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Worker and Business factors That Positively Impact Pay-for-Performance

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Abstract

Pay-for-Performance has been used for over half a century at this point, with countless successes and failures. Established research up until now has almost exclusively been conducted for implementations at hospitals and schools. Now that the service sector is suffering major shortages, this might be a great opportunity to break the mold and see what the possibilities are for pay-for-performance outside of the high-paying jobs it is usually associated with. This paper consists of an exploratory research on the effect of different factors within pay-for-performance on worker performance to come to a decision on whether pay-for-performance has potential for low-income jobs within the service sector.

1. Introduction

The Dutch cleaning industry has been struggling with staff shortages for decades now. When the pandemic of 2020 caused lockdowns in the Netherlands, another employment contraction of 8.4% was observed in the industry as a result of businesses being temporarily closed (UWV, 2021). This in turn led to even worse shortages when the country was not in lockdown and demand rose again. After the final lockdown, demand did not stop rising to the point where growth is being majorly stunted (UWV, 2023). Stories like this are not uncommon and staff shortages are prevalent through the Netherlands, especially in the service sector (UWV, 2021). To prevent further stagnation and start growth again, supply of services has to be increased.

There are two main ways of improving the amount of employee demand that can be met in this sector; increasing the number of workers and improving the productivity of the existing workers. The latter will be the main focus of this paper. Both are very difficult to achieve without proper structural change (O'Malley, 2000), which means some big changes would have to happen for a major improvement to take place. Through important factors like earnings, compensation/benefits, incentives, and recognition, motivation can be increased (Ali & Anwar, 2021) (Sandhya & Kumar, 2011). Through this improved motivation, perhaps the industry is able to diminish excess demand. To aid in improving these factors, pay-for-performance could be a good fit. Pay-for-performance is a model that utilizes incentives to reward employees that deliver good work over time with extra earnings or compensations.

Pay-for-performance, or PFP for short, has been a topic of debate for over 60 years now (Katz, 1961). Research has been done again and again, mostly for implementations for teachers and physicians. The results vary greatly and seem to depend on many factor within and outside the reach of these institutions, with no major effects being observed in most of the research done in healthcare (Kondo, 2016). Among all of this research, there are wildly differing implementations of PFP that all have their positives and negatives. Unfortunately PFP research rarely concerns itself with industries outside of health care and education. However, there is at least one instance of research in the other industries within the service sector of Nepal, which concluded that rewards, along with empowerment, achievement, and appreciation have a positive effect on performance (Pradhan, 2022). With PFP bringing along an increase in most of these factors, that could imply that PFP could be a great tool to stop stagnation and potentially even grow the supply of service.

To lay some groundwork for future research, this paper will contain exploratory research on the potential effects of PFP on employees in the service sector. Rather than discussing proper implementations of PFP, there will be a focus on the potential effects a proper implementation would have on the employees of the service sector. This leads to the main question to be answered; "What factors contribute to low-income workers in the service

sector increasing their performance within a pay-for-performance environment?”. To answer this question, a vignette-type questionnaire will be used to measure how people would react to PFP implementation.

2. Background

2.1 Service Sector

2.1.1 Scope of the Research

This paper will be researching low-income jobs in the service sector in the Netherlands. It is important to define low-income jobs and which industries are considered for this research paper. The service sector is a massive and diverse sector. The service sector includes, but is not limited to, healthcare, education, cleaning, retail, tourism, personal care services, media, transportation, entertainment, and waste disposal. Healthcare and education have starting salaries that generally fall outside of the low-income range and will therefore not be considered for the analysis. Cleaning, retail, tourism, and personal care services all generally have a low income of around 1000 euro per month, even with experience. Finally there is media, transportation, entertainment, and waste disposal. These industries are difficult to classify, as the income is dependent on a lot of factors and can vary drastically between different people, even if those people are working the same job technically. Since it is difficult to make a distinction between the low-income and other jobs, these will be excluded. This leaves us with only cleaning, retail, tourism, and personal care services.

2.1.2 Quality in the Service Sector

Quality can be defined in a multitude of ways, all of which have their own uses. Grönroos (1984) describes three categories for quality in the service industry; technical quality, functional quality and corporate image. The first category, technical quality, denotes the outcome of a service encounter. For retail and tourism this can usually be objectively measured, while for cleaning and personal care services this cannot be done in many cases. The second category, functional quality, concerns itself with the quality of the process used to come to the outcome. This includes employee attitudes and personality, as well as the accessibility of the service. These factors are all subjective and the importance of each of the factors can differ between businesses. Lastly there is the corporate image, which is also the hardest to measure in light of PFP. Corporate image is how the customer perceives the company and the service they have received. The customer their perception of the services is reliant on the two other factors, along with individual factors that change how the customer perceives these two types of quality.

2.2 Driving Motivation

2.2.1 Effects of Motivation on Performance

As Human Resource Management becomes more and more prevalent in today's business settings, more focus is being put on getting your employees motivated to stay loyal and perform well. Both intrinsic and extrinsic motivation are important to achieve this, as motivation is very closely related to performance (Bawa, 2017). Intrinsic motivation is one of the main predictors of activity engagement and can bring psychological benefits which, in turn, can improve performance (Fishbach & Woolley, 2022). Extrinsic motivators can be used to entice employees to reach certain goals, as long as those motivators are deemed worthy of the effort (Turner, 2017). The biggest drivers for motivation in general for both loyalty and productivity seem to be earnings, compensation/benefits, incentives and recognition (Ali & Anwar, 2021) (Sandhya & Kumar, 2011).

2.2.2 Earnings

Earnings can most concisely be explained as salary and wage. The reason people go to work in the first place is to make money and provide, making it the most important extrinsic motivator for employees (Medoff & Abraham, 1980).

