

Worcester Polytechnic Institute

# Layoffs and alternatives to layoffs

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Bachelor of Science

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## **Abstract**

This project aims to evaluate the effects of layoffs and alternatives to layoffs. Working from literature survey and interviews, we described the effects of layoffs and the alternatives, their uses in industry, and their impact on firms. We assessed: 1) if alternatives were used more frequently than layoffs, 2) how effective layoffs and alternatives were at cost cutting and other areas, 3) if company culture played any role in what methods are used. The results provided some information on what cost-cutting methods could be used.

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## Executive Summary

This project, consisting of a group of three students from Worcester Polytechnic Institute (WPI) examined the current status of layoffs, as well as the alternatives and their effects. We focused on analyzing the effects of both the layoffs and the alternatives, and comparing their effectiveness. Knowledge of the state of industries was essential, as was knowledge of the factors that can cause layoffs and when alternatives to layoffs were generally employed. Though our results showed minimal significance in terms of effectiveness, we feel that they are still trending close enough that the significance is more indicative of low sample size rather than useless results. However, to better understand what we found, an awareness of layoffs and their alternatives is crucial.

According to the research we found, layoffs tend not to be used until a firm has been suffering from financial difficulties for over a year. Before then, alternatives, such as cutting pay or shortening the work week, tend to be used instead. In addition, we also found research citing that layoffs tend to be used more often by firms that view their employees more as means to an end, rather than as assets. We also found many reports of firms trying new and experimental methods to avoid laying-off their employees, although these tended to be specific cases rather than the industry as a whole.

Our group chose to evaluate these methods, in the hopes that we could find a method that was more advantageous than layoffs. To determine this, we found when layoffs were being used, and evaluated the layoffs and the alternatives in terms of several variables, such as how much the firm was able to cut costs and how well the employees liked the alternative. We also tried to determine whether a company who believes its employees to be assets will actively seek out alternative methods, or if one that does not will eliminate them first.



After looking at the most commonly used research techniques, our group quickly agreed that surveys would be the best way to compile data. A survey allowed many companies to answer multiple questions at once. Since surveys normally consist of only closed-ended questions, we also conducted several interviews to receive more diverse and open-ended answers.

The data we found was unexpected. To begin with, while we received many more survey responses than expected, due to the fact that every question was able to be skipped, the responses to individual questions was still somewhat low, and as a result so was our significance. But what we could decipher from our data was that layoffs were the most often used method of reducing costs. According to the companies, it was also the first chosen and the most effective method for cutting costs. This went against everything we had read, which said that layoffs should be used as a last measure, and were very detrimental to a company as a whole.

We feel that the conclusion of our project shows that: alternatives to layoffs are not as commonly used as might be wanted. However, companies feel that layoffs are working; this may mean that either employees do not have an issue with layoffs, or that the firms are not thinking in terms of what would be most beneficial to their employees. We highly recommend that more research and studies need to be done in this area to find the solution(s) that would create a win-win situation for both employers/firms and employees alike.

## 1 Introduction

The term “layoffs” is defined by the Bureau of Statistics as “suspensions without pay lasting or expected to last more than seven consecutive calendar days, initiated by the employer without prejudice to the worker”. According to US legal definitions “[a] Layoff is a reduction of company’s work force in response to a temporary or long term business strategy or economic condition” and according to Cambridge dictionary layoff occurs due to lack of funds or lack of work. Now, more than ever, layoffs are having relevance in today’s society.

Layoffs are something that is starting to become a regular occurrence. If not affected by them directly, people often know friends or loved ones who are, if only due to the fact that layoffs affect so many. While this situation is explainable, due to the economic recession, one can’t help but wonder if layoffs are the right answer.

Many organizations and firms are wondering the same thing. Companies are trying alternate methods to deal with the recession, and with varying degrees of success. However, in all of our literature search, we could not find any analysis or comparisons between layoffs and alternate methods to layoffs such as furloughs, pay cuts, reduction of benefits, and shortened workweeks in terms of effectiveness, frequency, or anything else. And since this seemed to be a gap in terms of research, our group decided to fill it.

We decided to research this topic for multiple reasons, one of the foremost being the lack of research done in this area at all. While studies are done on how layoffs affect employees, both the employees laid off and the employees who are retained; not much research is done in terms of effectiveness of layoffs. There was one source of academic research we found, a book by W.F. Cascio(2002), which due to its relevance to our study, we cited a lot. Other than that, very limited research was found.

Another reason we decided on this topic was the utility the results of a study on layoffs and alternatives could produce. If there was some way to avoid layoffs that was better all around, the effects it could have on even local industry would be massive, let alone anywhere else. We were driven by a genuine curiosity, and hope to make this discovery and help the world at large.

In order to find the information, we

- Identified what economic trends tend to drive a firm into having layoffs, and attempted to categorize firms accordingly
- Gathered data on how severely firms were affected, and then what they attempted to do as a response to their economic downturn
- Compared layoffs to alternatives to layoffs in a number of categories, from frequency of occurrence to perceived effects on the firm

We have attempted to draw conclusions on what our results mean, and attempted to discern some pattern of effectiveness from our data. While our results ended up lacking significance, they came close, and tended to show that layoffs were the most commonly used first option.

## 2 Literature Review

### 2.1 Why Layoffs?

Layoffs are most commonly triggered by periods of unwelcome financial stress and changes in a firm's industry position, as a response to shifts in demand. On a long term scale layoffs can even be caused by inadequate job growth. The economic logic behind layoffs is that in order for a firm to make money, it should either cut costs or increase revenues. Since future costs such as the salary of an employee is more predictable than future revenues, some employers choose to layoff under economic constraints.

As layoffs are looked upon as a way to cut cost – the table below evaluates the cost of layoffs themselves.

“

**Table 1 Comparison of direct and indirect costs of layoffs**

<b>Direct Costs</b>	<b>Indirect Costs</b>
Severance pay, in lieu of notice	Recruiting and employment of new hires
Accrued vacation and sick pay	Low morale; risk-averse survivors
Supplemental Unemployment benefits	Increase in unemployment tax rate
Outplacement	Lack of staff when economy rebounds; training and retraining.
Pension and benefits payouts	Potential lawsuits from aggravated employees
Administrative processing costs	Heightened insecurity; reduced productivity
Costs of rehiring former employees	Loss of institutional memory and trust in management

“ (Cascio, 2002, p. 4)

The table of data above shows that layoffs intend to reduce costs but are often costly themselves. We do realize there is a cost associated with both layoffs and choosing other alternatives and retaining employees. An employer who faces financial stress has several avenues that they can choose. In order to ease financial stress, an employer can choose to layoff employees or other alternatives. But even then, how do the firms make the decision? According to Cascio (2002), firms can be logically divided into two different groups based on their thinking and approach towards employees.

- **Employees are costs to be cut** – This group continues to downsize and cut employees. They try to figure minimum number of employees who are needed to run the business.
- **Employees are assets to be developed** – This group tries to restructure so that they can work efficiently with the current employees.

We believe that the fundamental difference between these two views is how they reflect the company's culture. Company culture is the “values and practices shared” by the company members and what management feels strongly about (e.g., value of employees, sustainability etc.) (Catalyst Consulting Partners LLC, n.d.). Firms can be categorized by their company culture; for example, one firm facing recession might think cutting its staff and keeping the minimum amount needed might be the best approach whereas another firm that recruits highly skilled workers might consider cutting other costs before laying employees off. But we are skeptical whether firms will continue to be in the same category over time. It is possible that some firms which believe their employees are an asset to them may be forced to lay off

employees under lasting economic constraint. With this thought in mind, we found evidence that layoffs can be a result after firms have gone through different stages of downturns.

## 2.2 Stages of Downturns

According to a literature review by Franco Gandolfi (Summer 2008), there are three general levels of cost reducing alternatives depending on how long the company has been in a decline. The first stage of cost reduction normally occurs as a response to minor slowdown in business activities, generally expected to last less than six months, possibly brought about by something like an unexpected drop in sales. At this point, the strategies used range from enacting a hiring freeze, requiring the employees to take unpaid vacation days, shortening the workweek, to salary reductions; in 2001, Charles Schwab and Company enacted these strategies in order to attempt to prevent the necessity of layoffs (Cascio, 2002). The success of these methods in reducing costs depends heavily on Human Resource Departments (HR) both communicating and enacting these measures quickly and efficiently, so employees will know what is going on, and a level of flexibility from the employees in allowing cost structures to be modified by the firm, requiring them to accept a possibly unpleasant short term situation in the hopes of the future being much brighter. Schwab managed to succeed for a time with these strategies, but unfortunately, sometimes things get worse.

In case of a more serious business downturn, generally lasting between six to twelve months, more drastic cost cutting measures must be attempted. It is at this second level that HR must convince employees that these methods are required in order to avoid layoffs, no matter how unpleasant the methods themselves may be. Strategies such as further reducing employee salaries, voluntary sabbaticals or furloughs, lending employees to other firms for reimbursement from the other firm, and even methods such as high exit incentives, for both retirement and

simple resigning are examples of the type of methods used. At this point, many firms might begin to become impatient and begin laying off employees without giving due thought to alternatives, but many firms, such as Acxiom, Inc., a firm that offered two to one matching of stock for voluntary pay cuts, have shown that, with creativity and resourceful implementation, these strategies can help solve the issue without bringing about layoffs (Cascio, 2002).

But occasionally even these strategies do not work, and after twelve months of business downturn, the company must cut costs even more. At this point, the cost-reduction strategies are divided up into two basic phases. The first phase is when the majority of layoffs occur, as at this point in time they are more or less inevitable. But while layoffs may be a necessity, firms might still attempt to avoid massive layoffs at all costs, due to the costs to both employer and employee, as can be seen in table 1 up above. The second stage involves methods to rehire employees, but that is not something we felt really pertained to our study.

We are aware that not all firms go through the above described phases; some firms see layoffs as their first resort to save money. We believe a company's culture in regards to layoffs can determine the choices made by executives and it can vary from one firm to another. Even when some firms choose to incur layoffs, depending on how they enact their layoffs, either "Last come, first go" or eliminating a unit or sector or closing a plant, etc., the effects can vary greatly.

### **2.3 The Effects of Layoffs on Employees and Businesses**

When layoffs happen, the job losses that occur will often be traumatic experiences for many people. Since employees have no choice or voice when a firm has reached the stage of layoff, it can make them feel depressed, worthless, and it even has the potential to rupture

relationships and families (Ebert 2005). Ebert's research paper on layoffs compares job loss to a loss of a loved one. He states that employees will go through the five stages of loss and grief. Firms also try not to lay off their employees as they are aware that their people will suffer as a result of layoffs. In a survey conducted by The Workforce Institute ("Productivity Drain", 2009), it was found that 66% of the people surveyed said that morale was reduced after a layoff, and 64% said there was too much work to be done with not enough people to do it.

