be reviewed by a recognized entity qualified to validate research of any kind conducted on humans. In this case, the reviewing body was the Committee on the Use of Humans as Experimental Subjects, of COUHES, an office that is part of the Massachusetts Institute of Technology. The survey was distributed with the help of Company AZE by sending a prewritten email that contained instructions of how to get access to the survey (See APPENDIX A – PREWRITTEN EMAIL for reading this message). To assure that only the target audience can participate, a password was assigned to the survey which was included in the prewritten email. The survey was open in October 18th, 2013, and was closed on November 5th, 2013 (Refer to APPENDIX B – WORKFORCE SURVEY for an example of the online survey). Data from survey was analyzed with Minitab 15 software. Further analysis, as well as all graphical representations, was conducted using Microsoft Excel.

SURVEY RESULTS

TEST ANALYSIS

The survey was available for engineers to complete it for a period of 2 weeks, from October 18th, 2013 to November 3rd, 2013. It was sent to all Company AZE's Product Development team (937 Engineers) obtaining a total response of 292 engineers. Of these, 261 completed the entire survey; the

rest 31 incomplete responses were discarded from the analysis in order to assure the analysis integrity.

The analysis was performed using cross tabulation and regression analysis as the main tools. Cross tabulation was used to perform a deep dive on each one of the principal variables compared to quitting and confirm how they are affected the subgroups inside the company. On the other hand, regression analysis was used to perform a summary of which variables are the most correlated to quitting. In a sense both methods look for the same results but attacked the question from two different approaches.

POPULATION OVERVIEW

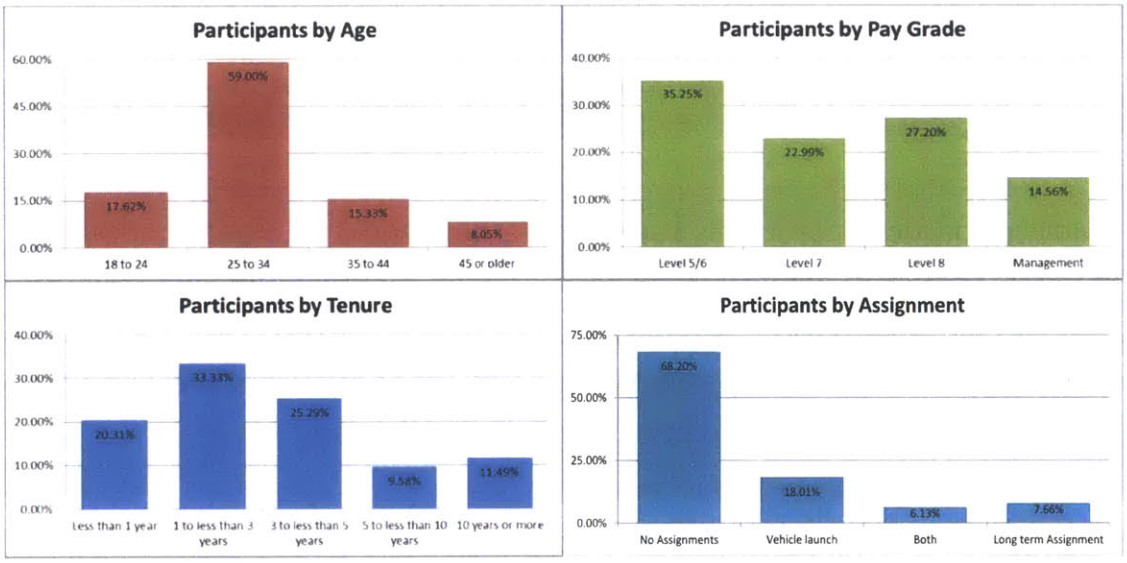

Figure 5: Population demographic analysis

In order to gain deeper knowledge of who the respondents (N=261) are, the entire population was segmented using the demographic questions asked in the survey. The questions requested info such as age, tenure, pay grade level and if they have participated in a long term assignment. These

questions are comprised from Q1 through Q5 in the survey. The results are shown in the form of charts in Figure 5.

The personnel who answered the questionnaire (N=261) is composed, with 76.62%, by people who are less than 35 years old, as shown in Figure 5 – "Participants by Age"; it means company AZE workforce is composed in its majority by millennials. Based on this fact, HR team retention strategy should be consistent with the type of feedback and rewards desired by this generation.

When pay grade level filter is applier (Figure 5 – "Participants by Pay Grade"), is remarkable that all groups have ~15% of participation, which enriches this survey by having different points of view from the different workforce bands. Most of the comparisons in following discussions are going to be related to this segmentation given the fact previously explained of leveled response.

Most of participants in this survey have between 1 to 5 years of tenure (58%) as is shown in Figure 5 – "Participants by tenure". This fact suggests that most of the workforce is relatively new to the company and might still be adapting to its culture. The up side of this phenomenon is the enriching experiences that new workers are bringing to the company.

The last filter run through the population is assignment. It refers to the personnel who have gathered job relocation experiences based on long periods of work away from home base (minimum of 1 year); Examples of this type of programs are assignments 1) at manufacturing plants to prepare new vehicle launches or 2) at company headquarters in US to work on more complex tasks. The objective is to fill up the knowledge gaps inside company AZE and by that prepare the company for future vehicle programs. Due to the level of experience of these engineers, they are considered as high potential.

It is desirable that their talent be kept inside the company. As shown in Figure 5 – "Participants by Assignment", approximately one third of the population has participated in one type of the long term assignments and about 13% have worked in the US headquarters.

TENURE

The first variable to be analyzed is tenure. The analysis of the examined variable will help understand how well experienced the workforce is and can provide a larger context to the other factors.

Figure 6 graphically reflects Company AZE workforce experience vs. quitting intentions; the tenure variable is segmented by its tenure which goes from less than 1 year to 10 year or more. The group most populated is 1 year to 3 years representing 33% of the entire workforce. The smallest group in the company is the one with engineers that have worked 5 to 10 years, representing 9.58% of the entire population. In general, the workforce population can possibly be catalogued as novice given that approximately 75% of entire population has less than 5 years of experience working for company AZE. Attrition variable is divided in three options which engineers provided when they were asked their intention to leave the company; which were lean to leave, neutral or lean to stay. At first glance, the chart shows positive data since the majority of the personnel are leaning to stay in all tenure subgroups. In Table 2, data is analyzed and discussed further.

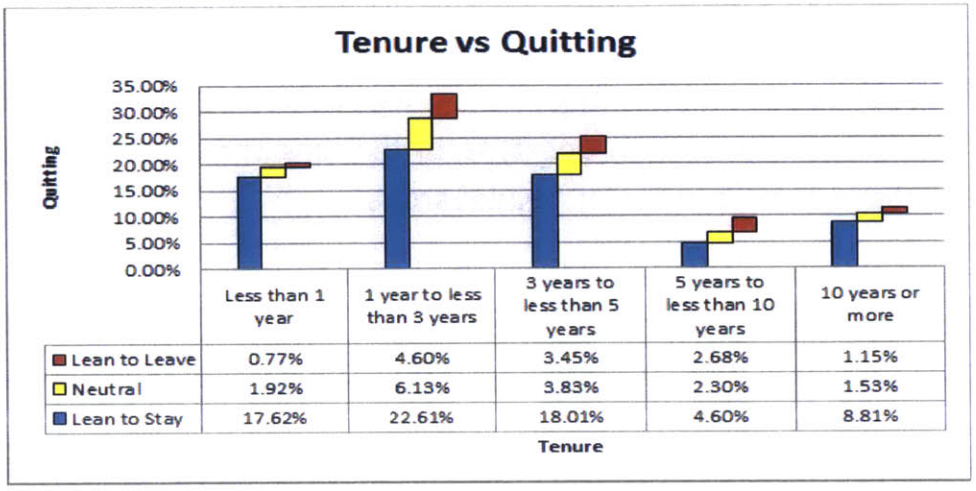

Figure 6: Tenure vs Attrition, P-Value=0.056

Based on Table 2, Professionals with 5 to 10 years working for the company are possibly the most prone to leave the company with 28% (the highest percentage of all subgroups). This is potentially concerning because they are the engineers with the most experience and usually are handling issues by themselves. The personnel with tenure of 1 to 3 and 3 to 5 years rank second of people thinking to leave the company with 14% each at the groups' category. The less prone people to leave the company are the new employees and the workers that have been in the company for more than 10 years.

N =	261	QUITTING			
		Dissagree	Neutral	Agree	Grand Total
TENURE	Less than 1 year	17.62%	1.92%	0.77%	20.31%
	1 year to less than 3 years	22.61%	6.13%	4.60%	33.33%
	3 years to less than 5 years	18.01%	3.83%	3.45%	25.29%
	5 years to less than 10 years	4.60%	2.30%	2.68%	9.58%
	10 years or more	8.81%	1.53%	1.15%	11.49%
	Grand Total	71.65%	15.71%	12.64%	100.00%
Chi-sq =	15.14	DF =	8	P-Value =	0.056

	Lean to stay		Lean to leave		
	% of Total	% of Group	% of Total	% of Group	All
Less than 1 year	17.62%	86.79%	0.77%	3.77%	20.31%
1 year to less than 3 years	22.61%	67.82%	4.60%	13.79%	33.33%
3 years to less than 5 years	18.01%	71.21%	3.45%	13.64%	25.29%
5 years to less than 10 years	4.60%	48.00%	2.68%	28.00%	9.58%
10 years or more	8.81%	76.67%	1.15%	10.00%	11.49%
N =	187	187	33	33	261

Table 2: Tenure vs Quitting, P-Value=0.056

The p-value between tenure and quitting in this work is 0.056, which means is on the limit of confirming whether the variables are correlated or not. That is why this data is auxiliary and as mentioned earlier, is used to provide a larger context of the other factors discussed in this thesis.

JOB SATISFACTION

To understand how job satisfaction is perceived inside company AZE, i engineers were asked to rate each one of the Herzberg factors in a 5 Likert scale question form. Each one of the factors has a short explanation written in the question to minimize confusion.