2.2.3 Compensation and Benefits

Compensation and benefits refer to ways of payment to the employee that are outside of their normal earnings. Most commonly this is given to employees in the form of fringe benefits or bonuses. These add to the extrinsic motivation given by standard earnings. Benefits can include for instance leasing a car or getting healthcare benefits through the company (Hansen, 2007). Bonuses are usually monetary rewards that contribute to the extrinsic motivation, but some benefits can also contribute to the intrinsic motivation by, for instance, 'improving' someone their social status. These bonuses and benefits can encourage employees to stay for longer because leaving could mean they lose their car, or miss out on a loyalty bonus later on.

2.2.4 Incentives

Incentives are very similar to bonuses and benefits, but they require some extra effort by the employee to achieve. Usually they are received only when a certain goal is met, which can incite and motivate the employee to reach said goal (Daniel, 2019). These rewards can be either monetary or non-monetary, and should always be linked to clear and transparent goals as they are meant to motivate. For these incentives to be effective in increasing performance, they should hold enough value for the employee to be worked towards (Turner, 2017). While incentives themselves are extrinsic rewards, if they are achieved they are usually followed up by recognition and thus are also related to intrinsic motivation.

2.2.5 Recognition

Recognition is the most closely linked with intrinsic motivation. It encompasses everything a business can do to make sure their employees feel seen and appreciated by their higher ups and colleagues. Some of the most important business factors that impact intrinsic motivation are organization culture and job satisfaction (Nantha, 2013). If both of these factors are positive, employees could start enjoying their work, which can be one of the best ways to motivate the workers (Nantha, 2013).

2.3 Popular Pay-for-Performance Models

While PFP fits best in the incentives, it is important to realize incentives are very closely related to recognition. Since there is no clear cut implementation of PFP that fits every business, it is important to look at how different implementations can impact different factors. Ideally you would want to limit negative effects on the motivation as much as possible, but there will inevitably be some negatives regardless of which system is implemented. The most popular implementations of PFP are fringe benefits, piece rate pay and merit pay.

2.3.1 Fringe Benefits

Fringe benefits are usually not implemented as a PFP mechanism, but instead are given to all employees or only to those at a certain position. This does not mean that it is not a valid form of PFP however, as fringe benefits can be very effective in attracting new employees and retaining the existing ones (Wilson, Northcraft & Neale, 1985). Unfortunately in the context of low-income jobs, fringe benefits become hard to feasibly and meaningfully implement. Although low-income workers are more likely to desire tax benefits that can be

achieved through fringe benefits (Turner, 2009), for employers it seems almost impossible to give meaningful rewards to employees without suffering losses from it. This excludes fringe benefits as a serious form of PFP or low-income jobs.

2.3.2 Piece Rate Pay

Piece rate pay is a system where the workers are paid not by the amount of time they work, but instead by the number of units they finished working on. These units vary per workplace and should be able to be quantifiable in a way that is fair for all employees. Productivity, measured in these units, and worker income should both significantly increase after a switch to piece rate pay (Lazear, 2000). A problem with piece rate pay, especially with unmotivated workers, could be that people try to finish as fast as possible without actually making sure everything is done well. While this downside is present in all PFP models, it is amplified by piece rate pay as in a lot of workplaces workers would be able to go home early if they finish early (Shearer, 2004). Another problem is that this type of PFP could be detrimental to corporate culture, which in turn could have the opposite effect on workers that we are trying to achieve. While this system could have potential for low-income workers, it seems as though it will be hard to do without either the workers or the business suffering under the system.

2.3.3 Merit Pay

Merit pay implementations directly link changes in salary to the performance of an employee. When someone has worked well they can get an increase in their salary, usually right after their performance review. Notable is that this progress is slow and does not impact most workers at first when it is implemented. The difference between poor performers and good performers should be at least 4% to ensure meaningful change for the workers (Henderson, 1989). In cases where high dependency on other workers for measurable performance is required, merit pay should be avoided (Campbell & Chia, 1998). This seems the most probable model to work for low-income workers, as it measures performance over a long time and is less drastic in its immediate change on the workers. Therefore, the analysis will be done with merit pay in mind.

2.4 Performance

Although performance can be defined in many ways, it can almost never be done completely objectively (Esposito, 2015). Most workers are dependent on at least some others, so if one does not perform under standard, others will have to make up for that which might hurt their own perceived performance (Campbell & Chia, 1998). As performance is always at least slightly subjective and workers are not able to accurately rate their own performance (Stajkovic & Luthans 1998), disagreements on evaluations can also not always be avoided. As stated before, a lot of the work done is hard to check for quality. As such, workers could take advantage of the metrics given for performance and sacrifice quality for quantity of their work.

2.5 PFP Study Results

For decades now, PFP models have been implemented with mixed results. For the health care industry, Markovitz & Ryan (2017) and Rosenthal et al. (2005) analyzed the results of many different studies on PFP to find what effects PFP has on both the workers and patients. Markovitz & Ryan focused on results in America only, while Rosenthal et al. took half of their research from American implementations and the rest from implementations around the world. For the teachers working under PFP, Leaver et al. (2021) their analysis on PFP in Rwandan primary schools will be included, as well as the critique on PFP by Katz

(1961). All of these papers paint a mostly negative picture of PFP, but also show that there is potential for PFP to shine given the right implementation and circumstances. All of these papers regard jobs inside the service sector, but all of the jobs are high-income.

2.5.1 PFP limitations

In the health care industry, the negatives of PFP seem to heavily outweigh the positives for the workers. The consistent positives found by Rosenthal et al. (2005) were the improvement of patient care processes, standardization of workflow, and the alignment of professional values and intrinsic motivation of the health care workers. The negatives on the other hand are much more abundant. They include box-checking, measure fixation, gaming, tension among team members, and no definitive positive impact on care delivery. As a result of these negative consequences, health equity was negatively impacted and care shifted from patient-centered to performance-centered. The reason quality care cannot be maintained is that there cannot be a perfect objective measure that ensures quality in all cases (Katz, 1961). Quality is difficult to measure and is always influenced by subjectivity, meaning that qualitatively measure PFP can never be set in stone (Markovitz & Ryan, 2017). Attaching a label to what is considered good quality can overshadow the invisible small changes that do make a big difference to the patient, meaning patients can become less satisfied with the care given to them.