We also noticed (Loftus, 2009) that some firms see this situation as a new business venture and as an opportunity that could create a new market for them. By helping their own laid off employees, they can receive free press coverage and help the reputation of their firm to grow. This also creates a new customer base at the same time. This is a rare positive side to the layoff experience and yet another example of how layoffs can have more effects than simply relieving financial stress.

But as firms start laying off employees, the reputation of the firm starts to take a hit. Even so, sometimes when the company is undergoing hardships, layoffs have to be made to cut costs. These layoffs enhance the company's competitive position. According to an investigation by David Flanagan (2005), the effects of layoffs on firm's reputations are considered as more negative than positive. From the micro-organizational perspective, layoffs will reduce the company's ability to share information, due to the changes in "informal communication networks" (Flanagan 2005). As a result, the firm's ability to learn and memorize will also be damaged. Since company's reputation largely depends how outsiders look at its behaviors, layoffs always impress the potential consumers and employees in a bad way (Flanagan 2005). In contrast, companies with good reputations tend to be those who are trying their best to avoid layoffs, such as FedEx, Southwest, and Toyota Motor North America (Dickler, 2008).



This position holds true when we take a look at Fortune's list of "World's Most Admired companies". Southwest, number seven on this list actually has no history of layoffs in 38 years (Esterl, 2009). Others in the list might have undergone layoffs, but they are mainly focusing on alternatives to stabilize the company. At FedEx, the higher the position of the employees, the larger percent of pay cut they have. As a matter of fact, founder and CEO Fred Smith cut his own salary 20% while lower level employees had their pay cut by 5%.

It also applies to Fortune's list of "100 Best Companies to work for". For example, at the Container store, workers are well paid (\$36, 256 average for a salesperson), have benefits (100% matches to 401k up to four percent) and are respected. Another company on the list, JM Family enterprises, founder Jim Moran has told an all-company gathering, "We are a family. We've got to make sure whatever we do- we cannot lay off one single associate" (Cascio, 2002, p. 14). In situations where those companies had to have layoffs, they still make the effort to try to help their ex-employees out. "Fenwick and West" laid off 47 employees but gave them four months of full pay and paid \$62,500 to new recruits to not to join firm, a very interesting way to reduce the need for further layoffs. Continental, which had laid off 4000 people after 9/11 gave them severance payments, chances to transfer or promises of a job when things get better (Cascio, 2002). All the cases we have read about might be a result of those companies' specific cultures; the fact that the leaders of those companies treasure their human capital cannot be denied.

## **2.4 Focus on Alternatives to Layoffs**

From a humanitarian stand point, firms could consider employees as assets and only as a last resort should they be let go due to financial reasons. We started to analyze the alternative

approaches taken by firms in a time of economic crisis. Several papers present what appear to be the typical alternatives to layoffs: four day workweeks, unpaid vacations, furloughs, pension cuts, and other methods to attempt to both cut labor costs and maintain the labor force (Richtel, 2008; Allyn, 2009). The concept of Kurzarbeit, German for “short work,” is a plan being enacted in Austria, creating both a three day weekend and reimbursement from both the company and the state on forced missed days (Compton, 2009). This four day workweeks plan is quite effective in Austria, but we doubt that it applies to America, since we think it would probably require a change of legislation. However, according to a recent article, more companies in United States start to take advantage of the flexibility of part-time jobs, such as Boeing. It might actually become a trend in American. As the Professor Cappelli from Wharton says, “The loyalty – ‘I will stick with you and you will reward me’ -that is effectively gone.”(Coy, Conlin and Herbst, 2010, p. 39) Roberts (2009) reiterates how effective unpaid time off is in cutting costs without laying off current employees and forcing resources to be used when attempting to hire new employees and train them. And according to Grant (2009), the majority of layoffs occur in the manufacturing, retail, financial, and pharmaceutical sectors. But employers are looking into other alternatives before enacting layoffs, such as cutting back on recruitment, implementing hiring freezes, and trimming corporate travel. Chuang (2008) also details in his article how tripartite guidelines issued by the Ministry of Manpower in Singapore try to encourage employers to take a long term view of their manpower needs and to be more fair to their workers, via such methods such as shorter workweeks, transferring employees to alternative area of work within the organization, and other solutions.

In a paper, Richtel (2008) goes on to give examples of companies which found measures to avoid mass layoffs include Dell (Extended unpaid holiday), Cisco (Four-day year end shut

down), Motorola (Salary cuts), Nevada Casinos (Four day week), Honda (Voluntary unpaid vacation time) and Seattle Times (week of unpaid furlough for 500 workers). Maryland requires 67,000 of its 80,000 employees to take unpaid time-off instead of layoffs, by which the state will hopefully save an estimated \$34 million during the fiscal year (“US workers forced to take unpaid leave”, 2009).

But according to Prof. Bewley, an economics professor in Yale University, these “strategies are feel-good, temporary measures and the magnanimous feeling will pass and if the sacrifices seem to continue for months, employees will get frustrated” (December, 2008). They may want their full compensation back and may well prefer a layoff that creates a new permanence. This point makes sense to us and we believe that if cost cutting keeps continuing after reaching the threshold level employees can handle, it can backfire (Loftus, 2009). In addition, John Pletz (2009) brings up the point of how companies are starting to look for ways to cut the cost of firing workers, such as reducing the amount of weeks total the employee could be compensated for, or reducing to the total max amount of severance pay that a person could receive. Since layoffs that are meant to reduce expenses still generate severance costs, those are starting to be focused on for cost cutting. In addition to that possibility, employee benefits, furloughs or severance pay could be targeted next.

Analyzing all of this, we came to the conclusion that depending on the situation, firms have to choose whether to keep employees and cut costs to a certain extent or at one point choosing to lay off employees if it is needed. But whatever is done, it would be more considerate if firms strove to do their best to put employees first and give them a chance to survive and any help that they can do the people who drove their business.

## 2.5 Research Question

With the above conclusion in mind, we decided that our research question is to analyze in what order alternatives to layoffs are used by firms (specialized in science and technology in particular) and how successful these firms feel their methods are, and to analyze the results.

### 3 Methodology

The main goal of our project is to gather data on layoffs and alternatives to layoffs, and then to compare them. In order to do this, we identified the generally used alternatives to layoffs such as pay cuts, short work weeks, furloughs, reduction of benefits, etc. Another goal is to collect information about company culture. We gathered information and opinion about company reputation, perceived employee satisfaction, and employee retention from employees. We also gathered data on savings of the company by implementing those cost cutting measures.

Three objectives that we outlined to conduct this analysis are as follows:

Objective 1- In chronological order, evaluate the difference between layoffs and alternatives implemented.

Null hypothesis 1: we expect that alternatives to layoffs are used earlier than layoffs.

Alternate hypothesis 1: we expect that there is a difference between order of layoffs and alternatives being used.

Objective 2- Analyze the difference in terms of effectiveness of each cost cutting measure, while keeping in mind the size and industry of the firm.

Null hypothesis 2: we expect that alternatives are no more successful than layoffs.

Alternate hypothesis 2: we expect that alternatives are more successful than layoffs in terms of employee retention, employee satisfaction and company reputation, while layoffs are more successful in terms of cost cutting.

Objective 3- Gather information on firm culture, and evaluate if there is an association between a company's decision on layoffs and a company's culture.

Null hypothesis 3: we expect that company culture is not relevant in terms of what methods they used.

Alternate hypothesis 3: we expect that company culture is relevant in terms of what methods they used (Company that treats employees as assets will use alternatives and company that treats employees as costs will use layoffs.)

### 3.1 Data Collection

In order to collect information there were several types of methods we could use, such as surveys, in-person interviews, telephone interviews, document reviews, observations, focus groups and so on.

Case studies and focus groups would not let us generalize or provide with us the data we wanted. An observation could have provided us with some interesting data, but due to the difficulty of interpreting the reasoning behind the behaviors, and the possible expenses of an observation, we decided it was not a good method for us. A document review would only let us look at past existing data. If we could have found enough of them that would have helped, but given the limited information we found while researching, we did not feel there would be enough existing data out there to support our research questions. A more detailed comparison of these methods is given by the following table:

“

**Table 2 Comparison of different methods**

Method	Overall Purpose	Advantages	Challenges
questionnaires, surveys, checklists	when need to quickly and/or easily get lots of information from people in a non threatening way	-can complete anonymously -inexpensive to administer -easy to compare and analyze -administer to many people -can get lots of data	-might not get careful feedback -wording can bias [respondent's] responses -are impersonal - doesn't get full story

interviews	[when in-depth answers are needed].	-get full range and depth of information -can be flexible with [subject]	-can take much time -can be hard to analyze and compare -can be costly -interviewer can bias [respondent's] responses
documentation review	[to get an impression of how layoffs or alternatives to layoffs are taken]; is from review of applications, finances, memos, minutes, etc.	-get comprehensive and historical information -doesn't interrupt [measure taken] -information already exists -few biases about information	-often takes much time -info may be incomplete -need to be quite clear about what looking for -not flexible means to get data; data restricted to what already exists
observation	to gather accurate information about how a [measure actually works].	-view [consequences of a measure] as they are actually occurring -can adapt to events as they occur	-can be difficult to interpret seen behaviors -can be complex to categorize observations -can influence behaviors of program participants -can be expensive
focus groups	explore [layoffs and/or alternatives to layoffs] in depth through group discussion, e.g., about reactions to an experience or suggestion, understanding common complaints, etc.;	-quickly and reliably get common impressions -can be efficient way to get much range and depth of information in short time - can convey key information about [layoffs and/or alternatives]	-can be hard to analyze responses -need good facilitator for safety and closure -difficult to schedule 6-8 people together
case studies	to fully understand or depict [respondent]'s experiences in a [measure], and conduct comprehensive examination through cross comparison of cases	-fully depicts [respondent's] experience in program input, process and results -powerful means to portray program to outsiders	-usually quite time consuming to collect, organize and describe -represents depth of information, rather than breadth

”(adapted McNamara, 1997)

After evaluating all the possible methods we could use, we concluded that interviews and survey methods are the best, due to the nature of our project.

### **3.1.1 Survey**

“Survey is a system for collecting information to describe, compare or explain knowledge, attitudes and behavior” (Fink 1995).