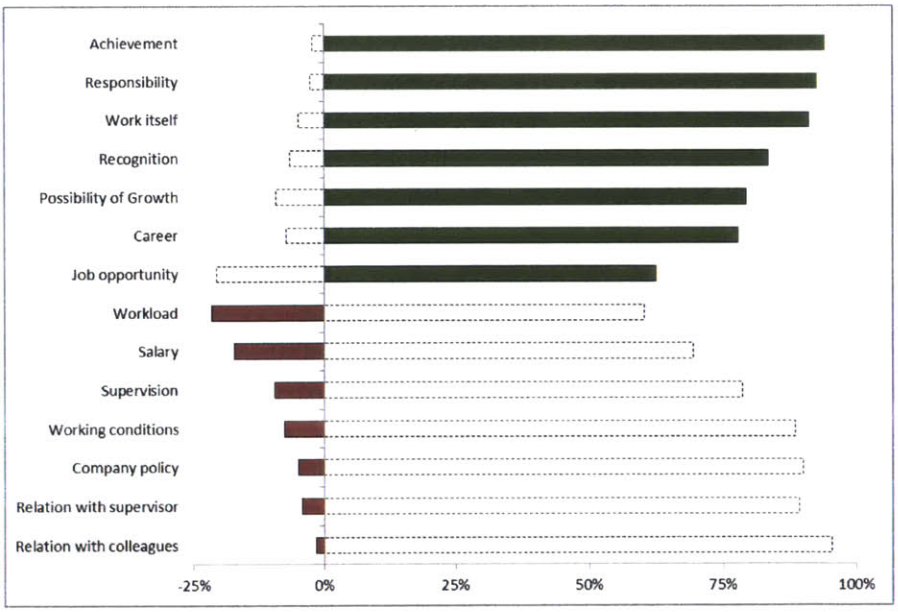

Figure 7: Job Satisfaction factors, N=261

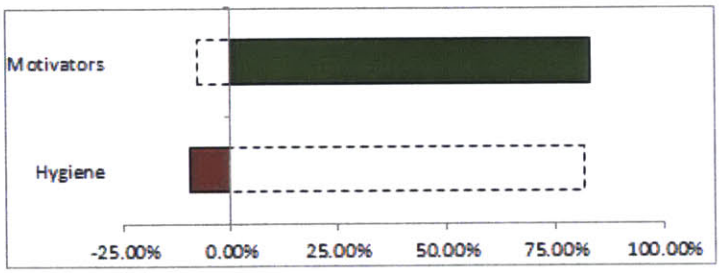

Figure 8: Motivation and Hygiene factors summary, N=261

Job satisfaction factors are presented in Figure 7; it is remarkable that most of the factors received positive feedback and larger than 80% satisfied regardless if they are motivators or hygiene factors. These results suggest that, on average and as shown in Figure 8, the vast majority of employees feel motivated which is a plus for the company and can be taken as advantage to keep pushing the boundaries of task capabilities and experience. However, the charts also reflect what factors may become issues in the near future: Workload, Job opportunity, Salary, Growth and Supervision.

PROMOTION SYSTEM

The premise of this hypothesis is employees inside company AZE are not entirely pleased with the annual performance review. The review is possibly not thorough enough. Part of the issue can be potentially caused due to most of the feedback provided to the personnel is focused to technical skills leaving human skills out. Although technical skills feedback is necessary, human skills also must be considered more during the performance reviews so engineers can understand better what is necessary to keep climbing inside the organization ladder.

Many comments were received verbally which pointed out that annual performance review process is confusing for the engineers. In order to

understand how personnel perceive promotions in the company, two specific questions were introduced into the survey; Question Q10 is related to promotion system perceived fairness, question Q11 is about promotion system perceived clearness.

		QUITTING			
N =	261	Dissagree	Neutral	Agree	Grand Total
JOB OPPORTUNITY	Dissatisfied	10.34%	3.45%	**6.90%**	20.69%
	Neutral	10.34%	**4.60%**	1.92%	16.86%
	Satisfied	**50.96%**	7.66%	**3.83%**	62.45%
	Grand Total	71.65%	15.71%	12.64%	100.00%
Chi-sq =	35.24	DF =	4	P-Value =	0.000
	Lean to stay		Lean to leave		
	% of Total	% of Group	% of Total	% of Group	All
Dissatisfied	10.34%	50.00%	6.90%	33.33%	20.69%
Neutral	10.34%	61.36%	1.92%	11.36%	16.86%
Satisfied	50.96%	81.60%	3.83%	6.13%	62.45%
N =	187	187	33	33	261

Table 3: Job Opportunity vs Quitting, P-value=0.000

As starting point, Job opportunity factor asked in question Q6.f was analyzed and compared to quitting variable (Q17) with the intention of determining if there is correlation between the variables. Job opportunity is the assigned variable inside the survey to measure the level of satisfaction of employees about the how they perceive the ease of getting promoted. As shown in Table 3, 51% are satisfied with the opportunity they have of being promoted; however 20.69% of the entire population feels dissatisfied and furthermore, data suggests that 6.9% of the whole are prone to quit the company since they perceive that it is hard to be promoted inside the company.

As mentioned, it was asked if engineers perceived the promotion system as fair (Promotion System Q1) and if they understand how it works (Promotion System Q2). The results are shown in Figure 9: Promotion System Q1 filtered by pay grade and Figure 10: Promotion System Q2 filtered by pay grade.

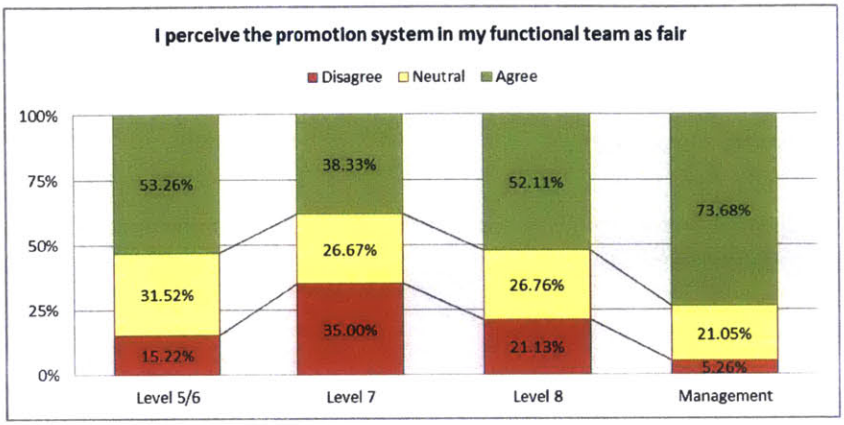

Figure 9: Promotion System Q1 filtered by pay grade

Overall, the personnel perceived the promotion system as fair in company AZE. Figure 9 shows the responses segmented by pay grade; Level 7 group stands out from the rest of the groups with almost the double of engineers (35%) thinking that promotion system is unfair; as we move to the Level 8 group, personnel that thinks the promotion system is fair increases. However it is also remarkable that there is a constant ~20% band along all groups representing people that responded neutral to the question. This type of response might suggest that indeed personnel do not understand how the promotion system works.

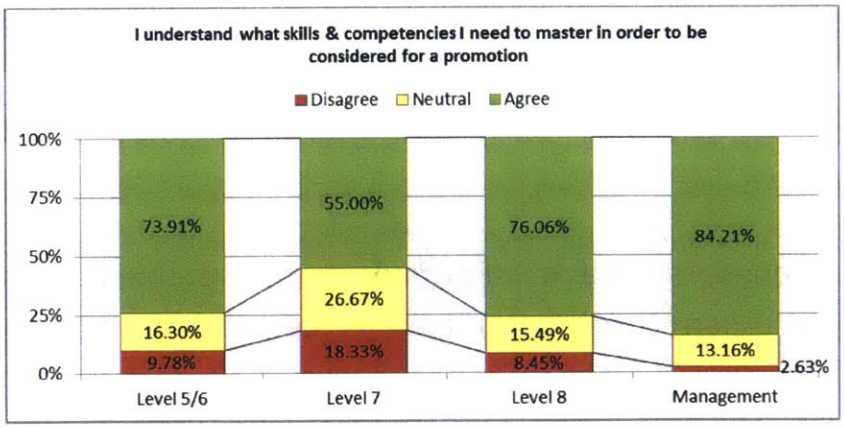

Figure 10: Promotion System Q2 filtered by pay grade

Figure 10 reflects the personnel understanding of what it takes to be promoted. The majority of the pay grade groups claim to know what skills and competencies they need for promotion. Pay grade Level 7 groups stands out, with an 18%, as the largest segment suggesting to not know what to learn and practice to be promoted. Same as in Figure 9, the neutral band is present in the response of question promotion system Q2; it suggests engineers potentially do not know what is necessary in order to be promoted. Based on the responses, when adding disagree and neutral percentages, almost 1 out 3 engineers in non-management groups are not coached well enough to help improve themselves. Presumably, the response to this question is directly linked to low level management and how they mentor the engineers; additional efforts should be made inside company AZE to sensitize supervisors and engineers about the roles in promotions.

SALARY

Personnel were asked about their satisfaction towards salary; many of the employees interviewed provided a comment about wages, not all of them were positive. Given the opportunity, it was requested to provide an answer about how the feel about the compensation for the work they do. Q7, Q8 and Q9 of the survey address this issue. Q7 is related to the compensation fairness perception (if they feel well with what they earn); if the answer is unsatisfactory then Q8 is shown in the screen which asks about how much the engineer should be earning (less than 10%, 25%, etc...). If the answer to Q8 is more than 25%, then Q9 asks the engineer if they have seriously thought of getting a new job based on the fact that reaching that type of salary can be highly complicated to obtain inside Company AZE.

N =	261	QUITTING			Grand Total
		Dissagree	Neutral	Agree	
SALARY	Dissatisfied	**5.75%**	**5.75%**	**5.75%**	17.24%
	Neutral	10.34%	3.07%	0.00%	13.41%
	Satisfied	**55.56%**	**6.90%**	**6.90%**	69.35%
	Grand Total	71.65%	15.71%	12.64%	100.00%
Chi-sq =	45.75	DF =	4	P-Value =	0.000
	Lean to stay		Lean to leave		
	% of Total	% of Group	% of Total	% of Group	All
Dissatisfied	5.75%	33.33%	5.75%	33.33%	17.24%
Neutral	10.34%	77.14%	0.00%	0.00%	13.41%
Satisfied	55.56%	80.11%	6.90%	9.94%	69.35%
N =	187	187	33	33	261

Table 4: Salary vs. Quitting, P-value = 0

Engineers were questioned if they perceived compensation as good for their skills and work experience in question Q7. Data was then compared against question Q17 about quitting to confirm if there is any correlation between these two variables, results are shown in Table 4. Correlation confidence test is ~100% which means the variables are interrelated. Data suggests that salary is not the biggest issue of why engineers leave the company. 5.7% of the whole population are prone to quit and are dissatisfied with their salary.