2.5.2 PFP Recruitment

One of the goals set by this paper is to help alleviate the shortage of service supply. Until now most attention has been given to the efficiency and quality of the workers to achieve this supply, but another way to increase supply would be bringing in more workers. While significant increases in recruitment and retention of physicians have been observed in England, America seems to not follow the same trends according to McDonald & Ronald (2007). From the interviews they conducted for their research, the most important reason for this difference is the loss of autonomy. American physicians were required to follow far less guidelines than English physicians. This, along with the inability to exclude certain patients from quality calculations, made Americans very wary and uneasy with the idea of PFP. This case paints a very clear picture that small differences can have a big impact on the effectiveness of PFP as a recruitment tool. Leaver et al. (2021) also researched how PFP could be used for recruiting new employees. They came to the conclusion that PFP has no significant effect on attracting skilled personnel, but they noted that there is a significant increase in quick learners being attracted by PFP.

2.5.3 Overcoming the Limitations

To minimize the negative effects of PFP, a lot of factors have to be kept in mind. First and foremost, the employees have to agree with a PFP implementation. If this first criteria is not met, there is a high probability for them to either part ways with the company or start to employ destructive behaviors for PFP (McDonald & Ronald, 2007). Secondly the type of employees present at the company is important. Markovitz & Ryan (2017) found that gender and age both had a significant effect on the success of PFP, with younger people and women being more likely to change their behavior positively. Markovitz & Ryan also found that the type of business trying to implement PFP is also an important factor. Since quality control is very important to the success of PFP, businesses that can easily control for quality are favored over businesses where this is difficult. In the case of the service sector, this means that companies where quality is either not important or there is a supervisor overseeing operations are favored. Aside from quality control, small businesses are favored for PFP, as corporate culture is much less likely to suffer and quality is usually easier to

control for. In conclusion, PFP is most likely to succeed in small businesses consisting of mostly women and younger people that want an opportunity to earn more.

3. Methodology

3.1 Type of Research

3.1.1 Survey Research

To answer the question “What factors contribute to low-income workers in the service sector increasing their performance within a pay-for-performance environment?”, a vignette-type survey has been distributed among students and adults residing in Western Europe. A vignette is a small text that simulates a real life situation that people find themselves in. For this research, the vignettes contain descriptions of people working in the service sector. After the subjects read the vignette, they get questioned on how they would behave in the given situation. The goal of the survey is to get an insight into how people would change their working behavior in different situations if a PFP system was implemented. There have been vignette studies regarding PFP in the past, they were focused on the business and motivation aspects. This paper instead focusses on the specific factors that make people desire and thrive inside a PFP environment. The focus was on the workers, as they are ultimately the ones to make a good PFP implementation into an actual success.

3.1.2 Structure of the Survey

The questionnaire consists of two parts, the first containing demographic questions and the second part containing the vignette and questions related to it. The demographic questions are there to give an insight into the people that filled in the questionnaire and how representative they are of the population. While accurate representation is not required for a vignette-type study, it does enhance the external validity of the findings (Gould, 1996).

3.1.3 What Vignette Type is Used

The study conducted was a paper people study with a mixed research design (Aguinis & Bradley, 2014). The subjects will get only one generalized vignette and the subjects are made to answer as if they were in the described situation. By doing this, the effect of certain factors on the workers will be analyzed. This can ultimately give insights into what makes a PFP implementation successful for the employees and what demographic has the most potential to make PFP into a success.

3.2 The Vignette

For the vignette, subjects will be asked questions on behavioral changes after the implementation of a PFP system, more specifically merit pay. These questions intend to capture the change in behavior regarding both quality and quantity of work after a PFP implementation. Two of the questions regard the demand of such a system. This is the complete vignette as seen in the questionnaire:

“Imagine you are an adult having difficulty providing for your family, working a low income job for 32 hours a week in the service sector (cleaning, catering, shopkeeping).

At your workplace they have now implemented a reward system, where a raise is given each year to employees that reach a certain performance threshold.

The following questions ask about how you would change if such a system were to be implemented”

The vignette paints a vague and general picture of adults in the service sector. This was a deliberate design choice to improve external validity, as vignettes cannot be generalized to situations other than the one described (Steiner et al., 2016). The only explicit detail mentioned is the amount of hours worked, which was done to make sure the subjects realized they were working part-time and there was still some room for more hours. The vignette was written based on the guidelines set by Wason et al. (2002). Some of their guidelines could not be followed, however. The first guideline that was not followed was the use of an adequate amount of vignettes. In vignette studies it is standard to create multiple vignettes with different levels for certain factors. The positive of using just one vignette is being able to see the within-person change between certain factors, but with the absence of levels the results do not necessarily give meaningful insights into how to tune these levels (Aguinis & Bradley, 2014).

3.3 Survey Questions

The questions of the survey were written in accordance with the frameworks laid down in the books by W.E. Saris Irmtraud & I.N. Gallhofer (2014) and A. Fink (2002). The books contain information on how to setup a survey and make sure the subjects understand every question and answer as desired. While these guidelines were followed as much as possible, all of the questions were still self-made and therefore problems with interpretation could be present.

3.3.1 Demographic Questions

The survey starts off with six demographic questions, meant to give insight into the demographic reached by the survey. By gaining insights into the sample, comparisons can be made to the population of low-income workers. Analysis can then also be done on for instance how different genders react differently to PFP implementation. While five of the six questions are very general and common questions, the sixth one is on work motivators. For this question subjects are asked what their biggest work motivator is from the list of earnings, compensation/benefits, incentives and recognition. This question was added with the purpose of comparison between the different motivators.