In general, surveys are effective when questions are short, simple and clear. Using difficult or unfamiliar words (such as technical terms, jargon, slang, etc.) is not advised (Gendall, 1998). The questions should neither lead respondents towards one way nor require a lot of effort from respondents. Questions should follow a logical sequence and should be designed to cater to the respondents. A no opinion or do not know option should also be available in survey and interview.

There are two types of survey questions: closed and open. Questions which have preselected answers for the participants to choose are known as closed questions (Fink, 1995). Closed questions help us analyze the survey by grouping answers based on the variables their content addresses, and the answers are much more likely to be in the same form. Questions which require participants to use their own words are known as open questions. Open questions enable us to get information on the views of the respondents and the information given is useful for coming up with specific recommendations in addition to the results we get from closed questions. The majority of our questions are closed, as to be both easy to answer and encourage people to continue to complete the survey. Also we have several open questions for important aspects, such as people talking about if they thought the methods they used as a whole worked or not. By gathering information from both types of questions we are able to test the possible



associations between company culture and cost cutting measures implemented and to come to conclusions from the survey sample.

The three types of surveys responses are nominal/categorical, ordinal and numerical (Fink, 1995). In a categorical/nominal survey response, there is no numerical or preferential value. Ordinal responses ask participants to rate or order the choices and numerical responses asked for numbers such as number of employees employed by the firm in USA etc. We plan to use all these three types of responses to get the most information out of the survey.

Our survey (Appendix 1) has been structured by both the principles of good survey design and the variables we are trying to find out. The questions in our survey help us to gather information on layoffs and alternatives to layoffs as well as company culture. Our survey starts out with simple, easy to answer demographic questions, such as “What field is your firm in?” and “Approximately how many employees does your firm have in the US?,” and gradually gets to more complex topics such as evaluating how well alternatives to layoffs worked and how successful cost-cutting measures were for the firm as a whole. We also inform the respondents that all survey responses will be kept confidential in order to get true, unbiased responses and also to protect their privacy.

We used the free online survey software Qualtrics, to send the survey out to email. We compared Qualtrics with other free online survey softwares such as Survey Monkey, Google spreadsheets or Zoomerang ; Survey Monkey did not have advanced data extraction like Qualtrics and only let us have 10 questions. We did not want to limit ourselves to 10 survey questions. Google spreadsheet was another option but it did not have the great layout and cannot generate graphs. Zoomerang did not let us export results to spreadsheets and had limited

appearance customization. Therefore, given the export options and style of survey questions available we figured that Qualtrics would be the best software to use.

We had our survey reviewed by our project advisor and reference librarian of Gordon Library, Christine Drew. In addition to that, we submitted the survey for Worcester Polytechnic Institute's Institutional Review Board to ensure that we satisfy all the regulations and ethical guidelines on conducting research which involves human subjects. The Institutional Review Board of Worcester Polytechnic Institute reviews and approves all surveys involving human subjects performed under auspices of WPI under federal mandate ([The Common Rule, 45 CFR 46](#)) and WPI policy. Our survey was approved and the project was exempt from further IRB review and supervision. The exemption covers any research and data collected under our protocol from 23 November 2009 to 22 November 2010 (Appendix 2).

Upon meeting IRB approval, we emailed invitations to complete the survey online to firms through school resource and we planned to supplement that through additional online sources. The reason for this is that we are aware the response rate of surveys can be low, generally around 10% response rate. Due to that, sending out an email survey to random companies simply would not get us the amount of response we wanted. Another reason is that the smallest survey sample size we hoped for was 30. Because by central theorem limit theorem, 30 is the least number of sample size to give an adequate approximation of normality. When we can have a sample size of 100, it will almost guarantee the normality of our sample distribution (Petrucci, Nandram and Chen, 1999). So the more data we collected, the more likely we were

going to have significant results, assuming that there is association of what we are trying to measure.

As a result, while our original intended target survey population was Human Resource managers, because they would be better informed than entry level employees, we decided to use the Career Development Center (CDC) at Worcester Polytechnic Institute instead. As CDC operates to assist students and alumni of Worcester Polytechnic Institute to get employment opportunities, they maintain a database of firms which attend the career fair to recruit students and also maintain contacts with alumni. Therefore, most of the firms reached through the CDC will be connected to Worcester Polytechnic institute in some sense, so we believe we are targeting more engineering, science related firms.

Other than the response rate issue, we had more difficulties finding Human Resource managers to question than we had expected. So while people in Human Resource might have answered the survey, we have no way of knowing for sure anything about the people who took our survey other than their level in the organization. However, if all the responses were collected from firms that have connection with CDC, we would have a biased target population. In order to compromise this issue, we sent out additional survey to random companies, despite of the possible low response rate.

### **3.1.2 Interviews**

Interviews can be time consuming but they are an effective way to gather information either face-to-face or via telephone. Due to time constraints, we planned to do a limited number

of interviews to gather data which will supplement the information we get from surveys.

According to Frey and Oishi (1995), interviews can help to enhance respondent participation due to the role of the interviewer. Having an interviewer will help to guide the questions, to clarify the meaning of responses as needed and also to answer any questions raised by respondents.

Just like the survey, the respondent firm's information and respondent's responses will be kept confidential. We plan to use more open ended questions in this process to get the supplementary information that cannot be gathered in a survey, such as what they feel the benefits of cost-cutting methods used were. We plan to reach out to firms using our personal contacts, searching for additional sources online, and also using the companies that are available via CDC of Worcester Polytechnic Institute.

While our original plan was to perform all of the interviews first to help refine the survey, due to how soon our survey was to be sent out, we slightly revised its purpose. The interviews were instead restructured to be more of a supplement to our survey and let us ask more open ended versions of the questions we were planning to ask in the survey. By looking at specific cases, we hope to see if there are any reoccurring trends, or chains of logic that could be followed across the whole of our results.

In the end, we were able to interview four different companies, three conducted by phone and one conducted via email. We chose to do so because phone interview and email interview could be done with minimum time and costs. Considering that all interviewees agreed to record the conversation and by reason of class schedule conflicts, not all project members were present during the interview.

From the information gathered from survey and interview we measured several variables. The next section explained the variables that we measured.

### 3.2 Identifying and Measuring Variables

To review, our research questions are to analyze how often alternatives to layoffs are used by firms and how successful the firms feel their methods are and to analyze if company culture affects firms' decision on their methods.

According to Fink (1995), a variable is defined as “a measurable characteristic that changes with the population sample”. We identified *the percentage of layoffs, the amount of benefits reduced, the percentage of pay cut, and the hours of work week shortenings* as independent variables. We started by asking whether the company has been affected by the most recent economic downturn. If they answered yes, we asked them to identify which cost cutting measures they used and the chronological order of these measures used. All the independent variables have been assigned a direct question within the survey to accumulate the data, mostly through Likert scales. Our dependent variables range from *the amount of money saved by implementing cost-cutting measures* to *employee retention aside from layoffs*, and *satisfaction with the cost-cutting methods used by the company*. *The amount of money saved by implementing the cost cutting measures* is collected by different ranges of dollars. The values of

*employee retention* and *employee satisfaction* are measured by Likert scales from 1 to 7, with 1 as not important to the company, 7 as very important to the company, and 4 as neutral.

The effect of *company culture* on what measures were used was another important independent variable we tried to measure. As discussed in the literature review, the culture of one company may affect its decision to have layoffs or not. We were also interested in learning if there were cases where the company is forced into having layoffs due to their financial struggles even if the company believes their employees are assets to be developed. In order to determine the company culture, we asked respondents to rate the importance of employee satisfaction, retention, company reputation and cost-cutting to find out which one concerns the firm most. The following question helped us capture company culture: *For your firm how important are the following aspects (On a scale of 1-7, where 1 is not important and 7 is very important)*. Preselected answers for the question were *cost cutting, employee retention, employee satisfaction* and *firm's reputation*.

*Company size* and *industry* were also taken into account, for we intended to analyze if the firm size and the industry would affect our results. First of all, we knew our target population firms would be more specialized in technology and science. Secondly, we thought *company size* might have a group effect on company's decision. That is, small-sized firm might be inclined to choose alternatives and large-sized firm might prefer layoffs, or the other way around. In view of that, we split our data into two groups by firm size and by industry separately and introduced dummy variables for analysis. With the presence of these variables, either one

certain type of industry or certain size of company, we would code it as 1; otherwise, we would code it as 0. How we chose the cut-off line for company size and grouped industry would be dependent on our survey results and were discussed in data analysis and results section.

### 3.3 Statistical Model

In this section we briefly discussed the statistical model we were going to use for data analysis. Some of the methods were just personal choice, like histogram and box plot. Others like hypothesis testing and regression model were more adapted to our three main objectives.

#### 3.3.1. Descriptive statistics

First, we are going to create a histogram to decide the frequency of each measure being used by the company during the economic downturn. Then, for each measure, we will calculate the mean and standard deviation respectively. Namely, we will be able to discover the basic quantitative summary of percentage of employees that were laid off, hours the company reduced its work week by, money the company saved, and percentage of pay cuts. In order to identify data distribution of *firm industry*, *firm size* and *how long the firm has been suffered during the economic downturn*, histogram will also be applied. These results will give us a clearer picture of how layoffs and alternatives to layoffs are functioning in United States.

A more detailed evaluation was obtained by applying box plots to our data. Box plots can not only show the main feature of the data graphically, but also automatically spot possible outliers (Petruccelli, Nandram and Chen, 1999). Thus by plotting the results of questions in which companies were asked to rate the effectiveness of different cost cutting measures (furloughs, layoffs and pay cuts, etc.), we could have a five-number summary (smallest observation, lower quartile, median, upper quartile and largest observation) of our data.

We also took the chronological order of measure implementation into account when we evaluated the effectiveness of different measures. By computing the mean and standard deviation of the time line of each measure, we found out which measure was the first to be implemented.

### **3.3.2 Qualitative analysis**

Another way to evaluate the effectiveness of each measure is to look at the results of the question “do you believe that your firm has been successful in facing the most recent economic downturn so far?” The more companies choose yes, the more successful are those measures implemented in general. We will also analyze this question qualitatively, as while the question asks for a yes or no, it also gives a space to respond in greater detail if the person taking the survey so chooses.

### **3.3.3 Hypothesis testing on the data**

In this section, we discussed several ways of how to test our hypotheses. Two of our hypotheses were tested by using of t-tests and the last one was tested by checking the fit of the linear regression models.



### 3.3.3.1 Effects of company culture on layoff decisions

Since simple linear regression can numerically measure the association between two random variables and how strongly they are related to each other (Weisberg, Krosnick and Bowen 1996). We decided to use this technique to analyze the relation between company culture and implementation of cost cutting measures.