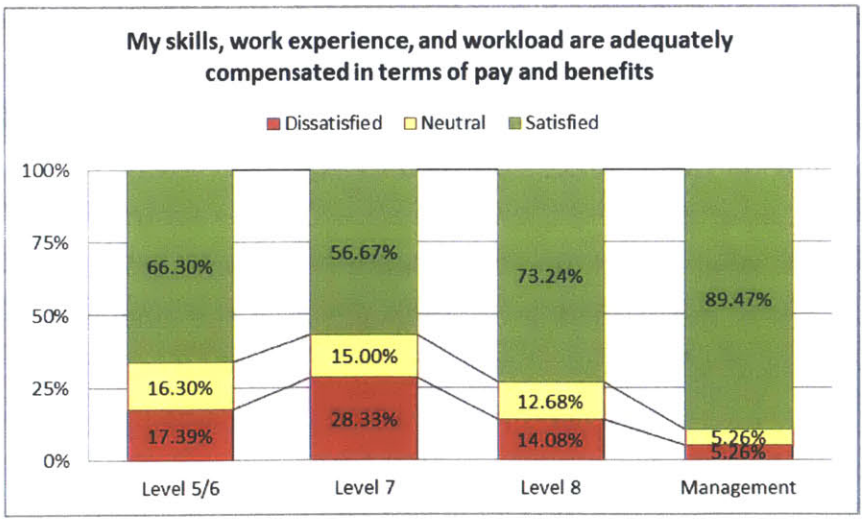

Figure 11: Salary by Pay Grade

The results of salary factor filtered by pay grade are shown in Figure 11. Most of the nonconformists are found in the level 7 band with a 28% of the subgroup. Eventually, the nonconformists are reduced when we review higher level bands. Is remarkable to see that in management level, the grade of satisfied people is significantly big (almost 90%) while in other groups, the satisfaction level is less than 75%.

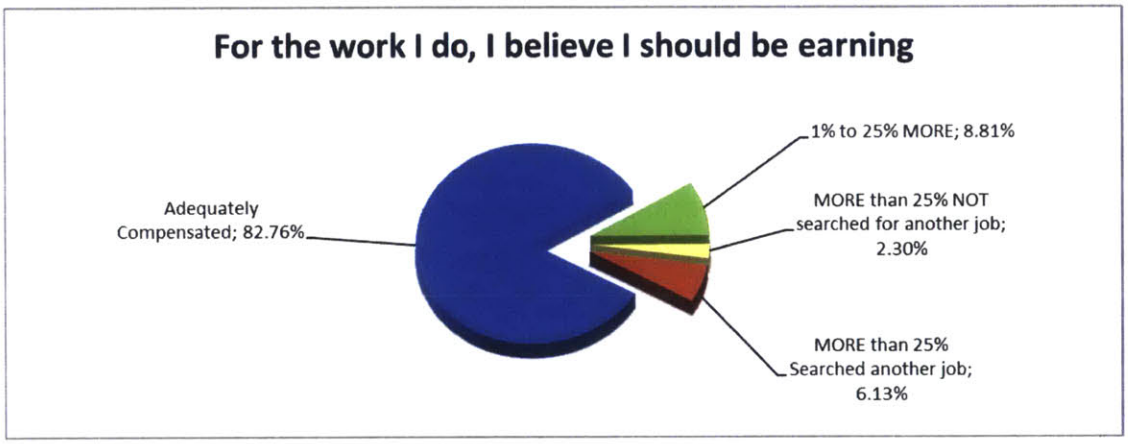

Figure 12: Q8, Q9, For the work I do, I believe I should be earning

Figure 12 reflects answers of questions 8 and 9 of the survey. The nonconformist group is made out of an outstanding ~18% of the entire population. Out of that ~18%, 6.13% are seriously thinking of changing jobs. 8.81% believes that a minimal salary raise is enough to keep them motivated.

WORKLOAD

The purpose of this study is to check if workload is affecting the lives of all workers inside company AZE. Once again, given the idea that engineers might open up more since this is an independent survey, it is speculated that they will provide more accurate answers about their feelings.

The approach taken in this work is to check if workload is affecting the engineers' personal lives and they are not doing it on purpose just because overtime payment might be obtained. The survey asked three questions; the first and second are related to overtime and their respective payment, the third is related to personal life; the questionnaire was planned in this way to avoid any biasing related to the premiums. In company AZE, overtime premium is a benefit that is given during a vehicle's launch phase only. No other vehicle phase accounts for additional wages for R&D engineers.

The first workload question asks about if engineers worked more than the standard workday hours to catch up with their workload, i.e. overtime. Figure 13 might indicate that management and senior engineer groups have more workload due to their seniority and experience. Once again, the replies were sorted by pay grade; the chart shows a trend where the higher level has the larger response about working extra hours. However, the most remarkable highlight is that more than around 75% of the people are working extra hours to keep up with their workload. Workload seems to be a matter that senior management will have to consider in the near future.

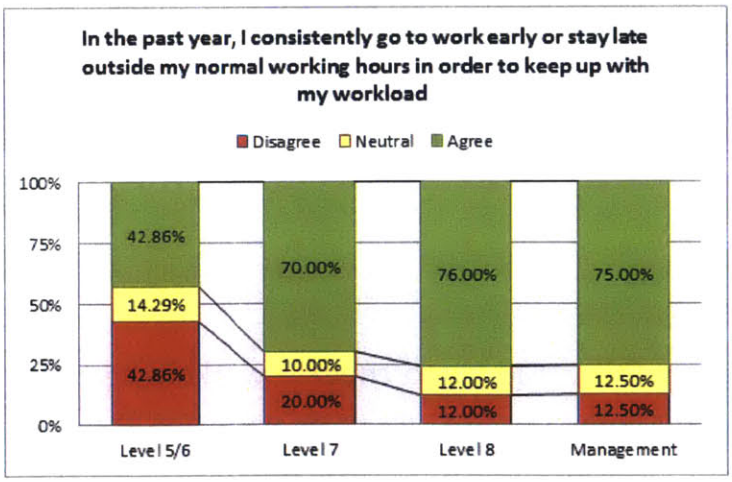

Figure 13: Overtime in company AZE

Figure 14 reflects how many extra hours people tend to work daily in average. Most of the people work between 1 to 3 hours (64%) which can be considered normal in most companies as is in Company AZE; however, it is remarkable that 25% of the employees who work extra hours are giving 3 to 5 additional hours. This phenomenon should be further studied to confirm if this is becoming a larger tendency in the future. Job satisfaction might diminish if 11 to 14 hours of work a day becomes the norm.

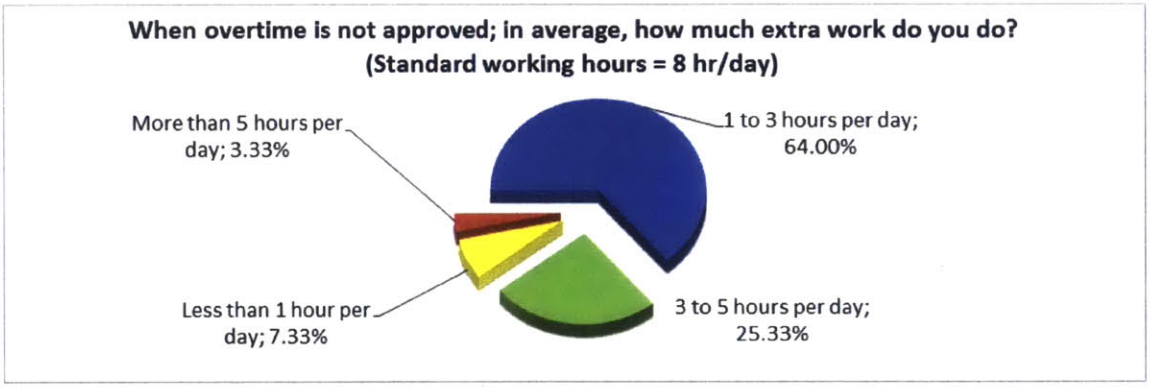

Figure 14: Q12, Non-paid extra work hours

The third workload question is related to the engineers' personal lives. It was intended to confirm whether workload is affecting them at different levels. The response to the question is reflected in Figure 15. Replies were sorted out by pay grade level; Level 5 and 6 are the least affected with a 64% and then the level 8 grade with a 56%; Management has a 45% and finally level 7 is carrying a 35%. Is remarkable to see that level 7 group is the most affected by workload; one theory which can explain this behavior is that level 8 and management are already used to work extra hours and therefore, they and their family can manage better their work/personal life balance.

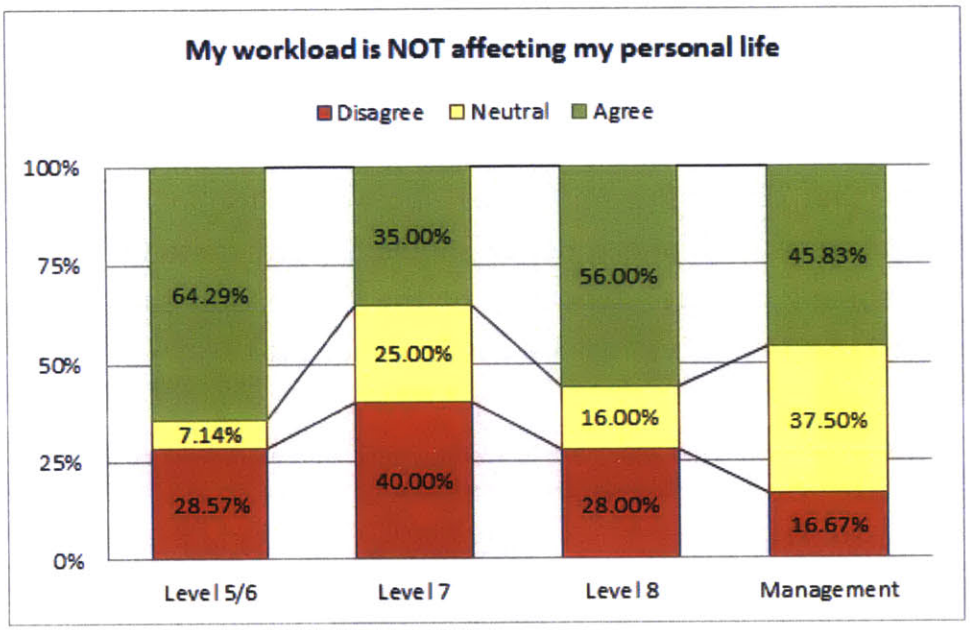

Figure 15: Workload by Pay Grade

HIGH POTENTIALS

Usually high potentials are provided with international assignments to prove their worth and improve their skills. In an effort to achieve better understanding of the respondents, the entire sample was divided into 2 groups: 1) Those who have been assigned to a long term period in other locations from home base and 2) those who have never received an assignment which required leaving their base office. Approximately the ratio of relocated persons is 1/3 of the entire population.

