Bridging the Gap between Employee and Developer Attitudes to Encourage Employee Engagement with Corporate Wellness Applications

A Research Paper Submitted to the Department of Engineering and Society

Presented to the Faculty of the School of Engineering and Applied Science

University of Virginia • Charlottesville, Virginia

In Partial Fulfillment of the Requirements for the Degree

Bachelor of Science, School of Engineering

By

Jackson Kennedy

Spring, 2020

On my honor as a University student, I have neither given nor received unauthorized aid on this assignment as defined by the Honor Guidelines for Thesis-Related Assignments.

Signed: _____ Date _____

Jackson Kennedy

Approved: _____ ___ Date _____

Kathryn A. Neeley, Associate Professor of STS, Department of Engineering and Society

"In the age of Big Data, joining a wellness program is less akin to a confidential visit to your family doctor than it is joining public social media"

- Arjunwa, Crawford, & Ford (2016)

Introduction

Baicker, Cutler and Song (2010, pp. 1) show that 60% of Americans main provider of health insurance coverage is their employer. Health insurance claims made by employees are therefore a direct cost for many companies. Beyond just insurance claims, studies have also shown that healthier employees are more productive showing less absenteeism and presenteeism, with presenteeism being time spent at work doing tasks that are non-work related (Aldana, 2019a, n.p.). Thus, beyond the moral responsibility of helping take care of those responsible for earning a company's money it is also economical for employers to ensure their employees remain happy and healthy.

To achieve this goal companies typically use corporate wellness programs to help employees maintain high standards of wellbeing. Between half and two-thirds of all companies in the U.S offer some kind of wellness program while 99% of companies that employ more than 200 workers offer at least one wellness program (Arjunwa, Crawford, & Ford, 2016, n.p.). Corporate wellness programs can provide a wide range of offerings from workout classes, health-risk assessments, and stress counseling (Muir, 1997, pp. 1). However, today there is a new facet of many of these programs which some would describe as a "disruption generated by the appeal of technology-focused wellness solutions (such as mobile applications and games)" (Abrahams & White, 2017, n.p.). Companies are incorporating this new type of channel for connecting with their employees with hopes of helping them take ownership of their own wellness. However, introducing such solutions into the wellness-space can lead to problems, which Arjunwa, Crawford, and Ford (2016) articulate by comparing these applications use to

"joining a public social media". These applications have the opportunity to collect all kinds of employee data. Sometimes it is not always explicitly clear how this data will be used which makes this process "less akin to a confidential visit to your family doctor" than employees might like (Arjunwa, Crawford, and Ford, 2016, n.p.). But, writing these applications off entirely wastes the potential benefits that could come if the companies using there were to approach them differently.

In this paper I show how these applications use personal data to provide targeted resources to different groups of employees. I will discuss clear oversteps made by many companies when doing so along with ways to avoid such overextensions, allowing both parties to still reap benefits. Using Kerschner and Ehlers framework of attitudes toward technology, an analysis on the expectations surrounding corporate wellness applications will be used to find common ground between the perspectives of employees and developers. Two applications will be considered: Limeade One and Castlight. I will argue that companies who purchase the services of corporate wellness applications must incorporate both developer attitudes as well as employee attitudes toward the technology in their pitches encouraging employees to use the software.

Corporate Wellness Applications Reach into Employees lives in Unprecedented Ways

Before beginning any analysis, the background and reasons for offering corporate wellness programs must be considered in more detail. Corporate wellness programs are designed to lower costs for companies first by reducing health insurance claims. Historically offering exercise programs for employees to take part in or even building fitness centers dedicated to a single companies' employees accomplished this goal. Over time companies came to realize providing benefits such as these only reached those who already exhibited healthy behavior

(Muir, 1997, pp. 1). While the resources were being used, they were not being used by the employees who benefit the most from the company's offerings. Therefore, a shift took place that meant companies started offering other resources hoping to help encourage behavior changes in all employees. This meant the introduction of things such as health risk assessments, self-help education materials, and even individual counseling (Baicker, Cutler & Song, 2010, n.p.). With programs like this in place it was possible for the wellness programs to reach more employees outside of those already displaying healthy behaviors.