The survey question “For your firm how important are the following aspects, cost-cutting, employees retention, employees satisfaction, reputation of the firm?” will give us four variables represented by Likert scale from 1 to 7. They are the *importance of cost-cutting*, *employee retention*, *employee satisfaction* and *reputation of the firm*. These four variables are our independent variables in the model, which correspond to the company culture we measured. The predicted variable will be the percentage of employees that have been laid off during the economic downturn. Our fit model is:

$$\begin{aligned} \text{Percentage of layoffs} = & \alpha_1 \text{ Cost cutting} + \alpha_2 \text{ Employee retention} + \alpha_3 \text{ Employee} \\ & \text{satisfaction} + \alpha_4 \text{ Company reputation} + \alpha_0 + \text{Error} . \end{aligned} \quad (1)$$

The choice of not applicable means the company does not have layoffs, so the percentage can be coded as 0. We will throw out the answers of “do not know” because these answers do not give us information on our predicted variable.

### 3.3.3.2 T-tests

We needed to convince ourselves that there is sufficient evidence to draw conclusion from our three main hypotheses earlier in methodology section. Hence, we decided to use t-tests for our first two hypotheses, as t-test is usually used to estimate the difference between two sample means (Lomax, 2001). In our case, these two samples were layoffs and alternatives to

layoffs. If there is a significant difference between our two samples in the results, we reject our first null hypotheses. Otherwise, we are not able to draw conclusions from our hypotheses.

## 4 Data Analysis and Results

The results of our survey are presented in this section. We also propose explanations of our results.

### 4.1 Response Rate

We first sent out our survey through two different resources: Career Development Center and contact addresses listed on companies' websites. The response rate of each survey varied from one to another. CDC helped us send out 225 surveys. We had 74 responses from this survey, out of which 68.92% were complete ones. The fewest responses we received were from the survey we sent out by the contact addresses listed on companies' websites. We sent out 100 emails but only 6 people started the survey, out of which 4 people finished it. We felt that the CDC survey had a 22.67% response rate due to the fact that the respondents were familiar the organization that sent out the survey and thus treated it with more weight. The second survey was sent out not only to general email addresses of companies but also to strangers who might not be familiar with Worcester Polytechnic Institute at all. Another reason that the second survey had a low response rate was that some of the emails were returned due to possible company email filters.

We analyzed the data we collected from the first two surveys and it did not show much significance due to small sample size. Therefore, we decided to send out a third survey to increase our sample size. The last survey was sent out to 1234 part-time graduates of Worcester Polytechnic Institute and we had 38 complete responses. The part-time graduate sample might had some overlap with our CDC sample, but we believed that most of them should not overlap.

We believed that the low response rate (3.1%) here was due to both spam filters and a possible lack of currently used email addresses. A more detailed results analysis is discussed next.

## 4.2 Results of survey

When we began to interpret our results, we were surprised by what they showed us. Not only had we been incorrect in our assumption of when layoffs would occur, but also they tended to be the first, and oftentimes the only option that firms would take, as demonstrated by the results of t-test of hypothesis 1. Whether companies were suffering from deficits for only a short period time or over a year, layoffs were just the quickest and easiest solution in their minds.

We also found that layoffs tended to be used first and company culture tended to play very little role. In addition, while our data lacked significance, our results came close enough that we believe that was simply caused by the sample size, an issue we had.

Next we are going to present our results: descriptive statistics, regression model fit and hypothesis testing.

### 4.2.1 Descriptive Statistics

Our total usable sample size is 89. Although it appears that our sample size varies from question to question in the following histograms, that is simply because certain respondents did not answer all of our survey questions.

Among all the responses, 70.79% has been affected by the most recent economic downturn and out of them 89.86% has implemented layoffs.

The descriptive statistics of these five cost cutting measures are in the following table (1 as the first implemented and 7 as the last implemented):

**Table 3 Comparison of implementation order of layoffs and alternatives**

Order of cost cutting measures used	Mean of when the method was used	Standard Deviation	Earliest position used	Latest position used
<b>Furloughs</b>	2.25	1.23	1	5
<b>Layoffs</b>	1.62	0.82	1	4
<b>Pay cuts</b>	2.85	1.75	1	6
<b>Reduction of benefits</b>	2.53	1.71	1	5
<b>Shortened-work week</b>	2.59	1.02	1	5

From the above table, it is easy to notice that seems to be a difference between layoffs and alternatives and the difference between alternatives is relatively small. Whether the differences are significant are explored in the section 4.2.

#### **4.2.1.1 Box plots**

We also have a five-number summary of the effectiveness of each cost cutting measures: furloughs, layoffs, pay cuts, reduction of benefits, and shortened work weeks.

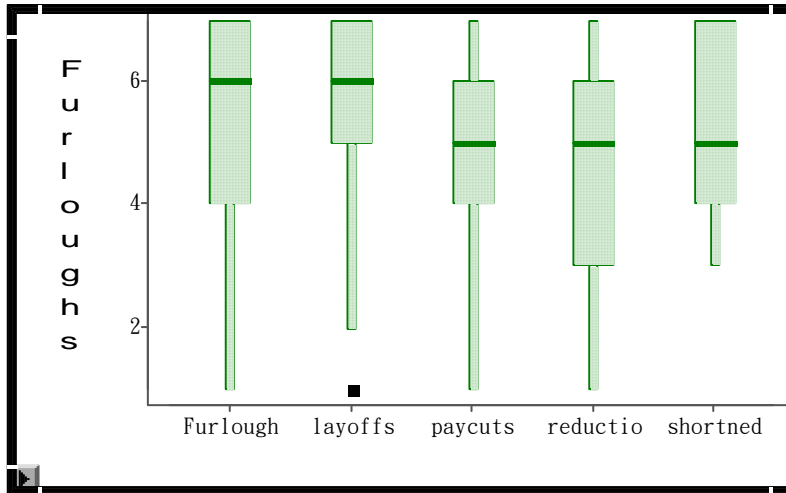


Figure 1, Comparison of mean effectiveness of different measures on cost cutting

From this figure, we can clearly see the difference of mean effectiveness between last three alternatives and layoffs. However, whether the difference is significance need to be further investigated.

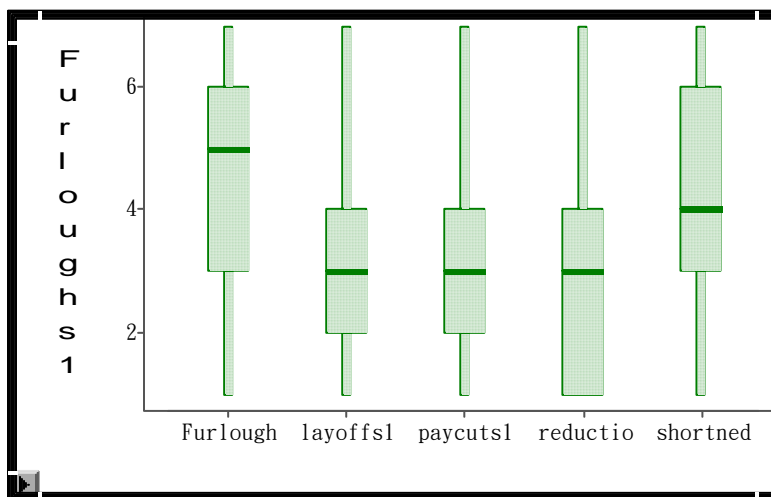


Figure 2, Comparison of mean effectiveness of different measures on employee retention

Figure 2 displays an obvious difference of mean effectiveness between the layoffs and the first and last alternatives. Same as before, whether the difference is significance need to be further investigated.

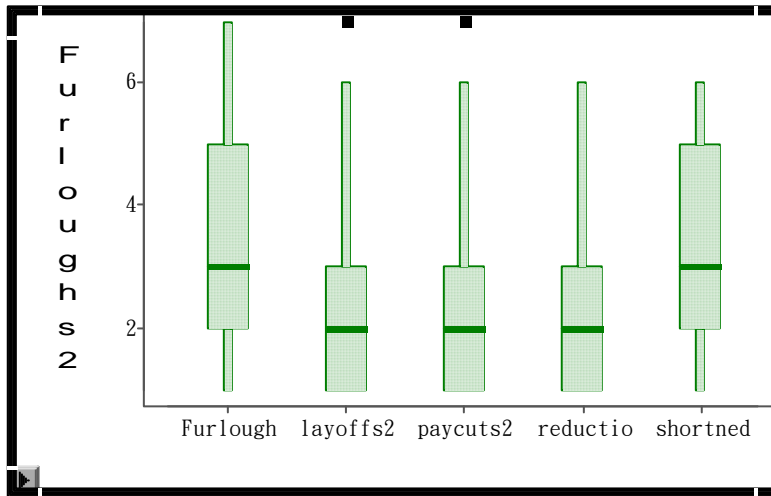


Figure 3, Comparison of mean effectiveness of different measures on employee satisfaction

Figure 3 displays a similar pattern as Figure 2. Still, we need to test if there is significant difference of the results.

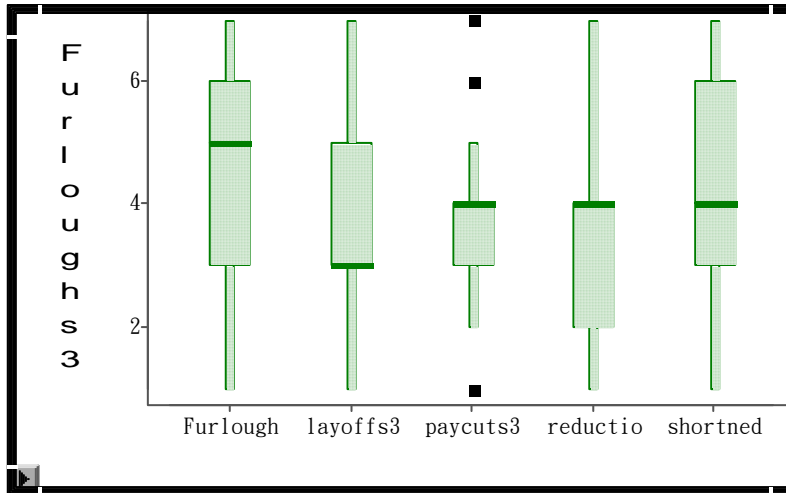


Figure 4, Comparison of mean effectiveness of different measures on company reputation