The analysis was conducted using job satisfaction analysis approach. When comparing charts in Figure 16, most of the top motivators and hygiene factors rankings are the same for both groups. Achievement is the most important motivator; in second place there is a small difference: Responsibility is more important to the no-relocated group while work itself is preferred by the group that has been assigned to other locations.

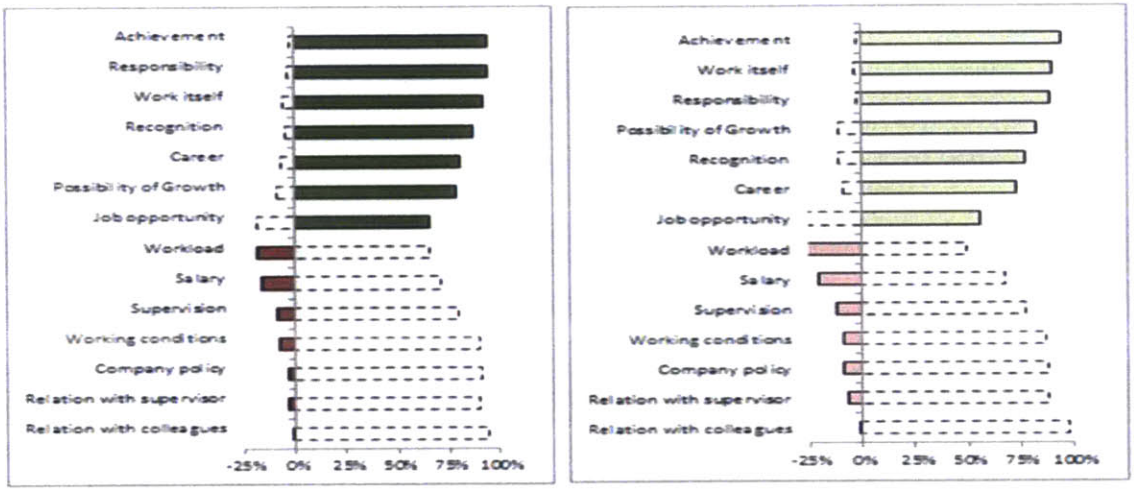

Figure 16: Job Satisfaction factors comparison by relocation; Non-relocated (left, N=178) & relocated (right, N=83).

People who have been temporary relocated (high potentials) are possibly to enjoy more the work they do. It seems like they are not looking for others to constantly recognize their efforts and are ok with the responsibility they have; however it seems their satisfaction comes with a price: workload given to the most experienced engineers is higher compared to the rest since the company trusts in their capability to perform accordingly. Figure 17 shows the response of high potentials vs. non-high potentials about how they feel about workload and personal life. Apparently, 66% of the personnel in the high potentials group feel their workload is not affecting their personal life; while 80% of the non-potential group are feeling the same; it means that is possible (15% difference among groups) that tasks are not evenly distributed among the personnel.

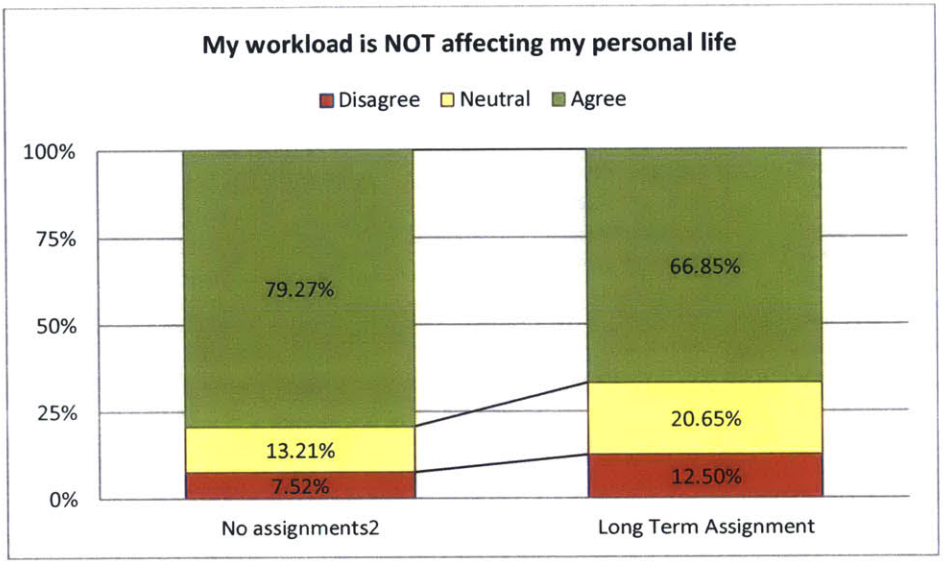

Figure 17: Workload satisfaction, N=261, p-value=0

The hygiene factors ranking on both cases are similar but with different magnitudes; the no-relocated personnel are, most likely, to be less affected by all factors that do not motivate; might be correlated to fact that they are new to the job and are probably excited to have a new work. Figure **18** reflects, in summary, that High potentials are slightly more affected by hygiene factors than the rest of the Company AZE population.

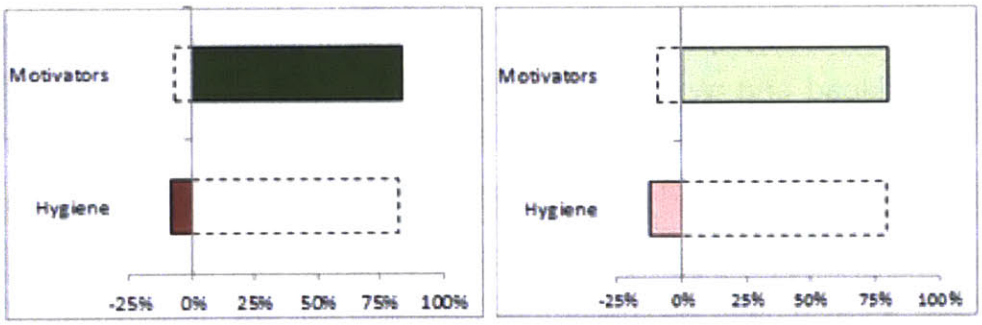

Figure 18: Job Satisfaction factors summary comparison by relocation; No-relocated (left, N=178) & relocated (right, N=83).

ENGAGEMENT

Another key element to analyze is engagement. Engagement can help to keep the people motivated and increase productivity. The analysis method used in this work is referenced to the UWES test (Schaufeli, et al., 2003) which consists in 6 questions. The results of the entire population are shown in Figure 19 and Table 5; the results show that on average, almost 87% of the employees feel engaged a few times a week, which is a good indicator of motivation. The bonus of working in the automotive industry is reflected in the proudness related question: almost 70% of the population feels proud of working to design automotive vehicles. This industry advantage should not pass unnoticed by upper management, a strategy can be developed to remind the engineers periodically on what they do and that they can feel proud of doing it but of course such an approach should not be overdone or it could backfire.

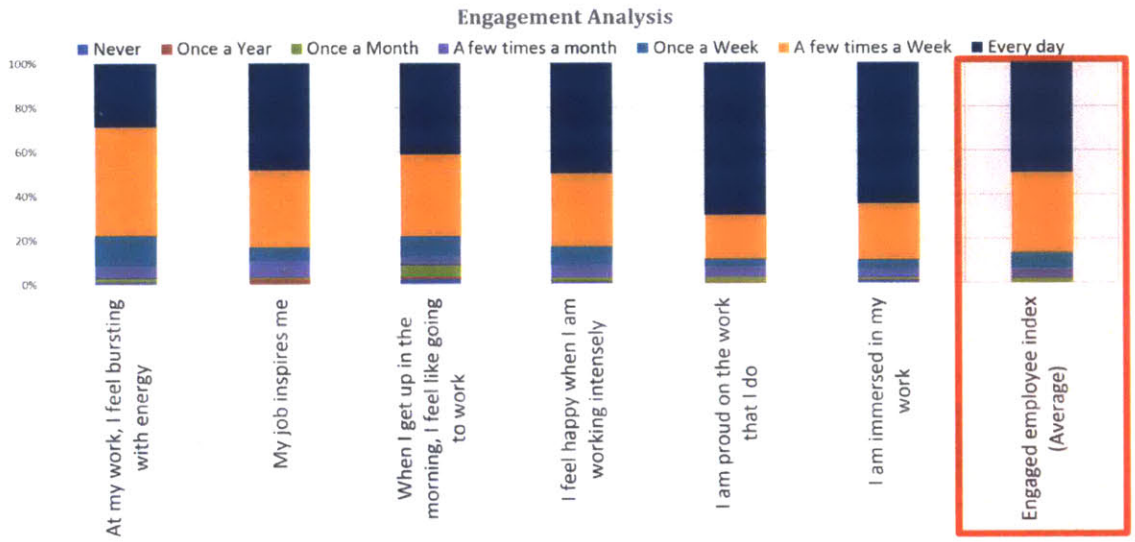

Figure 19: Engagement analysis chart

Category	Never	Once a Year	Once a Month	A few times a month	Once a Week	A few times a Week	Every day
At my work, I feel bursting with energy	1.15%	0.00%	1.53%	5.75%	13.79%	49.04%	28.74%
My job inspires me	0.38%	2.30%	0.77%	6.90%	6.51%	34.87%	48.28%
When I get up in the morning, I feel like going to work	2.30%	1.15%	4.98%	3.83%	9.58%	36.78%	41.38%
I feel happy when I am working intensely	1.15%	0.38%	1.53%	5.36%	8.43%	32.95%	50.19%
I am proud on the work that I do	0.00%	0.77%	2.30%	4.60%	3.45%	19.92%	68.97%
I am immersed in my work	1.53%	0.38%	0.77%	3.45%	4.60%	25.29%	63.98%
Engaged employee index (Average)	**0.38%**	**0.00%**	**1.92%**	**4.21%**	**7.28%**	**36.02%**	**50.19%**

Table 5: Engagement analysis table

The next step on engagement analysis was to filter the most relevant answers by pay grade. The first variable to analyze was proudness of the work done inside the company. The response, as shown in Figure 20, is overwhelming positive; in all pay grade groups, more than 60% feel proud of what they do on a daily basis. Even level 8 and management groups are above the 73% mark, which means that the experienced personnel feel like there are doing something good when they work. This type of good response must be nurtured and remove any potential threats such as company bureaucracy than can ruin the experience.