3.3.2 Questions on Quantity of Work

The quantity of the work can be quantified differently depending on the branch, company and even job position. Quantity was divided into two types, working harder and working more hours, to keep things general for the entire sector. These two types were then divided into two questions, with an important factor differing between the questions. Working harder was divided into two levels; if the subject would already work hard enough to reach the threshold and if the subject did not yet work hard enough to reach the threshold. These two levels are meant to represent both sides and see if a positive impact could still be there for workers that could already reach the threshold. Working more hours was divided into two questions, the first on the willingness to work more hours per week and the second on the willingness to accept extra shifts. All of this together should give insight into the increase of the quantity of the work done of the workers after a successful PFP implementation.

3.3.3 Questions on Quality of Work

The quality of the work done was also divided by four questions. The first two asked about employee helping behavior, asking the subjects if they would still be willing to help others if their own perceived performance could suffer. The first question was asked given nothing

else changed and the second one asked how they would feel if their coworkers negatively changed since a PFP implementation. These two should give insight into both what the subject would do in case corporate culture would stay the same, as well as if corporate culture would suffer after a PFP implementation. The other two questions concerned themselves with the possibility of an exploit in the PFP system. The subjects were faced with a decision on how much they would abuse such an exploit in the system, first with no other factors changed and then if the other employees would also make use of the exploit. These two questions were meant to give insight into whether people were willing to sacrifice the quality of their work for perceived performance, both when only they use it as well as when others are using it.

3.3.4 Questions on PFP Desirability

Then there was one question at the start of the vignette and one at the end regarding the demand for PFP. The first question asked the subjects how much they would be bothered knowing their performance was being measured. This question was meant to give insight into the pressure that a PFP model could impose on the workers if they felt like they were being watched. The final question asked, given the current limited knowledge of PFP, how happy the subjects would initially be after a PFP implementation. This final question should give insight into the initial reaction of the workers to a PFP implementation.

3.4 Distribution

The questionnaire was distributed online among students and working people in North Brabant, as well as on survey distributing websites (SurveySwap and SurveyCircle). The students and workers residing in North Brabant were distributed by word of mouth in order to get a baseline reach with enough responses to do an analysis. The survey distributing websites were used to get a reach outside of the Netherlands. As a result of this broader reach, generalizability of the results should increase (Eckerd et al., 2021). These channels were chosen because they are both accessible and free to use. However, due to the nature of rewarding people by finishing the survey, bias and noise might be added to the data as a result of including these sources of subjects.

4. Analysis Methods

4.1 Pre-Processing

4.1.1 Noise Removal

After all the data is collected, the data needs to be pre-processed. In order to achieve the best results, all of the entries will be looked at and then determined if the subject filled everything in correctly and that there are no inconsistencies between answers. Any entries that are infeasible or inconsistent will be removed. In order to find these entries, multiple comparisons will be done to determine the feasibility of an entry being real. The first comparison is between income and student status. This means for instance students with an improbably high income are removed. Then comparisons will be made between the the opinions on PFP and the behavioral reaction the subjects think they will see. For instance someone that is very bothered by their performance being watched and their behavior being negatively impacted, but reacts that they would absolutely want a PFP implementation or vice versa will be removed.

4.1.2 Normalization

Most of the original data is not normally distributed. This can cause major problems when applying statistical models or tests to the data, as they often work under an assumption of normality of the data. To bring the data closer to a normal distribution, the data will be normalized.

4.2 Partitioning of the Data

The subjects will be partitioned into groups based on their answers to the demographic questions. The first partition is based on the biggest work motivator for the subjects. Even though there are 4 answers on the survey, the subjects were partitioned into 'earnings', 'recognition', and 'compensation/benefits/incentives'. This was done because the number of subjects choosing 'compensation/benefits' and 'incentives' was not sufficient for meaningful analysis. The second partition was based on work motivation. Since people tend to overestimate their own motivation (Stajkovic & Luthans 1998), answers 1, 2, and 3 will be considered unmotivated and answers 4 and 5 will be considered motivated. The final partition is based on whether the subjects are mainly studying, or working. Subjects that both work and study are all classified as students, as they are likely to be focused more on studying than working. None of the subjects answered they were neither working or studying, so no group could be made for this.

4.3 Data Analysis

4.3.1 Statistical Tests

First there will be t-tests performed on all variables to see if there is a significant change between the neutral, in this case the middle of the Likert scale, and the observed results of the survey. From these t-tests, conclusions can be made on whether PFP has an effect on these factors or not.

Then an analysis of variances (ANOVA) can be used for the first partition on most important work motivator, as it consists of 3 groups. ANOVA is one of the most popular and trusted methods of analyzing vignette data (Steiner et al., 2016). ANOVA will be used to explore if there are any differences in behavioral change between the different partitions of the data. T-tests will be conducted for the partitions containing only two groups to get to the same goal as ANOVA. From the results of these different tests, significant difference between the results for the different groups will be analyzed.

4.3.2 Working more Hours

While the data on quality and quantity of work is numerical, the data for working more hours is categorical. The analysis of this data will be based on visualizations and percentages. There exists no test for significance, as there is only one answer (None) that has a precise definition. Using visualizations, the likelihood of an increase in hours worked per week will be approximated.

4.3.3 Opinions on PFP

The first and last question of the vignette concern themselves with the opinions of the subjects on PFP. The first question, asking the subjects how much they would be bothered by their performance being monitored, was answered on a scale from 'Not at all' to 'Very much'. Since this is on a linear scale, the distribution of this data will be analyzed and reported. The last question of the vignette, which is on whether the subjects would like for a PFP system to be implemented, will be tested like the questions on quality and quantity.