Corporate wellness programs have only become more and more popular since this change. In 2006, 19% of companies with 500 workers or more were offering wellness programs while in 2017, 99% of companies with 200 or more workers were offering at wellness programs (Baicker, Cutler, & Song, 2010, n.p.; Abraham, & White, 2017, n.p.). Figure 1 below shows a breakdown of the distribution in wellness program offerings from 2006. Part of this explosion in wellness programs has come with the wave of interest in technology focused wellness programs. Matured wellness focused companies have stayed away from developing these technology focused wellness programs and have continued with more traditional programs. This has left openings for newer, younger wellness-focused companies to create the technology focused platforms who believe these new types of solutions "promote wellness as a form of human capital investment to improve organizational performance" (Abraham, & White, 2017, n.p.). However, it is also worth noting that many more established firms who have stuck with more traditional programs still require information technology solutions for managing their offerings. Employees who use these programs expect online/mobile portals to sign up for the services being offered, to be able to track progress, and to be able to view personalized educational programs

(Abraham, & White, 2017, n.p.). Thus, no matter which route a wellness-oriented company decides to take there is always going to be some technological component.

Figure 1: Types of Corporate Wellness Program Offerings in 2006

Method of delivery	Percent of firms
Health risk assessment	81
Self-help education materials	42
Individual counseling	39
Classes, seminars, group activities	36
Added incentives for participation	31
Focus of intervention	
Weight loss and fitness	66
Smoking cessation	50
Multiple risk factors	75

Figure 1: The above table provides a broad overview of what corporate wellness program offerings looked like in 2006. (Baicker, Cutler, & Song, 2010)

One of the areas that technology focused solutions shine in is the aforementioned realm of providing educational material. Using the web application format, it is easy to make content readily available to all employees at any given time and to provide content in many different formats. It is possible to provide seminars, video content and even live streams to all employees (Aldana, 2019b, n.p.). Online platforms also serve as an efficient way for users to track their engagement with any available wellness programs. Marking content that an employee finds useful makes for easy reference at a later date putting vast amounts of information at employee's fingertips. This empowers them to take control of their own well-being. Finally, it is more achievable to visualize what a healthy lifestyle looks like in this online format (Aldana, 2019a,

n.p.). This provides another way for employees to feel empowered to take control of their own health and wellbeing.

It is important that all of the information crafted for these services keeps comprehensibility in mind. Employees will not want to read all kinds of material that they are not readily able to understand and it has been shown that the ability to easily understand provided educational material is crucial to the success of these kinds of programs. An example comes from findings published in *AM J Public Health* that claim material on smoking with lower reading levels led to much higher performance on a post-test of smoking knowledge (Byrd, Lee & Meade 1989, n.p.). Understandable information also makes it much easier for communication to occur with their primary care physician when that becomes necessary (Barret & Puryear, 2006, pp. 692).

Even with well-crafted, easily understood content comes the issue of getting employees to actually want to learn from it. One possibility for doing so involves providing content tailored to the individual employee either manually or automatically. In the automatic case, some wellness platforms are able to comb through all the information provided through things such as health risk assessments and searches made within the platform in order to make predictions about relevant content for the user. An example of such a program is Castlight. Castlight is able to make guesses at which employees might be pregnant or attempting to become pregnant by looking for women who have stopped using birth control and have made fertility related searches on the Castlight health app (Arjunwa, Crawford, & Ford, 2016, n.p.). Many people would feel, and rightfully so, that this is an intrusion of their privacy. Especially since much of this is done without making the employee explicitly aware what is going on. Discussing Castlight's own justifications for making decisions such as this will be done in a later section.

Beyond just being unnerving for employees, these kinds of machine-made predictions and categorizations can be used discriminatorily in the hands of unethical employers. For example, obesity and smoker status are not explicitly protected statuses according to the United States government anti-discrimination laws (Ajunwa, Crawford, & Ford, 2016, n.p.). If a system like Castlight were to instead attempt to predict which employees were most likely to be smokers, employers would have the ability to unethically fire employees who use these wellness programs. Thus, companies have to give some sort of affirmations to their employees that they will not use or even interact with data on such a level that would allow for practices such as these. Communicating this to employees using the application from the start would be a necessity. While preventing oversteps such as these, predictions made in this manner can prove to be useful. With proper consent, the ability to deliver content tailored to one's own personal needs can be beneficial; it will make the platform more engaging as content will be more applicable to a user's everyday life. By engaging in these programs' employees are able to increase their long-term health outcomes.