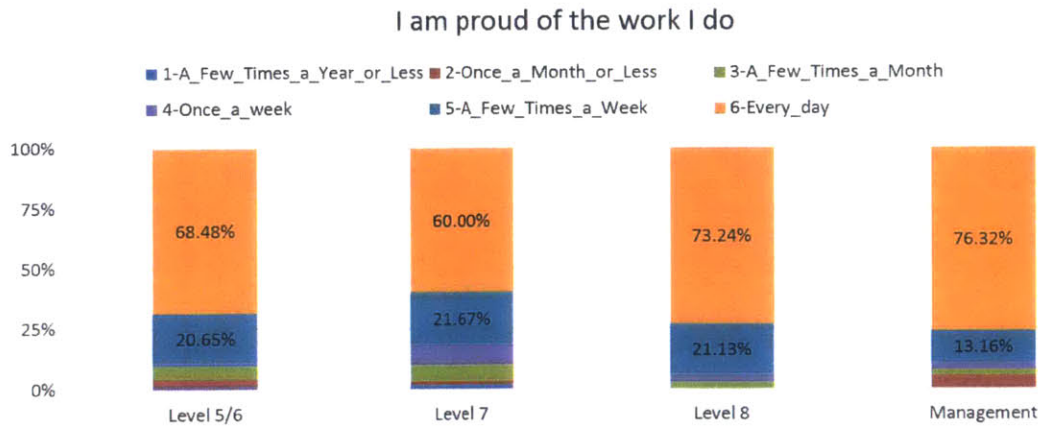

Figure 20: Engagement, I am proud of the work I do

The next variable to be analyzed is inspiration at work. Figure 21 shows the results; the general response is positive towards feeling inspired everyday (almost 50% in each group). However, 30% of the personnel lose inspiration a couple of days per week. One possible cause might be related to all the meetings held per day. They cut any work stream that engineers can achieve and put more pressure on them since in most of the meetings more work is delegated.

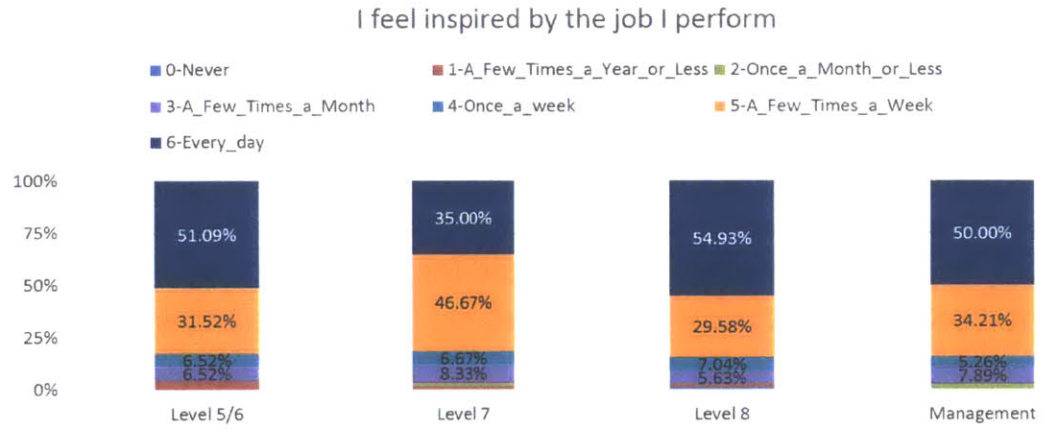

Figure 21: My job inspires me

The last variable studied is what I called as Engaged employee index. The variable is the average of all other engagement variables encompassing how engaged the personnel is. As shown in Figure 22, the results among all subgroups is consistent, at least 40% of the people feel engaged every day, which appears to be very positive for the Company. There is an area of opportunity for upper management which is finding ways so employees feeling motivated only a few days a week can change it feel motivated daily. If that happens, we would be talking about an average of 80% feeling engaged every day; productivity might rise significantly.

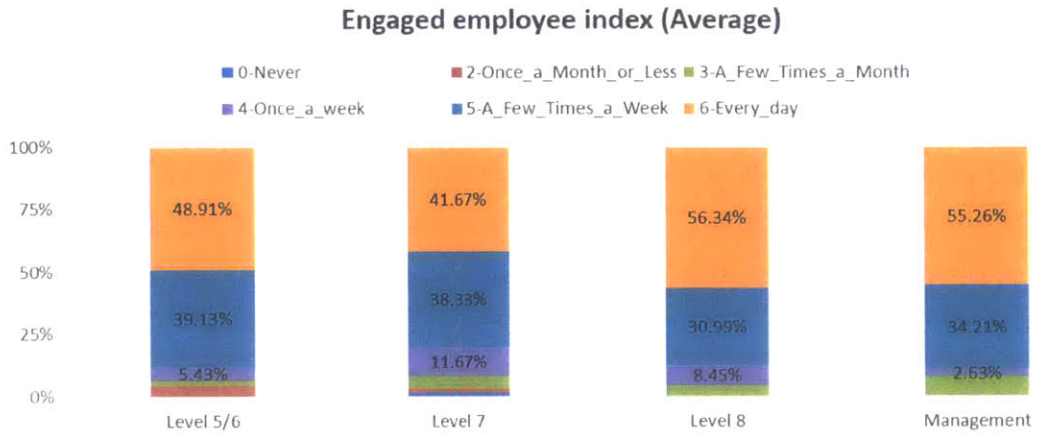

Figure 22: Engaged employee index

The engagement work presented in this thesis can be used as precedent in my company to keep track of how engaged the personnel are. As it will be shown later on, engagement plays an important role on attrition variable.

ATTRITION FINDINGS

Using linear regression analysis, all variables were analyzed with the purpose of understanding which are the most significant to lead people to quit the company. Furthermore, the group was split in relocated and no-relocated clusters to confirm whether the same factors are affecting them the same way.

Correlation (r-sq ~ 30%) is low for linear regression equations of all clusters; a possible explanation is that not all the important variables were considered in the survey, this point will be retaken later on for further discussion. Equations describing quitting phenomenon are shown next:

$$Attrition_{Total} = 4.64 - 0.285 * Personal\ development - 0.393 * Engagement - 0.313 * Responsibility - 0.106 * Salary - 0.141 * Recognition + 0.082 * Management\ aid$$

Equation 1: Entire population attrition equation (r-sq = 33%)

Equation 1 corresponds to the entire population most significant quitting factors. Engagement is located in first place followed by responsibility and personal development.

$$Attrition_{High\ potentials} = 5.33 - 0.338 * personal\ development - 0.551 * Responsibility - 0.233 * Age + 0.238 * Tenure - 0.223 * Pay\ Grade - 0.425 * Engagement$$

Equation 2: High potentials (relocated) group attrition equation (r-sq = 43.8%)

High potential group's most important quitting factors are found in Equation 2 with and r^2 of 43%, representing the most correlation equation of all 3. Responsibility is the most important factor, followed by engagement. It is seen once again that responsibility appears to be what high potentials are looking for. However, it is also noteworthy that engagement is at least as important for this group as for the non-relocated group.

$$Attrition_{No\ Relocated} = 4.411 - 0.214 * personal\ development - 0.426 * Engagement - 0.271 * Recognition - 0.177 * Salary + 0.255 * Management\ Aid - 0.244 * Supervisor$$

Equation 3: No Relocated group attrition equation (r-sq = 35.33%)

Finally, Equation 3 reflects the most significant variables that this study identified which affect the non-high potential groups. Engagement and recognition are the top factors that upper management should consider in the retention strategy.

-	ALL	RELOCATED	NO-RELOCATED
Constant	4.644	5.334	4.412
1	PERSONAL DEV. -0.285	PERSONAL DEV. -0.34	PERSONAL DEV. -0.215
2	ENGAGEMENT -0.393	ENGAGEMENT -0.42	ENGAGEMENT -0.43
3	RESPONSIBILITY -0.31	RESPONSIBILITY -0.55	SUPERVISOR -0.24
4	SALARY -0.106	TENURE 0.238	SALARY -0.178
5	RECOGNITION -0.141	PAY GRADE -0.22	RECOGNITION -0.27
6	MANAGEMENT AID 0.083	AGE -0.233	MANAGEMENT AID 0.255
R-Sq	32.98	43.8	35.33

Table 6: Variable comparison that is affecting attrition the most.

Table 6 is meant to be a summary of all independent variables and their correlation to quitting. Except for management aid, all factors are negative, which means that the smaller are these variables, the more prone engineers will be to leave the company.

DISCUSSION

Attrition Equations

Attrition regression equations are given in Equation 1, Equation 2 and Equation 3. They provide indications of what variables are the most sensitive to quitting. The most significant variables are personal development, engagement and responsibility.

Personal development was not considered in the hypotheses given the idea that in company AZE there is a decent career program and tracking which is well used by the engineers. The career program and tracking consists in filling and review of a file that each engineers populates it with all the skills and experience they believe they have obtained. Once the file is ready, it is reviewed with the appropriate supervisor who provides feedback on the performance and suggests next steps going onwards in the year. It seems like this procedure can be improved in order to increase the engineers' perception of personal development and hence reduce attrition.

Engagement is the variable with the most correlation with attrition in this study. The variable was investigated in order to try to measure how motivation is related to engineer's in order to give the "extra mile" or "110%" of their performance. Through the analysis results, it was possible to see that company AZE engineers are, in average, engaged almost on daily basis, which is possibly a significant advantage to the company's productivity. Presumably, engagement levels can be caused by the good work environment and the growth momentum that the company has; it will be important to keep the engagement level once company's AZE growth ends. However, it should be noted that with this and in fact all variables, our results are suggestive only since we do not have engagement results for competitors.

Responsibility is possibly the biggest issue among the high potentials group; it has a correlation of 55%. It means that high potentials are eager of getting more important projects. It is understandable when it is recognized that they are sent abroad for 1 or 2 years assignments which clearly are more complex than the ones done at company AZE; upon their return, they often end up doing the same job as before.

Attrition equations are key on this study, however their correlation is low (r-sq~33%). This fact is leading me to think that not all variables are being

considered in this study such as: daily commute, business travels, sport clubs or offsite activities. This can be taken in consideration for future work on this subject.