4.4 Robustness Test

Finally, a robustness test will be performed in order to make conclusions on the external validity of the experiment. This robustness test will consist of systematically adding different amounts of noise to the data to see the effects of the noise on the final results. This noise will be generated by creating fake entries that have random results for every question. These fake entries will be added and randomized until there is a significant impact on the results of the t-tests to see how robust the results are to added noise.

5. Results

5.1 Pre-Processing

5.1.1 Removing Noise

The results contained 41 responses, of which two rows were removed. The first removed row was of a student that had a monthly income of 30000 euro. Along with this, they had contradictory answers which made it unlikely the response was truthful. The second row that was removed consisted of the middle answer being chosen every time. While this again is not impossible, it was not likely to be a serious response and was thus removed.

5.1.2 Normalization of the Data

After normalization of the data, all columns were normally distributed. However, within certain groups there did exist some exceptions for which normality did not hold. This data was still used, as ANOVA is likely still the option to compare the different groups (Lantz, 2013).

5.2 Descriptive Analysis

The resulting data consists of 39 entries. There are three missing values, all of which are in the 'income' column. This does not affect the analysis, as the income is used only to check how representative the data is of the population. For the income values that do exist, only one of 11 workers would fall under low-income according to Dutch standards (UWV, 2023). 17 of the subjects were male (44%) and 22 were female (56%). 16 subjects (41%) chose earnings to be their biggest work motivator, 14 subjects (36%) chose recognition, 5 subjects chose incentives and 4 chose compensation (final two combine for 23%). 9 subjects (23%) were classified as unmotivated, which means 30 subjects (77%) were considered motivated. For the final partition, based on work status, 11 subjects (28%) were working and 28 subjects (72%) were actively studying. This data is heavily skewed towards younger people and students, which may skew the results of the analysis positively.

At the start of the next page, descriptive analytics of the numerical variables (before normalization) can be seen.

	Mean	Std	Min	25%	Median	75%	Max
Age	27.64	11.30	19	21	23	27	57
Motivation (pre-PFP)	4.03	0.95	2	4	4	5	5
Bothered by monitored performance	3.05	1.21	1	2	3	4	5
Work harder given the threshold is reached	3.18	0.85	2	3	3	4	5
Work harder given the threshold is Not reached	3.74	1.04	1	3	4	4	5
Helping behavior	2.54	0.85	1	2	3	3	4
Helping behavior given decrease by others	1.72	0.86	1	1	1	2.5	3
Gaming	3.20	0.95	1	3	3	4	5
Gaming given others are also gaming	3.38	1.06	1	3	3	4	5
Happy with PFP implementation	2.85	1.30	1	2	3	4	5

Table 1: Descriptive analytics numeric columns

5.3 Results Effect of Factors

T-tests were performed to see for the vignette questions what impact PFP had on the behavior of the subjects and what factors influences the change. Question 8, question 9, and question 12 through question 16 (see Appendix) were analyzed, with the results visible below.

	Alternative Hypothesis	t-statistic	p-value
Work harder given the threshold is reached	$\mu < 3$	-2.0917	0.0219**
Work harder given the threshold is Not reached	$\mu > 3$	2.7984	0.0041***
Helping behavior	$\mu < 3$	-3.4157	0.0008***
Helping behavior given decrease by others	$\mu < 3$	-9.1523	0.0000***
Happy with PFP implementation	$\mu \neq 3$	-0.74536	0.4615

Table 2: T-tests on potential change

The first two rows, on question 8 & question 9, show that people are willing to work harder to benefit from PFP. However, it also shows that people are willing to do less under a PFP model if they already did enough to reach the performance threshold for a raise. This falls in line with what was expected, as only the people that are not working hard enough for the rewards are incentivized to improve their work.

The two rows regarding employee helping behavior show that people are not willing to help others. This again is what would be expected, since there was no incentive described for them to be helpful towards their colleagues. Testing the two questions against each other

does not show a significant difference between them (p-value 0.4219), so there is no proof for declining corporate culture to fuel this negative impact on helping behavior.

No significant results show for how happy the subjects would be with a PFP implementation. Important to note is that this column does have the highest standard deviation (1.30), so changes to happiness of work will still change for most workers.

5.4 Results of the Partitions

5.4.1 ANOVA

The first model used was ANOVA. The three groups are based on the subject their answer to the third question of the survey. Question 7 through question 9, and question 12 through question 16 (see Appendix) were analyzed, with the results visible below.

	F-statistic	p-value
Bothered by monitored performance	2.4463	0.1009
Work harder given the threshold is reached	5.5771	0.0077***
Work harder given the threshold is Not reached	2.6005	0.0881*
Helping behavior	4.8565	0.0135**
Helping behavior given decrease by others	1.4152	0.2560
Gaming	0.6463	0.5299
Gaming given others are also gaming	1.2068	0.3109
Happy with PFP implementation	1.1311	0.3338

Table 3: ANOVA results

The only significant differences were found for the two questions on whether the subjects would work harder after PFP implementation and the question on change in helping behavior (given others do not change). These are Question 8, Question 9, and Question 12 respectively. After analysis of the three different groups for these questions gives the following results:

Question 8: The group that found earnings to be their main work motivator was found to increase their performance a significant amount less than both of the other groups. This can most likely be attributed to the subjects not wanting to improve if they already reach the threshold to increase their income. The group that found recognition the most important work motivator would increase their performance the most, likely to gain more recognition from the higher-ups.

Question 9: The group that found recognition to be their main work motivator was found to increase significantly more than the other two groups. This is likely explained by the subjects from this group chasing the extra recognition gained by reaching the performance threshold.

Question 12: The group that found earnings to be their main work motivator was found to increase significantly less than the other two groups. Presumably this is because these

subject would be less likely to care about helping others when their main focus is to make money.

There was no significant impact on the other factors between the three groups. However, since the ones that are significant, seem to be very important in actually increasing performance. The best performing out of these three groups would then be the people whose main work motivator is recognition.