Applying Kerschner and Ehlers Framework of Attitudes Towards Technology to Corporate Wellness Applications

With a background understanding of corporate wellness programs, now the framework that will be used to conduct an analysis must be laid out. Kerschner and Ehlers developed this framework with three step process. First, a literature review of texts relating to technology in society as well as texts relating to ecological science was conducted that focused on finding "ways of being with technology" (Kerschner & Ehlers, 2016, pp. 141). On top of this, a qualitative content analysis was performed on lecture slides from a two week long summer school focusing on integration of complex systems in the realm of ecological economics. Quotes representing explicit and implicit views were categorized into one of 12 groups in order to help

more rigidly define the spectrum of attitudes found in the literature review. Figure 2 displays all of these categories below. Each individual category will be discussed in more detail in the following paragraphs.

Figure 2: Kerschner and Ehler's Attitudes Towards Technology Categories

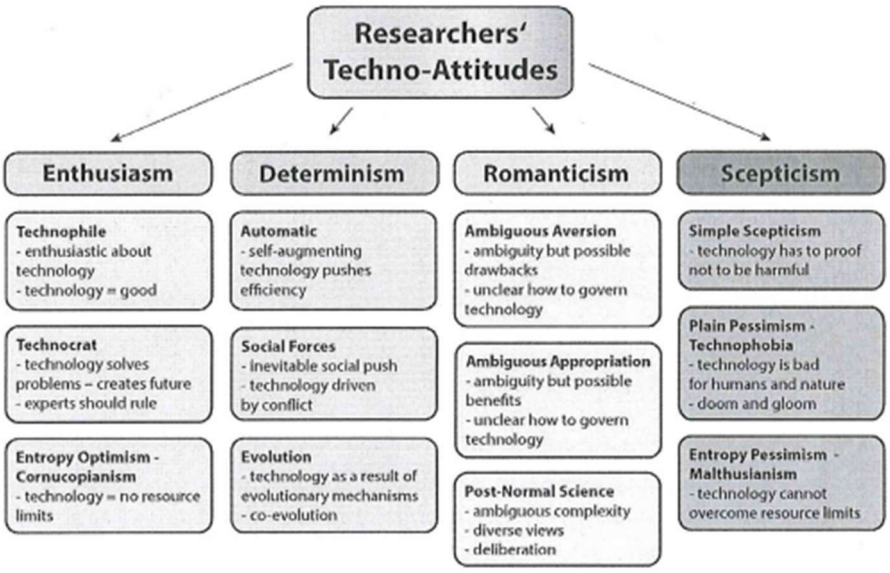

Figure 2: Kerschner and Ehlers's 12 categories of attitudes towards technology. Explicit and implicit ideas can be codified into one or more of these categories. Boundaries between categories are not meant to be overly rigid, describe the framework as a spectrum.

In the categorization created by Kerschner and Ehlers there are four major groups: enthusiasm, determinism, romanticism (and post normal science), and skepticism. First, technological enthusiasm, or technological optimism, will be considered. Generally, ideas placed into this categorization believe that "technological improvements will allow humanity to perpetually overcome resource limits in the face of increased demands caused by population growth" (2016, pp.144). Thus, whatever barrier or obstacle faced by humankind there will be some way to overcome using technology. There will come no time when foregoing technological improvement will be the only way forwards. Three sub-categories divide technological enthusiasm all takings slightly different approaches to this belief in unending technological

innovation. One being the technophile whom “cannot imagine why anyone would be critical towards it [technology]” (2016, pp. 144). “Novelty” and “innovation” are key and will always propel society forwards. Second, there is the “technocrat” that believes all decisions made for society should be done by those with “specialized, technological knowledge” (2016, pp. 144). In other words, decision making power should rest solely on the shoulders of the technical experts in whatever domain a decision needs to be made in. Finally, there is cornucopianism which holds onto the principle that “unlimited economic growth” is the only solution to all of the world’s ills (poverty, pollution, etc.). As resources become depleted, substituting them for “newer, more abundant resources” will always be a possibility. All of these subcategories relate back to the idea of technology continually solving humanities problems over time.