Exit Interviews

Additionally to the survey, during the realization of this thesis, I was able to conduct short exit interviews with personnel that have had international assignments and were quitting their job, they mentioned the reason why they are leaving the company is mostly due to the lack of career planning; specifically, when they are about to get step up the ladder into management positions. They feel there is no support or interest from management to make it happen. They found demotivating to return and perform the exact same job when they left. Although they are a small group, is important to address the issue because the people in this group as claimed to be the ones with most talent working for the company. Additionally due to the lack of planning as motive to quit the company, salary is mentioned as an important factor when the engineer is making up his mind; the wage reduction of more than 50% upon the return to home base is demotivating for the engineers.

People who find a job in the US and do not have a special commitment to Mexico are hard to retain. Once again, based on interviews done with personnel that left Company AZE during 2013, most of them found a job in the US. The most frequent reasons for leaving the company were 1) Salary, their annual income was at least doubled and 2) Career path, additionally to salary, people did not feel they could be promoted at Company AZE. This type of situations will keep happening and probably increase on the following years. A proven fact is that internet and social networks, e.g. LinkedIn, are facilitating the means for people to find jobs all around the globe.

CONCLUSION

A dataset was developed and then analyzed following two methods, cross tabulation and linear regression analysis. Both of them provided insightful feedback that can be used to propose different strategies to prevent attrition inside company AZE; however both methods demonstrated that variables were not as highly correlated as was expected. The phenomenon previously explained can point me to think that not all motivators and hygiene factors affecting the engineers are considered in this study.

Additionally, as expected, the results show a workforce that on average is satisfied with their jobs. A possible reason is because the company is still growing; it influences positively to all employees' mood and maintains a good working environment. However, it is necessary to keep an eye on the factors that are making the employees dissatisfied such as: Responsibility, Engagement and Personal Development.

We will now review the outcome of each one of the hypotheses and check whether each one of them can be confirmed. As reminder, all hypotheses are written below:

- *In Company AZE, the lack of a clear promotion system leads to lower job satisfaction.*

Hypothesis 1 proposing that the lack of a clear promotion system leads to lower job was not entirely confirmed. The results are not conclusive in regard to how the promotion system is affecting the personnel and if is, in fact, decreasing job satisfaction. The analysis of the data indicated that personnel leaning to stay in the company (representing 50% of the population) perceive that promotion system is fair and just.

- *In Company AZE, higher levels of workload lead to lower job satisfaction.*

Hypothesis 2 results are also inconclusive. It has been found that the senior engineering and management groups are the ones with the highest workload inside the company and is affecting partially their personal life. Also, it was found that more than 64% of the entire population is working extra hours just to catch up with their daily work. However workload variable did not appear as a significant factor in quitting equations, which leads me to think that workload condition is accepted and assimilated by company AZE employees. As with other variables, it is not clear how the workload compares to competitive firms.

- *In Company AZE, wages is key factor but not the most important*

Hypothesis 3 was supported by the results. More than 80% of the entire population feels they are well compensated for the work they do. Furthermore, only 6% of the entire population is prone to quit due to salary. Although the salary variable is contained in the quitting equations (equations 1 and 3), its weight is low compared to the rest of the variables.

However, it was discovered through exit interviews that wages do matter when people find jobs abroad. In developed countries, wages and buying power is significantly higher. New ways of finding jobs are arising. Globalization and social networks are drastically changing employee retention strategies. Company AZE is competing more and more with other companies located outside Mexico which offer higher wages and different quality of life to employees. If Company AZE and other companies in Mexico want to retain their talent, soon enough they will have to adjust the employee benefits strategy and use US based companies as the new benchmark. Of course, when this happens the benefit of doing R&D work in Mexico might decrease leading to a counter-force to current growth.

- *In Company AZE, high level of engagement leads to lower attrition rates*

Hypothesis 4 related to Engagement was strongly supported by the results. The engagement variable is playing an important role in company AZE's workforce. Per attrition equations 1, 2, 3, it was demonstrated that the more engaged the engineers are leads them to be less likely to quit their jobs. Additionally, the analysis shows that the great majority of the personnel are highly motivated; they feel motivated a few times a week. The challenge for upper management is to increase engagement to be felt every day or to do what it can to maintain the current level.

- *High potentials are prone to leave the company due to lack of opportunities*

Hypothesis 5 related to high potentials is supported by the results; the responsibility variable is apparently one of the top of the motivators and also significant in the quitting equations. Data matches with exit interviews where personnel considered high potentials left the company because they felt there was lack of opportunities to get more responsibility inside the company. They felt they could not grow if they stayed in the company but since they mostly left for significantly higher salaries outside of Mexico, the relative importance is not clearly known.

RECOMMENDATIONS

Many opportunities exist to improve internal survey data collection, contents and analysis to obtain more accurate results; the main goal is to provide management with better facts in their decision making process. Some of the main subjects that can be improved are: Company AZE's annual job satisfaction survey, long term assignment, promotion system.

Internal survey

Company AZE's annual internal survey can be enriched by adding quitting and pay grade questions. Correlation of the two new variables with the rest of the asked data can significantly improve analysis. Insights provided in this survey by quitting and pay grade questions are significant; without them, most likely the study done in this thesis wouldn't be completed.

Long term assignment

Create a financial program for engineer ending long term assignments to mitigate the negative impact upon their return. The economic implications of ending long term assignments are not well understood by the engineers, it takes them by surprise the significant wage reduction the get upon their return.

Additionally, Long Term Assignment process tracking can be improved. Currently, engineers on international assignments don't count with proper tracking of their work and achievements from Company AZE upper management delaying their development inside the company, and possibly affecting their career plan once the come back from their assignment. To improve current status, it was suggested to create a procedure where the supervisor is bestowed with more responsibility; they need to explain to upper management and HR teams the engineer's progress of the last period of evaluation. A template was created in order to standardize the information to be shared to upper management and HR. The workflow is shown in Figure 23.

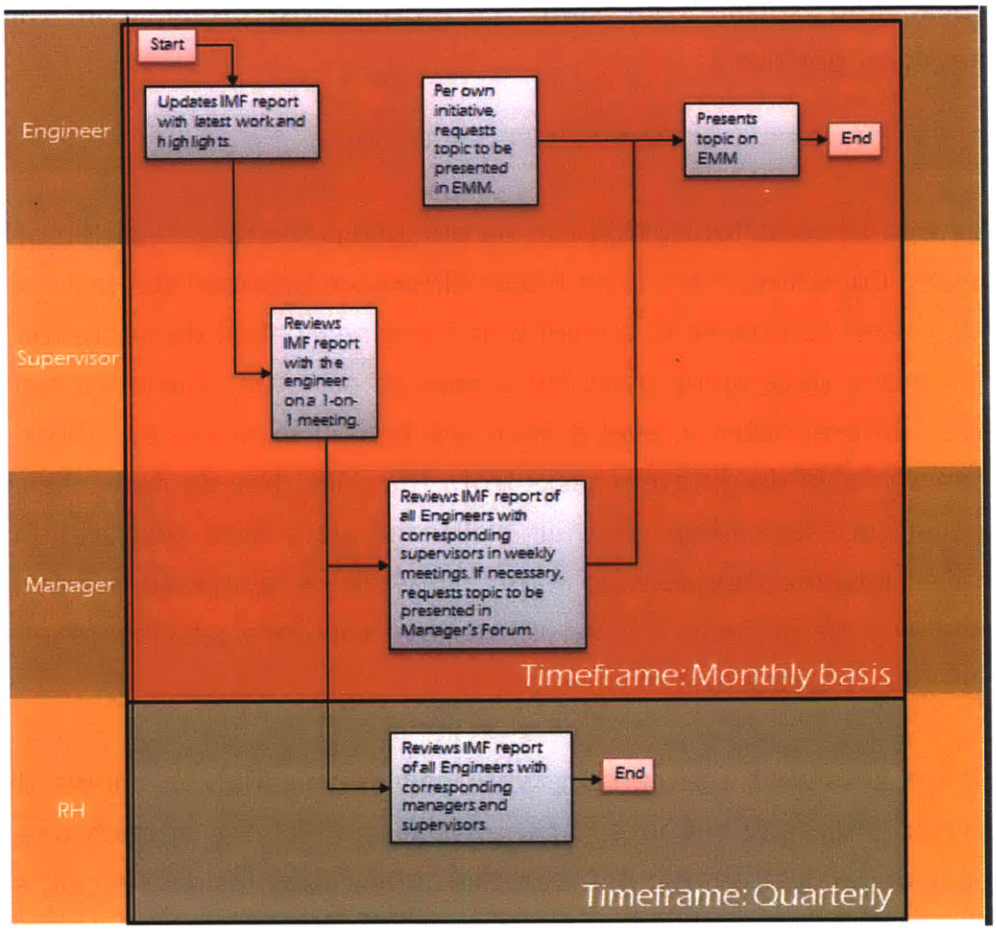

Figure 23: Follow up of Engineer with International Assignment progression process proposal

Promotion system & organization

The promotion system inside the company is not robust enough. In order to improve it, employees' social skills should be included into the performance review and annually evaluated. As Lieberman analysis results tell us, leaders are seen by employees as "great leaders" when they have strong analytical and social skills (Lieberman, 2013). By adding the social skills measurement mechanism, the promotion system will become more robust and the company will easier keep track of employees that have both

analytical and social skills and therefore, most likely, can thrive in management positions.

Level 8 engineers, role specialization.

An area of opportunity that can be pursued is the specialization of level-8 engineers. Currently, there is no major difference between the tasks a level-8 engineer does compared to a level-6 or 7 engineer; all of them are focused in designing and developing parts for a specific program. The most significant skill that differentiates a level-8 from the rest is: experience. I think level-8 engineers should do different tasks from the ones they do now, they should be specialized depending on their skills and start their preparation to be promoted into management positions. Supervisors' workload is growing and growing and definitively a Level-8 engineer can help provide relief to the supervisors by taking part of the workload.

Figure 24 shows the current work cell organization. It shows that the supervisor is directly in charge of the work and training of each one of the engineer under his command. Given the organization inside the cell, all work streams must go through the supervisor which can become exhausting. Some of those work streams can be filtered and solved even before the supervisor hears about them.