5.4.2 T-tests

For the partitions containing 2 groups, based on motivation and academic situation, t-tests were performed to test whether these partitions are different from each other or not.

	p-value Motivated - Unmotivated	p-value Male - Female	p-value Students - Workers
Bothered by monitored performance	0.0253**	0.5501	0.0402**
Work harder given the threshold is reached	0.6212	0.4906	0.1775
Work harder given the threshold is Not reached	0.0660*	0.0378**	0.8424
Helping behavior	0.3651	0.0848*	0.7632
Helping behavior given decrease by others	0.5940	0.0092***	0.5834
Gaming	0.0071**	0.6030	0.3477
Gaming given others are also gaming	0.3234	0.0299**	0.2188
Happy with PFP implementation	0.8525*	0.2887	0.0391**

Table 4: T-tests for two-grouped partitions

Motivation: For the partition on motivation, the results to four of these questions are significantly different. There is evidence that motivated workers mind it less than unmotivated workers when their performance is measured constantly. The motivated workers were also significantly more willing to work harder to reach the performance threshold and more happy with a PFP implementation. Unmotivated workers on the other hand were more willing to abuse the system, even if others did not. This would all fall in line with what was expected, as motivated workers are more likely to deliver both better quality and quantity and are also more likely to thrive in a PFP environment. This all combined is very strong evidence for motivated workers leading to a more successful execution of a PFP implementation.

Gender: The literature suggested that women would have a higher likelihood to perform well under PFP. Comparing the results here, this is again what we would expect, with women willing to work harder than men to reach a performance threshold, as well as having higher helping behavior and being less likely to abuse the system. As expected, women seem to react to a PFP implementation better than men.

Students/workers: Students and workers only did not significantly differ in any performance measures. They did, however, differ in both questions asking the subjects about their opinion on PFP. The students performed better in these instances than the workers. While this is not surprising, there was an expectation that students would perform better looking at the

literature. This does, however, give evidence that students have a more open attitude towards PFP than workers.

5.5 Distribution Results

5.5.1 Categorical Data

The two questions concerning extra work for the subjects had to be analyzed slightly differently from the rest, as the scale was a bit more specific. A third of the subjects was not willing to structurally work more hours every week, which means that approximately 67% was willing to work more.

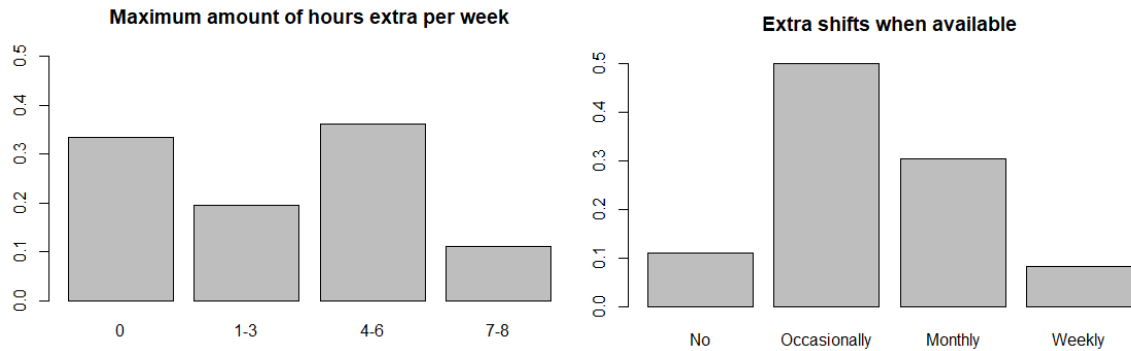


Figure 1: Fraction of subjects willing to work more hours/shifts

This implies that most people would accept more work, even if they were already working 32 hours a week. The subjects were, however, not as willing to take new available shifts. Since “No” and “Occasionally”, which is still less than a month in this case, make up over 61% of the responses. These two graphs would indicate that there would be a noticeable change in the amount of hours workers are willing to work given they are incentivized enough.

5.5.2 Abuse of the System Results

According to the literature, workers were likely to abuse PFP systems, or at least do the bare minimum to still get rewarded. Below the bar plots on how often they would abuse this system can be seen.

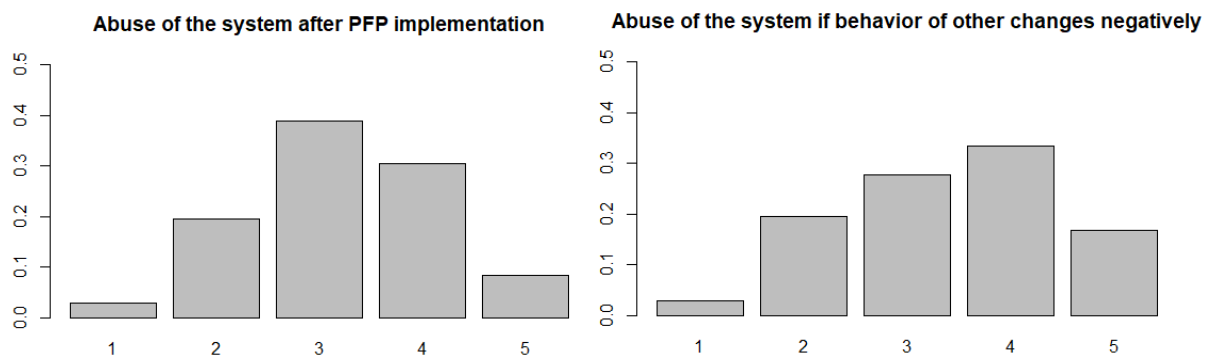


Figure 2: Fraction of subjects willing to abuse of the System

These results show that less than 5% of people would never abuse the system, even if they knew how to. The numbers are slightly worse if others are also to abuse the system, which is in line with what would be expected. These numbers are still very worrying though, as this means the vast majority of workers is willing to abuse the system for personal gain. This again shows the importance of quality control and subjective measurements.