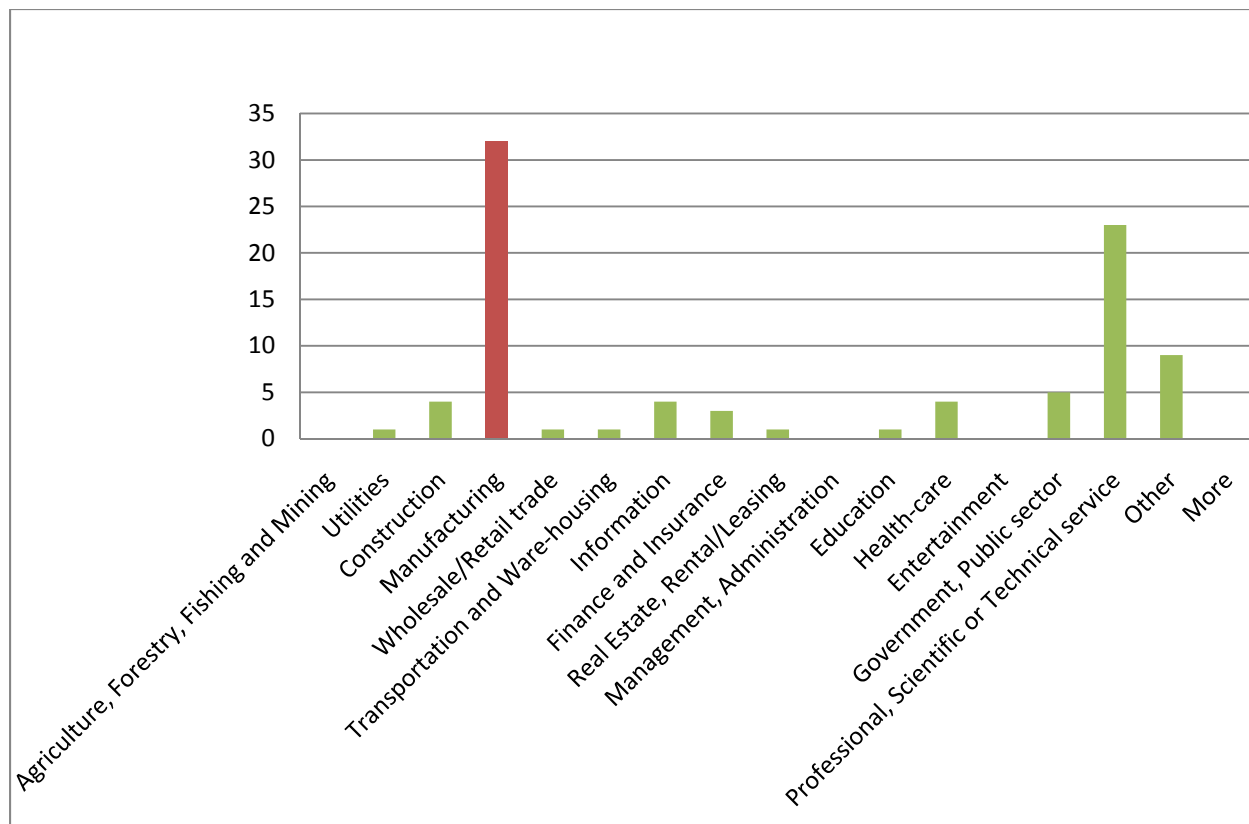
Although all the mean effectiveness of alternatives appear to have a clear contrast with the mean effectiveness of layoffs, we need to further test the significance.

The results of our testing of difference of mean effectiveness are explained in section 4.2.2.

#### 4.2.1.2 Histograms

By applying histograms to the results of the following questions “What industry is your firm in?” “Approximately how many employees does your firm employ in the US?” “What is your current position in the firm?”(Appendix 1), we were able to find the distribution of the company industry, company size, and current position of our respondents. We also found out how long the firm had been suffering in the most recent economic downturn and what cost cutting methods have been implemented. The histograms are displayed as followed:





**Figure 5, Distribution of industry**

The reason that manufacturing has a high rate of occurrence is because our school is a technical school and most firms that hire from WPI are manufacturing firms. As a result, CDC survey was mostly sent out to companies in manufacturing. This could have had an effect on our results, because, as we noted earlier, manufacturing was one of the sectors that was hit hard by the most recent economic recession. This is part of the reason why we decided to split our data into manufacturing firms and non-manufacturing firms. With the presence of manufacturing, we coded it as 1; otherwise, we coded it as 0.

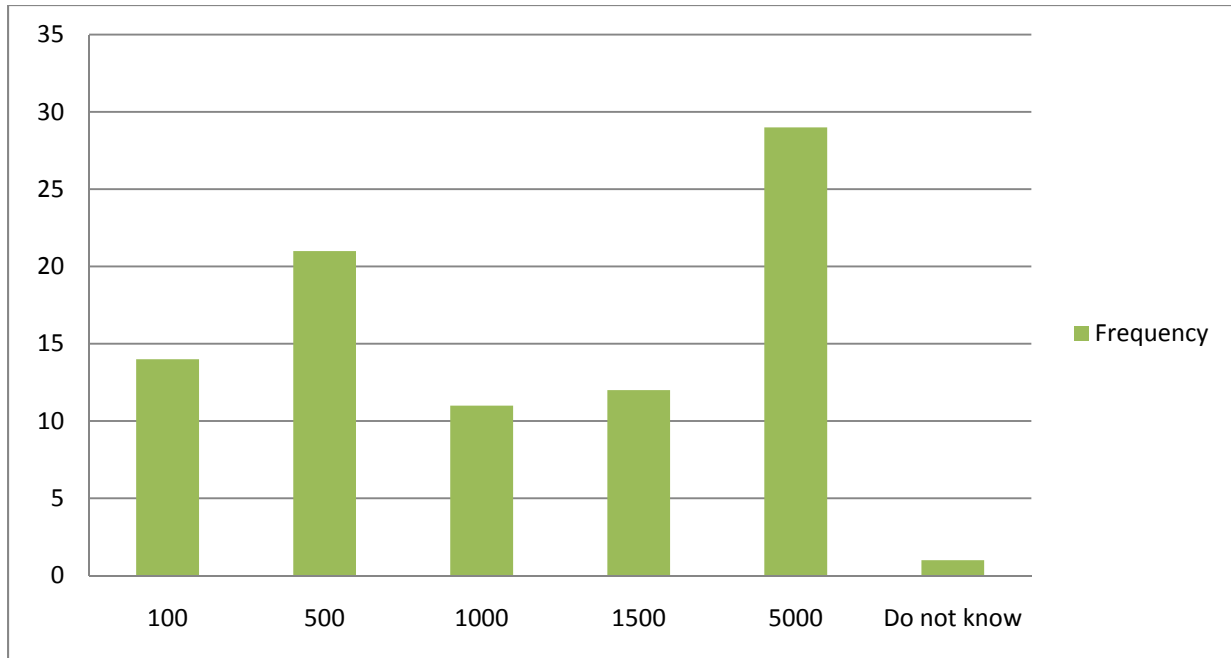


Figure 6, Distribution of company size

As mentioned in previous section, we would like to analyze our data size-wise. By the distribution showed above, we decided to use 1000 employees as a cut off line to categorize the company. Those companies that have employees less than 1000 are considered as small companies and those which have a company size larger than 1000 are considered as large ones. The reason we chose 1000 was that we wanted both large firm and small firm from our sample to have a sample size greater than 30. In the following regression analysis, we would code large firm as 1 and small firm as 0.



Figure 7, Distribution of respondents' demographics

As it is shown in the above histogram, managers, technical staff and support are the three positions dominant in the distribution. We think this might affect the results of our survey somewhat in that they might not be content with companies' decision on cost cutting measures, which could bias the results and hurt our analysis. In addition, support staff might not be as well informed as managers.

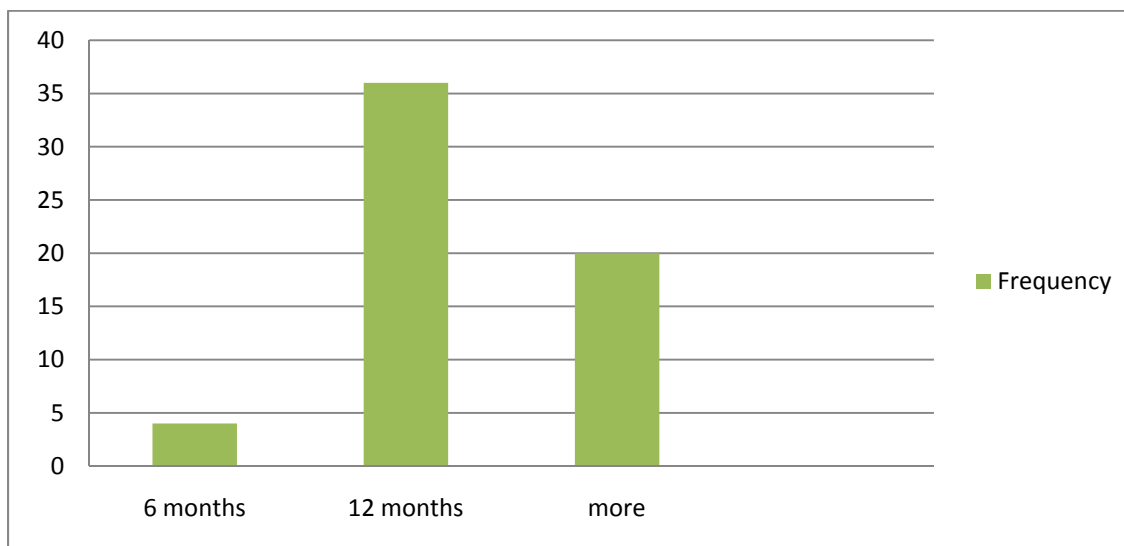


Figure 8, Length of time the company suffered in the most recent economic recession

This result is in line with what we expected, since the most recent economic downturn started roughly at 2008, which made the majority of the companies in the second stage of economic downturn where massive cost cutting measures occurred. However, the number of firms that used layoffs was much greater than the amount we expected, as in theory, firms should be attempting to avoid layoffs until they had been in a downturn for over a year.