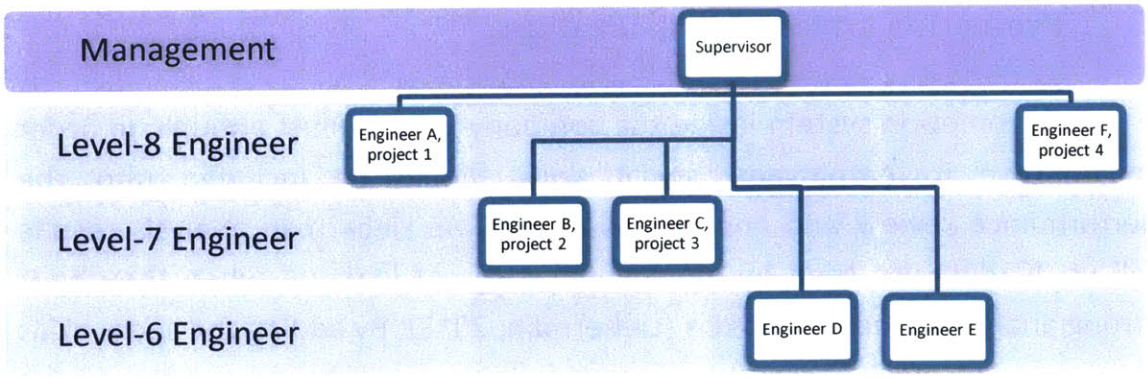

Figure 24: Current Work cell organization chart

Previous efforts inside the company were done to assign more responsibilities to level-8 engineer; all these efforts did not have good results. The plan consisted in using the level-8 engineers as buddies of lower level engineers; the idea was that the level-8 engineer was going to guide the other engineers in their career plan. At the end, the plan did not work because level-8 engineers were not accountable of the lower level engineers and all members inside the work team (level 8 and level 7 engineers) were working in different programs.

Given the previous factors, I propose to segregate level-8 band into different groups and bestow them with more responsibility. Two main groups are proposed:

A. Supervisor type:

The purpose of this group is to help supervisors by removing some of the tasks they do and at the same, provide more responsibility to the level 8 engineers and prepare them for management positions. It is proposed to assign 2 or 3 lower level engineers to one level 8 engineer who will be responsible of training them and supervising their daily work. The responsibility of designing the parts and components for a specific program will be bestowed to the lower level engineers, however, the level 8 engineer must be accountable for the work the lower engineers do and must explain the progress and issues to upper management.

To obtain better results, all these management tasks should be included as objectives in their performance plan. Their performance should be measured in the same way a supervisor performance is measured nowadays in regards to people development.

Having level-8 supervisor engineers will bring many advantages. For lower level engineers, they will receive more personalized attention and feedback which will help to boost their career plan. For supervisors, their workload will be reduced since some of their responsibilities are being transferred. For Level-8 engineers, their responsibility will increase and will start developing management skills which are required to be promoted.

B. Technical specialist type:

This type of engineers are more focused in innovation inside their commodities, they are the experts who are accountable for new technology that is applied into the programs. They don't have lower level engineers assigned to them.

The primary task of a technical specialist is to provide the other engineers with assistance in finding solutions to the technical issues they have. They can be also assigned to a program but ideally their main responsibility should be to pro-actively participate in any technical discussion related to his commodity regardless of the program.

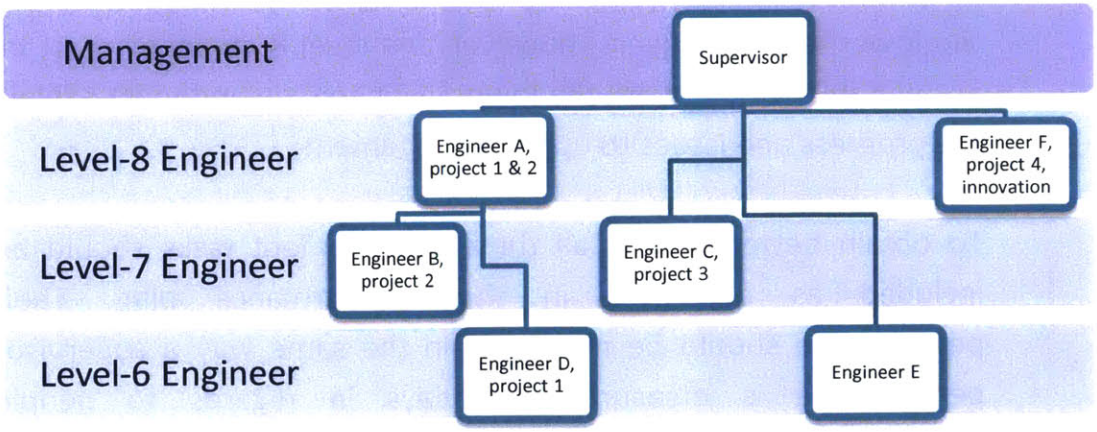

Figure 25: Proposed Work cell organization chart

Improve work environment

As explained by Michelle Checketts in her article: What Makes You Stay at your Work? (Checketts, 2013), in order to obtain longer and successful tenures, personnel should bond together more with their peers and find a job that satisfies them. As it was shown in the survey results, engineers at the company feel very proud of what they do in their daily work, which it may suggest the reason of why the will keep working for the company for at least another 24 months (Q17). The other vital variable is caring about the people inside the company, the more the people bond together, the less likely they will want to quit their jobs. As company AZE continues to rapidly grow, it becomes less likely that senior management and peers get to bond together as was done with a smaller organization where everyone knows everyone and what they are working on. Therefore, it is proposed to increase extracurricular activities for employees organized by the company, such as go-karts, gotcha, seminars, etc...

FUTURE WORK

Given the low R-square value obtained from linear regression equations, it is prudent to consider including more variables asked in the survey to increase its added value. Such variables can be: networks, commuting, etc...

It should be considered to study how networks affect the individual's decision of leaving the company. The analysis performed by G. Ballinger et al. in 2011 provide us an idea of how networks and turnover can be related (Ballinger, et al., 2011). In their work, it is explained why energizing relationships are a good indicator of turnover; when people watch a person who is perceived with high level of energy based on their interaction at work quit the company; they are more likely to also leave the company. Therefore

it is proposed to identify, within Company AZE working teams, the personnel who are perceived with high level of energy by others and understand their desire to stay with the company.

Commuting is an unexplored hygiene factor inside the company that might demotivate the engineers given the long hours they must face inside the traffic. If commuting is correlated to turnover, then Company AZE should consider implementing solutions such as: home office or providing complementary transportation for employees.

Perks system should be improved to motivate engineers. They should not be considered as the ultimate solution; however they can help to improve the focus of engineers on work tasks by removing constant distractors and complaints. One possible idea is to analyze the implication of adding a Car leasing system for employees. A well-studied business case should be developed where motivation is also considered as variable and not focused to economy only.

APPENDIX A – PREWRITTEN EMAIL

Dear colleagues,

I am Tomás GarciaJaime, D&R engineer from Body Exterior and in the process of completing my thesis for my graduate program. Currently I am working on my research project and as part of it; I am conducting an independent survey on issues related to engineers working in the Product Development group at this Company.

I would like to ask for your help to answer the following online survey, please take a few minutes to complete it. Your opinion transmitted through the responses will help to shape policy recommendations to the Company.

Your participation is voluntary and the survey is entirely anonymous, therefore please be as honest as possible. It will take you less than 6 minutes to finish the questionnaire. If for any reason you need to close the survey without finishing it; when you re-enter to the survey, you will be able to continue the survey where you left it.

The web link to the survey is the following:
https://www.surveymonkey.com/s/BSFSCN3a

Password: vehicle

Please complete the survey by November 5th, 2013.

If you have any doubts or comments, please send me a mail at surveymailbox84@gmail.com

Thank you in advance for your help!

Diego Tomás GarciaJaime

APPENDIX B – WORKFORCE SURVEY

No.	Variable	Pulse Survey Questions	Dimension	Scale	The higher the value:
1	**AGE**	How old are you?	Control	**0=18 to 24 6=75 or older**	
2	**TENURE**	How long have you been working for this organization?	Control	**0=Less than 1 year 4=More than 10 years**	
3	**PAY GRADE**	What is your current job pay grade at the company	Control	**0=GSR5/6 1=GSR7 2=GSR8 3=Management**	
4	**TEAM**	What functional team do you belong to?	Control	**Body Exterior, Body Interior, EESE, CAD, CAE, Chassis, SBU, Seats**	
5	**RELOCATION**	Have you ever been temporarily relocated as an ISE or during a vehicle launch phase?	Control	**0=No 1=Vehicle launch 2=Both 3=ISE**	
6		Give your assessment of what YOU feel about the following factors:	Job Satisfaction	**1=Dissatisfied 5=Satisfied**	**↑Better**
6.a	**JS1 – ACHIEVEMENT**	Achievement – I feel proud of what I do			
6.b	**JS2 – RECOGNITION**	Recognition – My talent is recognized by others			
6.c	**JS3 - WORK ITSELF**	Work itself – I like to do the tasks assigned to me			
6.d	**JS4 – RESPONSIBILITY**	Responsibility – Management trusts me			
6.e	**JS5 – GROWTH**	Possibility of Growth - My job allows me to improve myself constantly			
6.f	**JS6- JOB OPPORTUNITY**	Job opportunity - Easiness to move to other job positions or being promoted			
6.g	**JS7 - COMP POLICY**	Company policy - Personnel related policies (Performance Review, vacations, business trip, etc...)			
6.h	**JS8 - MANAGEMENT AID**	Supervision – I receive accurate technical feedback when needed			
6.i	**JS9 – SUPERVISOR**	Relation with supervisor – My supervisor and I have a good working relationship			