5.5.3 Opinions on PFP

In this paper, PFP is meant to be used to increase worker motivation in the service industry. Potentially, PFP can have the opposite effect on workers and decrease their motivation. The following visualizations show how workers can also have negative reactions to a PFP implementation.

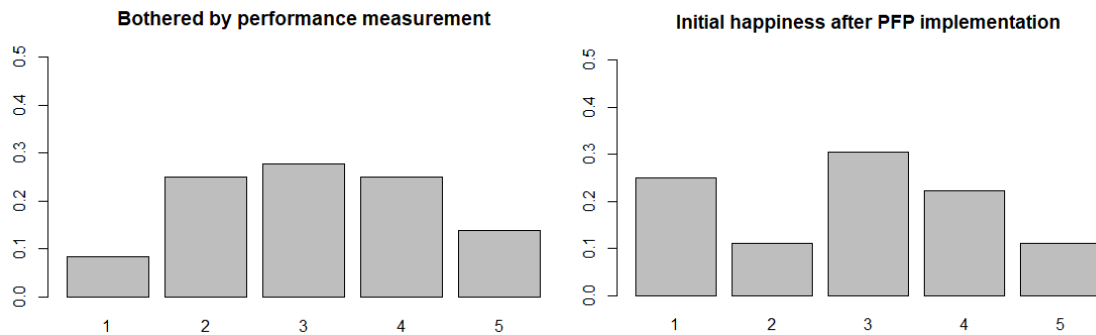


Figure 3: Fraction of subjects their reaction to PFP implementation

Most of the subjects would experience discomfort if their performance was systematically measured. While this is to be expected, the extent to which they are uncomfortable with the change is worrying. The initial happiness after PFP implementation is also worryingly low, as 26% of subjects would hate for PFP to be implemented. If over a fourth of all workers were to hate a PFP implementation, the chances of it succeeding would be very low. Both of these results show that PFP needs to be created with the workers in mind, as if they are unsure or do not agree with the change this could mean PFP already failed before it was fully implemented.

5.6 Robustness results

To improve external validity of the experiment, a robustness test was performed on the data to see how the results would change after adding noise to the data. After adding one row of noise, no significant effects on the results of the experiment were observed. After adding four rows, the noise could skew the data into a direction. This however did not necessarily lead to significant change to the results. After adding six noise rows, the results started to skew even further. With this much noise, on average the data began to skew and display different results from the ones observed in the research. Six rows was just over 15% of the original data being added. Overall these results showed that the data is resilient to some noise, but potentially might be biased if too many subjects did not truthfully fill in the survey.

6. Conclusion

6.1 Research Question

This research aimed at analyzing how pay-for-performance could impact low-income workers in the service sector by answering the research question “What factors contribute to low-income workers in the service sector increasing their performance within a pay-for-performance environment?”. Based on the conducted analysis, it can be concluded that PFP can have both positive and negative effects and many factors influence whether the workers will react positively or negatively.

6.1.1 Workplace Factors

In order for PFP to be successful, it seems there are two conditions that have to be met. These conditions are that performance is able to be measured in a way that is both fair and quantifiable (Markovitz & Ryan, 2017). In order for these conditions to be met, first a performance measure has to be found that describes the quantity of work done by an employee. This means that the measure cannot be too reliant on other workers or outside factors to remain accurate and fair. Then the quality of the work done by the workers has to be measured as well. This step is important to ensure employees do not exploit the system or do only what is required by the system. If the performance measure is unclear or abusable, workers will take their chances and act in a way that only benefits themselves.

The size of the company can also have an impact on the success of PFP, as smaller companies have performed better under PFP than bigger corporations. This is likely a result of employees of smaller companies being closer and caring more for each other than in bigger companies, making the corporate culture less likely to suffer from PFP implementations.

6.1.2 Employee Factors

Employees are the other aspect to make PFP successful. Evidence was found that different demographics can react vastly differently to PFP. The factors that seem to have the biggest influence are the workers being young, motivated, female, and driven by recognition. While this cannot be true for everyone inside a company, the more of these factors are present throughout most of the workforce, the more likely PFP is to be successful.

6.2 Implications

It seems that workers can increase their quantitative output without negatively affecting the quality of their work. If PFP were to be implemented at a place that maximizes the aforementioned factors, PFP has real potential to be a great tool. For most workplaces though, this is infeasible and PFP is likely not the best option moving forward. PFP can do a lot of damage to corporate culture and is not guaranteed to lead to improvements.

The results also show there might be limited demand for a PFP model with the given circumstances. This might pose a big threat for PFP at the moment, as the workers are the ones responsible for making PFP successful. Without commitment from the workers, PFP seems to be bound to fail in the end.

6.3 Recommendations

6.3.1 Future Research

This research also aimed at laying down the groundwork for future research. PFP has always been exclusive to important and high-paying jobs, while its means and goals apply to any company and any worker. Perhaps PFP could lead to a mutual improvement for company and worker. In order to get there, more research is required and implementations have to be made. Using the important factors to their advantage, researchers could find a more specific use for PFP that maximizes its potential upside and limits the potential detriments that have plagued many PFP implementations before.

While this paper does show some interesting results, it is important to keep in mind the scale and limited validity of the experiment. It is advised that more research is to be done in this field before any major advances are made. PFP in this context has close to no research and there is a multitude of ways for a PFP model to lead to more damage than good. Future

research should concern itself not only with good PFP practices, but also with a specific branch or business where a PFP model has the most potential.

Something that was not mentioned in this research were the economic aspects of PFP and how they influence the success of PFP. While this was outside the scope of this research, it is still an important factor that has to be researched more to ensure PFP is even feasible for low-income jobs.