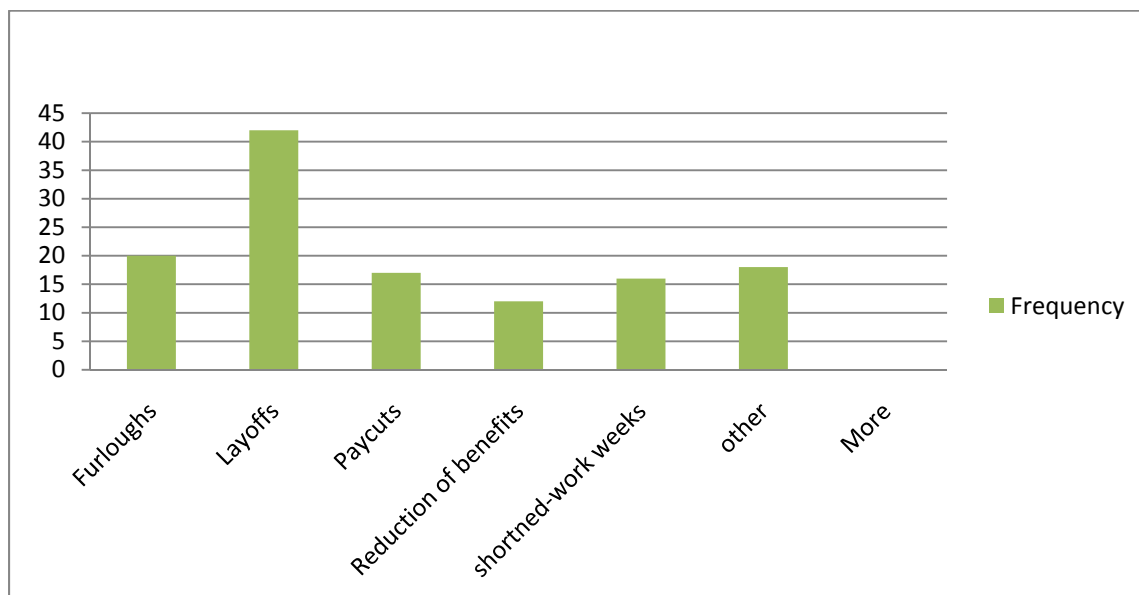


Figure 9, Distribution of cost-cutting methods implemented

According to the survey results, layoffs were the most frequently used cost cutting method. This is not what we believed prior to the survey, but as we believed that frequency does not imply effectiveness of methods. More detailed comparisons of the difference of each cost cutting measure are introduced later in the paper.

#### 4.2.2 Results of Hypothesis testing

We used one-tailed t-tests to test our null hypothesis 2. We compared layoffs to each of the four alternatives in terms of effectiveness of cost cutting, effectiveness of employee retention, effectiveness of employee satisfaction and effectiveness of company reputation. In total, we ran 16 t-tests and only seven of them showed significance. They were layoffs versus pay cuts (p-value  $< 0.05$ ) and layoffs versus reduction of benefits (p-value  $< 0.001$ ) in cost cutting, layoffs versus furloughs (p-value  $< 0.05$ ) and layoffs versus shortened-work week in employee retention (p-value  $< 0.05$ ) and employee satisfaction (p-value  $< 0.05$ ) and layoffs versus furloughs in company reputation (p-value  $< 0.05$ ). This result indicated that we should reject the null hypothesis for the seven comparisons that showed significance. On a more specific level, pay cuts and reduction of benefits tended to be less effective than layoffs in cost cutting. Furloughs and shortened work weeks were more effective than layoffs in employee retention and satisfaction. Furloughs were also more effective than layoffs for the company's reputation, but out of all the alternatives, that is the only one that is. So from the employees' point of view, alternatives are preferable, but from the companies' point of view, if cost cutting is the most important factor when it comes to decision making, layoffs are still going to occur.

For the other comparisons of alternatives and layoffs that did not show significance, we simply did not have enough evidence to draw any conclusion. For some firms alternatives seemed to work, while for some firms they did not, but not enough data went either way for us to draw conclusions. As one of the hopes for our project was to determine which cost-cutting method was more effective, this is slightly disheartening, but it does show how little alternatives are being used at the moment.

We also ran t-tests to determine if there was a significant difference between the chronological orders of the implementation of each cost cutting measure. We compared layoffs to furloughs (p-value < 0.05), pay cuts (p-value < 0.01), reduction of benefits (p-value < 0.01), and shortened workweek (p-value < 0.01) respectively. All of these results showed significance and thus we rejected our null hypothesis 1. This implied that there was a difference between implementation order of layoffs and alternatives being used. However, in contrast to what we learned from the literature review, layoffs tended to be the first cost cutting measure used by companies. Furthermore, when we compared furloughs to pay cuts (p-value = 0.0737), pay cuts to reduction of benefits (p-value = 0.3650), reduction of benefits to shortened-work weeks (p-value = 0.8584), no significance appeared. This implied that other than layoffs, all of the alternatives tended to be thought of the same way, which was also in accordance with the results of Table 3.

There are a number of possible explanations we have come up with for why layoffs were used so often. The first is simply that layoffs tend to be a quick and simple response to issues. Layoffs can manage to recoup profits, something we heard about from our interviews as well, and only require a onetime loss of employees. In addition, companies may feel like why bother going through hurdles like reducing pay when they can solve the problem via one action. Secondly, all the alternatives could simply be less well known than layoffs.

Once layoffs had been done, there was no particular rhyme or reason as to which method was chosen next, and we believe that is because the firms tend to view them all in the category of “alternatives to layoffs”, with none of the alternatives significantly better than the others. A third possible reason could simply be that while we are in a massive economic downturn, companies

have yet to truly think in terms of how they could cause their employees the least amount of grief; as we have shown, in Table1, layoffs have costs themselves.

### 4.2.3 Results of linear regression model fit

As discussed in methodology section, we used linear regression model to check if there is a correlation between company culture and percentage of layoffs. Data was collected from the question “*For your firm how important are the following aspects: cost cutting, employee retention, employee satisfaction and company reputation?*” We ran four simple linear regressions between *percentage of layoffs* and *cost cutting, employee retention, employee satisfaction* and *company reputation* (all measures of firm culture). The R-squares of each regression were 0.0348, 0.0628, 0.0613 and 0.0005. Only employee retention (p-value < 0.01) and employee satisfaction (p-value < 0.01) showed significance. The coefficients of *employee retention* and *employee satisfaction* in this model are -0.2507 and -0.2479. Since the R-squares were so small, we decided to recode our data to better fit the model.

Specifically, we combined the variables to construct a measure of company culture. The more importance companies tended to give *cost cutting*, the more likely they tend to fall into the category of companies who treat employees as costs to be cut. So we decide to label the data as negatives. On the contrary, the more importance a company places on *employee retention* and *employee satisfaction*, the less likely they think employees as costs to be cut. In this case, we coded the variable as positive. *Company reputation* is more neutral than the other three variables, but we still decide to label it as positive. By combining these variables, we were able to yield

$Company\ culture = -Cost\ cutting + Employee\ retention + Employee\ satisfaction + Reputation.$

Then we reformulated the regression model. The new R-square is 0.0597 and the p-value is 0.0010. The fitted model is  $Percentage\ of\ layoffs = -0.75 (-Cost\ cutting + Employee\ retention + Employee\ satisfaction + Company\ reputation) + 20.598 + Error$ . We noticed that R-square of regression between company reputation and percentage of layoffs is relatively small which means the effect of company reputation on the layoff decision is minimal. Consequently, we removed *company reputation* from our model to try another fit. This time we coded  $company\ culture = -Cost\ cutting + Employee\ retention + Employee\ satisfaction$ . The new R-square is 0.0745 and the p-value is 0.09.

Our new fitted model is  $Percentage\ of\ layoffs = 0.96 (-Cost\ cutting + Employee\ retention + Employee\ satisfaction) + 16.904 + Error$ .

Table 4, Regression without dummy variable

ANOVA					
	<i>Df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>
Regression	1	422.673	422.673	2.979256	0.092681
Residual	37	5249.263	141.872		
Total	38	5671.936			



As discussed before, we wanted to analyze our results size-wise (Table 5) and industry-wise (Table 6). We added two dummy variables into our regression model. Though we have a higher R-square (0.0977 after adding the variable of firm size and 0.0763 after adding the variable of industry), there is no significance for both models ( $p=0.1211$  for firm size and  $p=0.2645$  for industry).

**Table 5, Regression with firm size as dummy variable**

ANOVA					
	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>
Regression	2	554.1407	277.0704	1.94899	0.157155
Residual	36	5117.795	142.161		
Total	38	5671.936			

**Table 6, Regression with industry as dummy variable**

ANOVA					
	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>
Regression	2	432.8511	216.4256	1.487153	0.239571
Residual	36	5239.085	145.5301		
Total	38	5671.936			

Another possible factor that could affect our model fit is the stage of downturn as discussed in literature review. If the stage of downturn is more advanced, it is more likely for the company to choose to layoff. So we reformulated our model bringing in the stage of downturn as a dummy variable. However as shown in the Table 7, there is no significance either. Note that we fitted our model using three dummy variables separately rather than throwing them all together in the model. It is simply because we have a small size of sample. Introducing three variables at the same time reduces the power of our tests.

Table 7, Regression with effects of stage of downturn as dummy variable

ANOVA					
	<i>Df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>
Regression	2	56.39542	28.19771	1.899367	0.164772
Residual	35	519.6046	14.84585		
Total	37	576			

Since there is no significance of our regression model, we do not have enough evidence to reject our null hypothesis 3. This is in contrast of what we predict. True, companies that were hyper-focused on cost cutting tended to view employees more as costs to be cut than those whom were focused on other areas, but other than that, even if a company was focused on employee retention, layoffs still tended to be the first option they would pick. Once again, we do not believe this is due to some form of malice towards the employees, but rather just that layoffs tend to be such a quick and one time method of dealing with issues that it might almost be more troubling to employees to have to deal with the extended periods of reduced pay, shortened work weeks, or other measures.

Although we intended to analyze our results qualitatively, due to the time constraint, we were unable to do so in the end.

### 4.3 Results of Interviews

We had four interviews with human resource managers, recruitment and project specialists ranging from large financial institution, insurance company to Pharmaceutical company. As one can see when one looks at the interviews (Appendix 2), how similar the results we got from the

surveys were to the results from the interviews. We had both small and large companies from different sectors, and all of them still managed to find that layoffs were an effective solution to the economic downturn. In addition, very few alternative methods were used, which was something we found quite surprising.

Overall, we found data proving the opposite of what we believed in every single case. This tends to go against the bulk of the research that we did, but we do not feel that that is because the research is wrong. Most of what we read tended to discuss anecdotal situations, like specific corporations that were able to use these alternatives and come out with extraordinary results, instead of statistical evidence. However, for the average company, the reality might not allow them to attempt to experiment with alternatives, meaning that something that has worked in the past, i.e., layoffs, would be the most prudent choice to make.

## 5 Conclusion

We feel that we have learned a great deal about layoffs and their alternatives. We learned that layoffs, while still very unpleasant for the employees involved- tends to be the first line of action for many companies simply because of the instantaneous effect on the company, all for a one time action. We learned how few companies actually use alternatives, at least out of the companies that responded to our survey. While these facts may not be what we originally intended to find out, they are still valuable pieces of information we have gleamed along the way.