6.j	**JS10 - WORKING CONDITIONS**	Working conditions – I have the right set of tools to do my work			
6.k	**JS11 – COLLEGUES**	Relation with colleagues – My coworkers and I have a good working relationship			
7	**SALARY Q1**	My skills, work experience, and workload are adequately compensated in terms of pay and benefits	Salary	**1=Disagree 5=Agree**	**↑Better**
8	**SALARY Q2**	(If disagree to previous question) For the work I do, I believe I should be earning	Salary	**1=less than 25% of what I currently earn 4=more than 25% of what I currently earn**	**↓Worse**
9	**SALARY Q3**	(If more than 25% is selected to previous question) Have you seriously searched for other job opportunities while working for the company due to SALARY	Salary	**1=Disagree 5=Agree**	**↓Worse**
10	**PROM SYS Q1**	I perceive the promotion system in my functional team as fair	Promotion system	**1=Disagree 5=Agree**	**↑Better**
11	**PROM SYS Q2**	I understand what skills & competencies I need to master in order to be considered for a promotion	Promotion system	**1=Disagree 5=Agree**	**↑Better**
12	**PER DEV Q1**	I feel I have a career opportunity in this organization	Personal development	**1=Disagree 5=Agree**	**↑Better**
13	**PER DEV Q2**	My personal development plan inside the company is clearly established and can be measured	Personal development	**1=Disagree 5=Agree**	**↑Better**
14	**WORKLOAD Q1**	My workload is NOT affecting my personal life	Workload	**1=Disagree 5=Agree**	**↑Better**
15	**WORKLOAD Q2**	In the past year, I consistenly go to work early or stay late outside of your normal working hours in order to keep up with my workload	Workload	**1=Disagree 5=Agree**	**↑Better**
16	**WORKLOAD Q3**	(If yes to previous question) When overtime is not approved; in average, how much extra work do you do? Standard working hours = 8 hr/day	Workload	**1=Less than 1 hr 2=1 to 3 hrs 3=3 to 5 hrs 4=More than 5 hrs**	**↓Worse**
17	**QUITTING**	Do you expect to quit the company in the next 24 months?	Retention	**1=Disagree 5=Agree**	**↓Worse**
18.a	**ENG 1 – BURST**	At my work, I feel bursting with energy	Engagement	**0=Never 6=Everyday**	**↑Better**
18.b	**ENG 2 – INSPIRE**	My job inspires me	Engagement	**0=Never 6=Everyday**	**↑Better**

18.c	**ENG 3 - GET UP**	When I get up in the morning, I feel like going to work	Engagement	**0=Never 6=Everyday**	**↑Better**
18.d	**ENG 4 - HAPPY AT WORK**	I feel happy when I am working intensely	Engagement	**0=Never 6=Everyday**	**↑Better**
18.e	**ENG 5 – PROUD**	I am proud of the work that I do	Engagement	**0=Never 6=Everyday**	**↑Better**
18.f	**ENG 6 – IMMERSED**	I am immersed in my work	Engagement	**0=Never 6=Everyday**	**↑Better**
24	**COMMENTS**	Open question to leave any comments.			

APPENDIX C – SURVEY RESULTS

1. What is your age?

Category	Count	Percentage
18 to 24	46	17.62%
25 to 34	154	59.00%
35 to 44	40	15.33%
45 to 54	12	4.60%
55 to 64	8	3.07%
65 to 74	1	0.38%
Grand Total	**261**	**100.00%**

2. How long have you been working for this organization?

Category	Count	Percentage
1 year to less than 3 years	87	33.33%
10 years or more	30	11.49%
3 years to less than 5 years	66	25.29%
5 years to less than 10 years	25	9.58%
Less than 1 year	53	20.31%
Grand Total	**261**	**100.00%**

3. What is your current job pay grade at the company?

Category	Count	Percentage
GSR 5/6	92	35.25%
GSR 7	60	22.99%
GSR 8	71	27.20%
MANAGEMENT	38	14.56%
Grand Total	**261**	**100.00%**

4. What functional team do you belong to?

Category	Count	Percentage
Body Exterior	36	13.79%
Body Interior	51	19.54%
Business office	1	0.38%
CAD	33	12.64%
CAE	18	6.90%
Chassis	14	5.36%
Core Engineering	2	0.77%
DTO	2	0.77%
EESE	55	21.07%
Gov Automotive Regulations	1	0.38%
PMT	9	3.45%
Powertrain	17	6.51%
PTO	1	0.38%
Quality	1	0.38%
Restraints	1	0.38%
Seats	5	1.92%
VEV	14	5.36%
Grand Total	**261**	**100.00%**

5. Have you been temporary relocated to other locations as an ISE or during a vehicle launch phase?

Category	Count	Percentage
1 No	178	68.20%
2 Vehicle Launch Phase	47	18.01%
3 Both	16	6.13%
4 ISE	20	7.66%
Grand Total	**261**	**100.00%**

6. Give your assessment of what you feel about the following factors:

Category	1-Disatisfied		2-Somewhat_ Disatisfied		3-Neutral		4-Somewhat_ Satisfied		5-Satisfied		Total	
	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage
JS1 – ACHIEVEMENT	2	0.77%	4	1.53%	9	3.45%	73	27.97%	173	66.28%	261	100.00%
JS2 – RECOGNITION	5	1.92%	12	4.60%	26	9.96%	116	44.44%	102	39.08%	261	100.00%
JS3 - WORK ITSELF	4	1.53%	9	3.45%	10	3.83%	80	30.65%	158	60.54%	261	100.00%
JS4 – RESPONSIBILITY	2	0.77%	5	1.92%	12	4.60%	86	32.95%	156	59.77%	261	100.00%
JS5 – GROWTH	7	2.68%	17	6.51%	30	11.49%	74	28.35%	133	50.96%	261	100.00%
JS6- JOB OPPORTUNITY	20	7.66%	34	13.03%	44	16.86%	85	32.57%	78	29.89%	261	100.00%
JS7 - COMP POLICY	4	1.53%	9	3.45%	13	4.98%	88	33.72%	147	56.32%	261	100.00%
JS8 - MANAGEMENT AID	7	2.68%	18	6.90%	31	11.88%	79	30.27%	126	48.28%	261	100.00%
JS9 – SUPERVISOR	2	0.77%	9	3.45%	17	6.51%	62	23.75%	171	65.52%	261	100.00%
JS10 - WORKING COND	6	2.30%	14	5.36%	10	3.83%	78	29.89%	153	58.62%	261	100.00%
JS11 – COLLEGUES	3	1.15%	1	0.38%	8	3.07%	52	19.92%	197	75.48%	261	100.00%

7. My skills, work experience and workload are adequately compensated in terms of pay and benefits

Category	Count	Percentage	
1-Strongly_Disagree	8	3.07%	This answer leads to question Q8
2-Disagree	37	14.18%	This answer leads to question Q8
3-Neutral	35	13.41%	This answer leads to question Q10
4-Agree	141	54.02%	This answer leads to question Q10
5-Strongly_Agree	40	15.33%	This answer leads to question Q10
Grand Total	**261**	**100.00%**	

8. For the work I do, I believe I should be earning

Category	Count	Percentage	
-	216	82.76%	
Between 1% and 25% MORE of my current salary	23	8.81%	This answer leads to question Q10
MORE than 25% of my current salary	22	8.43%	This answer leads to question Q9
Grand Total	**261**	**100.00%**	

9. Have you seriously searched for other job opportunities due to SALARY?

Category	Count	Percentage
-	239	91.57%
No	6	2.30%
Yes	16	6.13%
Grand Total	**261**	**100.00%**

10. I perceive the promotion system in my functional team as fair

Category	Count	Percentage
1-Strongly_Disagree	11	4.21%
2-Disagree	41	15.71%
3-Neutral	72	27.59%
4-Agree	108	41.38%
5-Strongly_Agree	29	11.11%
Grand Total	**261**	**100.00%**

11. I understand what skills & competencies I need to master in order to be considered for a promotion

Category	Count	Percentage
1-Strongly_Disagree	4	1.53%
2-Disagree	23	8.81%
3-Neutral	47	18.01%
4-Agree	129	49.43%
5-Strongly_Agree	58	22.22%
Grand Total	**261**	**100.00%**

12. I feel I have a career opportunity in this organization

Category	Count	Percentage
1-Strongly_Disagree	5	1.92%
2-Disagree	14	5.36%
3-Neutral	39	14.94%
4-Agree	125	47.89%
5-Strongly_Agree	78	29.89%
Grand Total	**261**	**100.00%**

13. My career path plan inside the company is clearly established and can be measured

Category	Count	Percentage
1-Strongly_Disagree	6	2.30%
2-Disagree	43	16.48%
3-Neutral	66	25.29%
4-Agree	102	39.08%
5-Strongly_Agree	44	16.86%
Grand Total	**261**	**100.00%**

14. My workload is NOT affecting my personal life

Category	Count	Percentage
1-Strongly_Disagree	17	6.51%
2-Disagree	39	14.94%
3-Neutral	48	18.39%
4-Agree	105	40.23%
5-Strongly_Agree	52	19.92%
Grand Total	**261**	**100.00%**

15. In the past year, I consistently go to work early or stay late outside my normal working hours in order to keep up with my workload

Category	Count	Percentage	
1-Strongly_Disagree	12	4.60%	
2-Disagree	54	20.69%	
3-Neutral	45	17.24%	
4-Agree	87	33.33%	This answer leads to question Q16
5-Strongly_Agree	63	24.14%	This answer leads to question Q16
Grand Total	**261**	**100.00%**	

16. When overtime is not approved; in average, how much extra work do you do? (Standard working hours = 8 hr/day)

Category	Count	Percentage
-	111	42.53%
1 to 3 hours per day	96	36.78%
3 to 5 hours per day	38	14.56%
Less than 1 hour per day	11	4.21%
More than 5 hours per day	5	1.92%
Grand Total	**261**	**100.00%**

17. Do you expect to quit the company in the next 24 months?

Category	Count	Percentage
1-Strongly_Disagree	104	39.85%
2-Disagree	83	31.80%
3-Neutral	41	15.71%
4-Agree	22	8.43%
5-Strongly_Agree	11	4.21%
Grand Total	**261**	**100.00%**

18. Give your assessment of what you feel about the following factors:

	0-Never		1-Once_a_Year_or_Less		2-Once_a_Month_or_Less		3-A_Few_Times_a_Month		4-Once_a_week		5-A_Few_Times_a_Week		6-Every_day	
Category	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage
At my work, I feel bursting with energy	3	1.15%	0	0.00%	4	1.53%	15	5.75%	36	13.79%	128	49.04%	75	28.74%
My job inspires me	1	0.38%	6	2.30%	2	0.77%	18	6.90%	17	6.51%	91	34.87%	126	48.28%
When I get up in the morning, I feel like going to work	6	2.30%	3	1.15%	13	4.98%	10	3.83%	25	9.58%	96	36.78%	108	41.38%
I feel happy when I am working intensely	3	1.15%	1	0.38%	4	1.53%	14	5.36%	22	8.43%	86	32.95%	131	50.19%
I am proud on the work that I do	0	0.00%	2	0.77%	6	2.30%	12	4.60%	9	3.45%	52	19.92%	180	68.97%
I am immersed in my work	4	1.53%	1	0.38%	2	0.77%	9	3.45%	12	4.60%	66	25.29%	167	63.98%
Engaged employee index (Average)	**1**	**0.38%**	**0**	**0.00%**	**5**	**1.92%**	**11**	**4.21%**	**19**	**7.28%**	**94**	**36.02%**	**131**	**50.19%**

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