6.3.2 Future Implementations

For any future PFP implementations in the service sector, it will be incredibly important to look at compatibility. Since the success of PFP depends on the workers, a good corporate culture is advised. For the performance measurement, it is advised to ensure limited visibility of monitoring performance in order to make the workers feel at ease. The performance threshold should also carefully chosen. If it is too high the workers will feel like it is impossible to reach, while if it is too low workers do not feel the need to improve to reach it. Do not try to force PFP without carefully analyzing the possible results as it seems like small factors can make a huge difference to the overall success of PFP. PFP requires an environment in which workers are motivated to reach the rewards of PFP, without negatively impacting their working behavior. This is why it is advised to first research the employees to see what their intentions are and how they will likely react to a PFP implementation.

As of now, within the scope of this research, none of the industries fit the factors perfectly. In general, all of these industries have things working against them for PFP implementation. This is why it is advised to use PFP only if there is precedent of success. There is no way to guarantee any type of increase in performance under PFP, so for now the risk seems to outweigh the potential upside.

7. Limitations

7.1 Survey

The first limitations come with the nature of the research, since the results are from a survey that asks subjects to self-report in an imaginary setting. To illustrate the problem, there is only a very low correlation that exists between how people expect to perform at work and how they actually perform (Stajkovic & Luthans 1998). Then there is the noise in the data caused by people misinterpreting questions or having to make up answers on the spot (Saris & Gallhofer, 2014). The Hawthorne effect, which states that people change their behavior if they are aware of being observed for an experiment, could also be in play here.

The questions used in the survey were based on literature, but were still made up as the research was commencing. This means that some questions might not be interpreted the way they are intended to, hurting the internal validity of the experiment. While the questionnaire was designed in a way to mitigate most of this risk to internal validity, it was still self-made and potentially does not accurately reflect the subjects.

7.2 Scale of the Research

The small scale of the research causes a big problem when trying to generalize the data to the entire population of low-income workers. By far most subjects were students under the age of 30, which is not very representative of the entire population. The small scale also created a problem when comparing some partitions, as not all possible partitions had

enough data to make any conclusions about. All in all this leads to low generalizability over the entire population.

7.3 Uncertainty PFP Implementation

While this paper does argue that PFP has a positive effect on workers given a proper PFP implementation, there is still no guarantee that such an implementation even exists. Especially considering that the research is on places where there potentially is not as much room for financial improvements for the employees. This has only an exploratory analysis on the effects and now future research should conclude on the feasibility and actual results of PFP in the service sector. It seems like no perfect implementation exists as for now, so until one is created that works well in many different situations, this research does not translate into positive PFP results.

7.4 Non-standard Vignette

The research aims to give insights of the effects of PFP on workers on different levels, but for all variables there are only two levels. This is not standard for vignette-type studies, where usually many vignettes are sent out with different levels to infer results on what levels are important and how sensitive these levels are to change. Due to the small scale of the research, this would not have been possible and would have given very little datapoints per vignette. By not following conventions, however, the internal validity of the experiment still comes in question.

7.5 Economic Aspects

While this paper explored the potential of PFP to increase service supply, the economic aspects of PFP were not explored. This is what holds PFP back from being attempted at low-income jobs and what might make PFP completely infeasible in many cases. This was outside the scope of this research, but it is still an important factor for PFP. Resources are required to meet the extras that the employees will get as a result of PFP.

7.6 Confounding Results

While different partitions were analyzed individually, no confounding variables have been used. For instance it was not checked how many of a certain partition belonged to a group that we already knew reacted well to PFP. This causes problems for the reliability of the results of different partitions.

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9. Appendix

Questionnaire questions:

Q1: Gender (Possible answers: Male, Female, Other)

Q2: Age (*open question*)

Q3: What is the most important work motivator to you in this list? (Possible answers: Recognition, Incentives, compensation/benefits, earnings)

Q4: How would you rate your own work motivation? (*5-point Likert Scale from Very low to Very high*)

Q5: What is your personal average monthly working income? (*open question*)

Q6: Are you a student or working? (Possible answers: Both, Student, Working, Neither)

Vignette:

Imagine you are an adult having difficulty providing for your family, working a low income job for 32 hours a week in the service sector (cleaning, catering, shopkeeping).

At your workplace they have now implemented a reward system, where a raise is given each year to employees that reach a certain performance threshold.

The following questions ask about how you would change if such a system were to be implemented

Q7: How much does it bother you that your performance is constantly measured, considering it can be beneficial to you? (*5-point Likert Scale from Not at all to Very much*)

Q8: How much harder would you work if you already worked hard enough to reach the performance threshold? (*5-point Likert Scale from A lot less hard to A lot harder*)

Q9: How much harder are you willing to work if you are not yet able to reach the performance threshold? (*5-point Likert Scale from A lot less hard to A lot harder*)

Q10: Would you be willing to work more hours weekly to reach the performance threshold? (No, 1-3 hours, 4-6 hours, 7-8 hours)

Q11: Would you be inclined to take extra shifts from your colleagues, given it improves your perceived performance? (No, Occasionally, Monthly, Weekly)

Q12: How much less or more inclined would you be to go out of your way to help co-workers when it could negatively impact your perceived performance and positively impact theirs? (*5-point Likert Scale from A lot less than now to A lot more than now*)

Q13: What would your answer to the last question be if your colleagues have become less nice and helpful towards you since the reward system was implemented? (*5-point Likert Scale from A lot less than now to A lot more than now*)

Q14: If there was a way to easily reach the performance threshold by sacrificing the quality of the work you do. How much use would you make of this oversight? (*5-point Likert Scale from Never to Whenever possible*)

Q15: What would your answer to the last question be if a lot of your colleagues also make use of the oversight? (*5-point Likert Scale from Never to Whenever possible*)

Q16: How happy would you initially be if such a system was implemented? (*5-point Likert Scale from Very unhappy to Very happy*)