One of the problems we had with data collection, which we believe affected our results, was simply the data we collected. Yes, we were able to get a high level of survey response. However, nearly all of the surveys were completed by people who had connections to Worcester Polytechnic Institute. In addition, we received many surveys completed by people who works in manufacturing, and while we did introduce dummy variables to deal with that, which still does not stop the fact that we did not have as many respondents in other fields.

Another issue we had with data collection was simply the amount of companies that used alternatives. While a great many used layoffs, so few used alternatives that it was hard to gauge the effectiveness of them, and made achieving significant results even more unlikely. If we could have somehow targeted companies that we knew were using alternatives, we could have accomplished more interesting and useful results.

Due to the limitations we had with our data collection, we were not able to generalize our results across the whole country, although we could attempt to generalize for manufacturing

firms. Therefore, even though layoffs appeared to be the most favorable cost cutting measures used by our sample, it might not apply to the rest of the population. So was our prediction of the role company culture played in decision making.

Another reason that our results were not in line with what expected could be the common method bias caused by our survey. Our survey was the only source for both our dependent and independent variables. As a result, there might be potential confounds between our two types of variables.

We do feel that there is still a wealth of knowledge to be discovered in this area of study, for example, a study on what the reasoning behind the layoffs, other than to cut costs. Another interesting study might simply be about how many companies have awareness of alternatives. A possible issue could have been that the companies that responded simply didn't have enough awareness of the alternatives to consider them viable strategies, and so a study on how many of them would even consider using them could produce some significant results. Another study that could be done could also be more detailed on the firms themselves, with more information that might be slightly more confidential, but more useful on the whole. Either way, we still feel that there is much more to be discovered in this line of research, and much more to be gained.

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# Appendix 1

Qualtrics Survey Software

Page 1 of 4

## Layoffs

### Default Question Block

**Q31** Hello! We are students from Worcester Polytechnic Institute. We are doing a project on layoffs and alternatives to layoffs. The purpose of our survey is to gather information about how your company has dealt with the most recent economic downturn. Please answer each question to the best of your ability. There is no right or wrong answer, and your responses are strictly confidential and anonymous. With your help, we hope to pinpoint what strategies provide most benefit to firms.

**Q1** What industry is your firm in?

- Agriculture, Forestry, Fishing and Mining
- Utilities
- Construction
- Manufacturing
- Wholesale/Retail trade
- Transportation and Ware-housing

**Q2** Approximately how many employees does your firm employ in the US?

- Less than 100
- 101-500
- 501-1500
- 1501-5000
- Over 5000
- \* Do not know

**Q3** What is your current position in the firm?

- Top management
- Senior management
- Management
- Technical staff
- Support staff

**Q4** Has your firm been affected by the most recent economic downturn?

- Yes
- No

If No is Selected, Then Skip To End of Survey

**Q5** How severely has your firm been affected by the most recent economic downturn?

	Not affected at all 1	2	3	Somewhat affected 4	5	6	Seriously affected 7
Your firm	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**Q29** Has the economic downturn resulted in cost cutting measures for your firm such as the following (select all that is applicable)

- Furloughs
- Layoffs
- Paycuts
- Reduction of benefits
- Shortened work-weeks
- Other

If Furloughs Is Selected, Then Skip To Please rate the effectiveness of furl...  
 If Layoffs Is Selected, Then Skip To Please rate the effectiveness of layo...  
 If Paycuts Is Selected, Then Skip To Please rate the effectiveness of pay ...  
 If Reduction of benefits Is Selected, Then Skip To Please rate the effectiveness of redu...  
 If Shortened work-weeks Is Selected, Then Skip To Please rate the effectiveness of shor...

**Q7** Please rate the effectiveness of *furloughs* based on your firm's experience, in terms of the following categories:

	Not effective 1	2	3	Somewhat effective 4	5	6	Highly effective 7	Not applicable/ Do not know
Cost-cutting	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Employee retention	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Employee satisfaction	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Firm's reputation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**Q8** Please rate the effectiveness of *layoffs* based on your firm's experience, in terms of the following categories:

	Not effective 1	2	3	Somewhat effective 4	5	6	Highly Effective 7	Not applicable/ Do not know
Cost-cutting	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Employee retention	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Employee satisfaction	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Firm's reputation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**Q19** Estimate the percentage of employees that your firm has laid off due to the most recent economic downturn:

- Percentage
- Do not know
- Not applicable

**Q9**

Please rate the effectiveness of **pay cuts** based on your firm's experience, in terms of the following categories:

	Not effective 1	2	3	Somewhat effective 4	5	6	Highly effective 7	Not applicable/ Do not know
Cost-cutting	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Employee retention	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Employee satisfaction	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Firm's reputation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**Q10**

Please rate the effectiveness of **reduction of benefits** based on your firm's experience, in terms of the following categories:

	Not effective 1	2	3	Somewhat effective 4	5	6	Highly effective 7	Not applicable/ Do not know
Cost-cutting	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Employee retention	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Employee satisfaction	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Firm's reputation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**Q11**

Please rate the effectiveness of **shortened workweeks** based on your firm's experiences, in terms of the following categories:

	Not effective 1	2	3	Somewhat effective 4	5	6	Highly effective 7	Not applicable/ Do not know
Cost-cutting	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Employee retention	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Employee satisfaction	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Firm's reputation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**Q16** Estimate by how many hours your firm has reduced its work-week:

**Q12** For your firm how important are the following aspects?

	Not important 1	2	3	Somewhat important 4	5	6	Very important 7	Not applicable/ Do not know
Cost-cutting	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Employee retention	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Employee satisfaction	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Reputation of the firm	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**Q6** Please rank all the cost-cutting measures taken in the order of implementation. (1- first measure taken and n- latest measure taken)

Furloughs  
 Layoffs  
 Reduction of benefits  
 Pay cuts  
 Shortened work-weeks  
 Other

**Q13** How much has your firm been able to save by implementing the various measures (e.g., reduction of benefits, layoffs) discussed above?

Less than \$10,000  
 \$10,000-100,000  
 \$100,000-1,000,000  
 \$1,000,000-5,000,000  
 More than \$5,000,000

**Q14** Estimate the percentage of pay cuts that your firm has implemented so far for the following job categories: (drag bars to change percentage)

	0	10	20	30	40	50	60	70	80	90	100
Top management (%)											
Senior management (%)											
Management (%)											
Technical staff (%)											
Support staff (%)											
<input type="checkbox"/> Do not know / Not applicable											

**Q18** For how long has your firm experienced financial stress due to the most recent economic downturn?

Less than six months  
 6-12 months  
 More than one year (12 months)

**Q20** Do you believe that your firm has been successful in facing the most recent economic downturn so far? Please explain.

## Appendix 2

### Interview 1:

**Insurance company with more 4000 employees which specializes in personal and business insurance. Has presence in east and Midwest.**

Position – **HR representative.**

#### Interview Questions

1. What is your Position –(Top-Management, Mid-Management, Technical or support staff)

**Support staff**

2. Approximate number of employees employed in your firm in the US. **Approximately 4,500**

3. Has the economic downturn caused your firm to implement any cost cutting measures affecting employees? What are they? (For example, measures such as layoffs, furloughs, reduction of benefits etc.)

**We have been doing exceedingly well, even in the troubled economy. As such, we are even increasing our spending by investing in technology and people. The hiring rate has steadily increased, and benefits have not been reduced.**

4. How effective were they in terms of overall benefit (Considering the aspects such as Savings, employee retention, reputation of the firm) **n/a**

5. (If they list layoff) Approx. how many employees has your firm laid off in the US? **n/a**

6. How effective was layoff as a solution? **n/a**

7. Approximately how much money was your firm was able to save as a result of the methods that were implemented? **n/a**

8. Estimate the size of paycuts your company has implemented. Please explain how those paycuts were implemented (If paycuts were listed) **n/a**

9. (If reduction of benefits was used) What kind of benefits were reduced and how was that throughout the firm? (Did everyone lose same benefits or did the executives lose more than others)**n/a**

10. (If shorter workweeks were implemented) How many hours were reduced in a week to save money? **n/a**

11. If multiple methods were implemented – which, in your opinion, is the most efficient method in terms of

(a). Cost-savings

(b). Employee satisfaction

(c). Firm reputation

**n/a**

12. How important are following aspects to your firm, please explain

(a). Cost-savings

**At the moment, cost savings is not very important. We are focusing on building a world class company, and we know that in order to accomplish this, we must spend money.**

(b). Employee retention and satisfaction

**Extremely important; great companies are built with great people, and you have to develop and retain your employees.**

(c). Reputation of the firm

**The most important of all, we are trying to build a profitable and reputable company.**

13. Can you please rank the above mentioned options in the order of importance?

**1.) Reputation of the firm 2.) Employee retention and satisfaction 3.) Cost-savings**

14. Do you believe that your firm has been successful so far in facing the economic downturn? Please explain, why?

**Yes, although the economy is down, we are thriving as a company. We are making smarter decisions, and as a result have the capital to invest in our people, who in turn, will make our company even more successful.**

## Interview 2:

**A company which provides engineering solutions to environmental, design, building and contract issues. Specializes in waste, water treatments and serves municipalities, schools, colleges, industrial facilities and food and beverage sector. A mid size company which has a national presence.**

**Position – Recruiter and Project specialist in the company who returned our phone call.**

### Interview Questions

1. What is your Position –(Top-Management, Mid-Management, Technical or support staff) **My title is Recruiting and Project Specialist. I support our Consulting, Corporate, and Operation & Management groups with recruiting needs, and I also do Human Resources related project work.**

2. Approximate number of employees employed in your firm in the US. **560**

3. Has the economic downturn caused your firm to implement any cost cutting measures affecting employees? What are they? (For example, measures such as layoffs, furloughs, reduction of benefits etc.) **Yes, we had pay freezes this year, so only those who were promoted received raises. We will be cautious as we move into 2010 to see how long that pay freeze will last. Some employees went down to part-time hours temporarily and will go back to full-time as work increases in their area.**

4. How effective were they in terms of overall benefit (Considering the aspects such as Savings, employee retention, reputation of the firm) **In addition to pay freezes, we are more cognizant of how we are spending money traveling to other offices only when needed, scaling down office holiday functions, etc. These types of measures alone help. The overall benefits I think are good at this point- we have not had to do any major lay-offs, and we are trying to keep things steady and consistent at this point.**

5. (If they list layoff) Approx. how many employees has your firm laid off in the US? **Around 10.**

6. How effective was layoff as a solution? **We laid off a very small number, and so this will not play a primary role in saving our company money.**

7. Approximately how much money was your firm was able to save as a result of the methods that were implemented? **Can not answer this.**



8. Estimate the size of paycuts your company has implemented. Please explain how those paycuts were implemented (If paycuts were listed)

**Pay cuts have not been implemented, only a pay freeze- people's salaries are holding steady.**

9. (If reduction of benefits was used) What kind of benefits were reduced and how was that throughout the firm? (Did everyone lose same benefits or did the executives lose more than others)

10. (If shorter workweeks were implemented) How many hours were reduced in a week to save money? **This only affected very few employees. They went down to either 32, and some went to 24.**

11. If multiple methods were implemented – which, in your opinion, is the most efficient method in terms of

(a). Cost-savings

(b). Employee satisfaction

(c). Firm reputation

12. How important are following aspects to your firm, please explain

(a). Cost-savings- **Very important. We are consulting firm and have a backlog of work to sustain us, however we have to project towards the future and what happens when we run out of backlog and the economy has not picked up enough for us to keep bringing in a sufficient amount of new work. We need to make sure we are being cost-conscious so that we can continue to support our current employee base.**

(b). Employee retention and satisfaction- **Very important. Our firm was founded on the idea that employees come first- before the work and before the clients. Based on that philosophy, we have many folks that have worked here 15, 20, 25 or more years. Retention is extremely important to us.**

(c). Reputation of the firm- **We are a consulting firm and our reputation is half of what gets us work. People here know how well we did on a job and reach out to us. We also want to do a good job so a client will keep coming back with more projects.**

13. Can you please rank the above mentioned options in the order of importance? **A, B, C**

14. Do you believe that your firm has been successful so far in facing the economic downturn? Please explain, Why? **Yes. We forecasted early on and came up with an action plan for what we would do if things did not improve by such and such time period. We have been proactive in educating employees on how to be fiscally responsible and have kept them tuned in to the state of the company.**

**Interview 3:**

**Leading pharmaceutical company which has active presence in more than 100 countries. Employs more than 65,000 people worldwide with approximately 32% in the USA.**

**Position – Manager of analysis team who has an Engineering background. Person interviewed graduated from WPI**

## Interview Questions

1. What is your Position (Top-Management, Mid-Management, Technical or support staff)

**Mid-Management**

2. Approximate number of employees employed in your firm in the US.

**3000**

3. Has the economic downturn caused your firm to implement any cost cutting measures affecting employees? What are they? (For example, measures such as layoffs, furloughs, reduction of benefits etc.)

- **Key Management Bonus and Corporate Bonus Plans on hold.**
- **Controlling corporate spending**
- **Keeping costs down by managing and reducing travel expenses.**
- **Summer Corporate activity and winter holiday festival cancelled**
- **Changing health care insurance providers**
- **Reduction in staff worldwide**

4. How effective were they in terms of overall benefit (Considering the aspects such as Savings, employee retention, reputation of the firm)

- **Company was able to save a couple of million dollars. Exact numbers not available as this process initiated a couple of months ago. Year end numbers will only be out end of January.**

**There was very minimal impact employee retention or reputation of the firm.**

5.(If they list layoff) Approx. how many employees has your firm laid off in the US?

**2% of the workforce in the U.S was laid off.**

6. How effective was layoff as a solution?

**Overall benefit/\$ value to the bottom line profit of the company not available yet. Layoff were only one factor in what the company overall on its cost cutting initiatives.**

7. Approximately how much money was your firm was able to save as a result of the methods that were implemented?

**A couple of million dollars.**

8. Estimate the size of paycuts your company has implemented. Please explain how those paycuts were implemented (If paycuts were listed)

**10% salary cut for top management.**

9. (If reduction of benefits was used) What kind of benefits were reduced and how was that throughout the firm? (Did everyone lose same benefits or did the executives lose more than others)

**Benefits were not reduced.**

10. (If shorter workweeks were implemented) How many hours were reduced in a week to save money?

**No shorter workweeks were implemented**

11. If multiple methods were implemented – which, in your opinion, is the most efficient method in terms of

(a). Cost-savings

(b). Employee satisfaction

(c). Firm reputation

12. How important are following aspects to your firm, please explain

(a). Cost-savings

(b). Employee retention and satisfaction

(c). Reputation of the firm

13. Can you please rank the above mentioned options in the order of importance?

**Employee retention and satisfaction**

**Reputation of firm**

**Cost saving**

14. Do you believe that your firm has been successful so far in facing the economic downturn? Please explain, Why?

**New drug development is a multiple year process. Most contracts with pharmaceutical companies which are already in place are a steady revenue stream. New business wins have slowed significantly as some of the big pharmaceutical companies have merged and put some of the development projects on hold.**

**Interview 4**

**Interview Questions**

**One of the leading financial services Institution and one of the big banks in USA. Operates Internationally with partners in over 95 countries. Large size company.**

**Position of the person Interviewed – Assistant HR manager of Mass. branch**

1. What is your Position –(Top-Management, Mid-Management, Technical or support staff)

**Mid Management**

2. Approximate number of employees employed in your firm in the US.

**240,000 approximately.**

3. Has the economic downturn caused your firm to implement any cost cutting measures affecting employees? What are they? (For example, measures such as layoffs, furloughs, reduction of benefits etc.)

**A few layoffs .**

4. How effective were they in terms of overall benefit (Considering the aspects such as Savings, employee retention, reputation of the firm)

**Very effective since it assisted in employee retention.**

5. (If they list layoff) Approx. how many employees has your firm laid off in the US?

**Approximately 1000.**

6. How effective was layoff as a solution?

**Very effective.**

7. Approximately how much money was your firm was able to save as a result of the methods that were implemented?

**n/a**

8. Estimate the size of paycuts your company has implemented. Please explain how those paycuts were implemented (If paycuts were listed)

**CEO took a one million dollars pay cut**

9. (If reduction of benefits was used) What kind of benefits were reduced and how was that throughout the firm? (Did everyone lose same benefits or did the executives lose more than others)

**Not used**

**10. (If shorter workweeks were implemented) How many hours were reduced in a week to save money?**

**Not used**

11. If multiple methods were implemented – which, in your opinion, is the most efficient method in terms of

- (a). Cost-savings – **Necessary layoffs**
- (b). Employee satisfaction – **enhanced benefits**
- (c). Firm reputation – **ethical business practises**

12. How important are following aspects to your firm, please explain

- (a). Cost-savings - **important**
- (b). Employee retention and satisfaction – **very important**
- (c). Reputation of the firm – **extremely important**

13. Can you please rank the above mentioned options in the order of importance?

**C,b,a**

14. Do you believe that your firm has been successful so far in facing the economic downturn?  
Please explain, Why?

**Successful by doing the right thing – good ethical business practices.**

## Appendix 3



WORCESTER POLYTECHNIC INSTITUTE  
 Institutional Review Board  
 Application for Exemption from IRB Review for  
 Survey or Interview Research Involving Minimal or No Risk

WPI IRB use only  
 IRB # \_\_\_\_\_  
 Date: \_\_\_\_\_

*Use of this application is recommended for most student project research involving minimal risk. Proposed research meets the definition of "minimal risk" when the risks to research subjects are not greater than those ordinarily encountered in daily life. This application is specifically intended for projects in which students are expected to conduct interviews, surveys or focus groups. If student projects are sponsored by US federal agencies, students and advisors should contact the IRB for assistance in filing a full application with the New England IRB.*

**Project Faculty Advisor(s):**

Name: Fabienne Miller Tel No: 508-831-6128 E-Mail Address: fabienne@wpi.edu  
 Department: Management

Name: \_\_\_\_\_ Tel No: \_\_\_\_\_ E-Mail Address: \_\_\_\_\_  
 Department: \_\_\_\_\_

**Student Investigator(s):**

Name: Bhalayogasthini Sivayoganathan Tel No: \_\_\_\_\_ E-Mail Address: gasthi@wpi.edu  
 Name: Yiwei Liu Tel No: \_\_\_\_\_ E-Mail Address: yiwei@wpi.edu  
 Name: Joshua Ginsburg Tel No: \_\_\_\_\_ E-Mail Address: Jaginsb@wpi.edu  
 Name: \_\_\_\_\_ Tel No: \_\_\_\_\_ E-Mail Address: \_\_\_\_\_

**Project Title:** Evaluating Alternatives of Layoffs

**Project Location and Time Frame:** Worcester, next several weeks

**Expected Research Subjects: (e.g. museum visitors under the age of 12)**

Human Resource Employees

**NOTE: This application must be accompanied by written research methods and a reasonably complete set of survey or interview questions.**

1. Is the proposed research sponsored or supported by a US federal agency or by US government funding? No  Yes
2. Is the proposed research funded by a corporation or foundation? If so, please identify sources. No  Yes
3. Does the proposed research involve vulnerable research subjects? (e.g. children, prisoners, students, persons with mental or physical disabilities, pregnant women) No  Yes

**WPI IRB Application for Exemption from IRB Review for  
Survey or Interview Research Involving Minimal or No Risk**

4. Is the research confined to obtaining verbal or written information from subjects and/or publicly available documentary information? No  Yes
5. Could the disclosure of a human subject's identity and responses place the subject at risk of criminal or civil liability or be damaging to the subjects' financial standing, employability, or reputation? No  Yes
6. Will the researchers collect information that can be used to identify the subjects? No  Yes
7. If the researchers do know the subjects' identity, will individual responses be kept confidential? (e.g. only summaries of all data will be published) No  Yes
8. Will researchers be interviewing people chosen because of their expertise or experience? (See 4, below.) No  Yes

By signing below, all participants in this research project are agreeing to follow the following instructions:

1. You agree to inform subjects orally or in writing that:
  - Participation in the research is voluntary.
  - Participants may end their participation at any time.
  - Participants need not answer every question in an interview or survey.
2. If your research is **anonymous**, you also inform subjects that you are not collecting names or any identifying information from them.
3. If your research is **confidential**, you inform subjects that no identifying information will be disclosed with individual responses.
4. If your research subjects are chosen and interviewed for their expertise or experience, you seek and obtain each subject's permission to identify him or her in your report, and obtain each subject's permission to disclose his or her views and statements in your report. The subject must be offered the opportunity to pre-approve the publication of any quoted material. If a subject does not wish to appear in your report, you respect his or her wishes for confidentiality.

Signature of Faculty Advisor *Fabienne Miller* Date 11/6/09

Print Full Name and Title Fabienne Miller - Assistant Professor

Please return a signed hard or electronic copy of this application to the WPI IRB c/o Office of Sponsored Programs or [irb@wpi.edu](mailto:irb@wpi.edu).

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