Now, consider the next major category, technological determinism, which is one of the most talked about views of technology in social science research. The central tenets of technological determinism are that technological development happens on its own accord independent of outside social, economic and political forces and that “technological change determines social change (2016, pp. 146). However, over time studies have shown how this first tenet inherently has flaws after numerous studies have shown how social contexts affected technological developments. Thus, the variations of technological determinism that follow will not hold to the idea that technology is developed completely without external influence but will extend loosely from that idea. Automatic is the first subcategory and it focuses on the idea that technology is taking over the natural environment over time. It is not controllable by humans and is “self-augmenting” only continuing to grow itself over time (2016, pp. 146). Next, is social forces which concedes that technology is shaped by external social pressures however, these are not calculated. Whatever social pressures exist will create new technologies deterministically

without guidance. Lastly, there is evolution which holds that "more complex socio-technical systems are needed to cope with decreasing diversity of natural ecosystems" (2016, pp. 146). Together, these three subcategories all consider technology as something not completely in humanities control.

Technological romanticism is the next major category and within this category "technology is seen as questionable, double and associated with feelings of ambiguity" (2016, pp.145). Those holding this attitude toward technology believe every piece of technology must be considered uniquely; it is impossible to hold one blanket attitude towards all technology. Unlike determinism technological romanticism also sees many possibilities rather than just one. Among the sub-categories first there is ambiguous aversion which revolves around being averse to potential negative side effects of technology. Within this attitude there is a recognition that technology can be important to human advancement but at the same time it is not a guarantee and the possibility of bad outcomes must be seriously considered. Ambiguous appropriation is the next sub-category of technological romanticism and contains similar ideas to the previous sub-category. However, it pushes slightly closer to technological enthusiasm by believing through technological adoption humanity can be bettered. The main challenge with adopting new technologies is keeping them in check with governance. The last sub-category is title post-normal science which believes that when faced with uncertainty and risk in adopting new technologies the way forwards is through a "plurality of legitimate perspectives" (2016, pp. 145). This means that decision can be made about whether or not to adopt a risky new technology with opinions not just of the technologically knowledgeable but also those who will be affected by the technology's integration into society. Therefore, there is always a decision-making process to be followed when faced with challenging new technologies instead of just having them written off.

The final major category to be considered is that of technological skepticism. Sceptics believe that "technology can undermine social cohesion, foster individualization and isolation, eliminate jobs and erode their meaning" (2016, pp. 147). Within technological skepticism the first sub-category to be considered is simple skepticism which holds optimism in the fact that technology can be vetted for poor qualities before being introduced into society. There exist processes to determine what a technologies effect on society will be and therefore only technologies that pass a minimum threshold of risk assessment can be adopted. A view that is further down the sceptic spectrum would be plain pessimism which grew out of response to post-war technology not living up to all it said it could. In this view, all problems (poverty, inequality, ecological destruction) can be attributed to increased uses of technology. The only way to solve these problems is by "reverting to simpler 'low-tech-no-tech' lifestyles" (2016, pp. 147). Even more skeptical than the last, the final sub-category is entropy pessimism. Entropy pessimism posits that no technology can "reverse the arrow of entropic degradation of energy and materials" or in other words, all technological advancement contributes to the slow collapse of society. This is because that each layer of complexity added by new technologies will eventually prove to be unsustainable.

Examining Attitudes of Developers and Employees to Improve Communication Strategies

Using the framework just discussed, attitudes towards corporate wellness applications will be analyzed from both the developers and employees' perspectives. Developers are those who create the wellness applications. Their perspective on this technology will be found by analyzing the materials used to pitch these products. Included in the study will be two producers, Limeade One and Castlight as mentioned previously. To understand employee perspectives, data taken from a survey on expectations held by those participating in studies that will use their

personal health information will be used. The analysis process using the framework described previously is detailed in the flowchart shown in Figure 3 below.

Figure 3: Using Kerschner and Ehler's Framework for Analysis

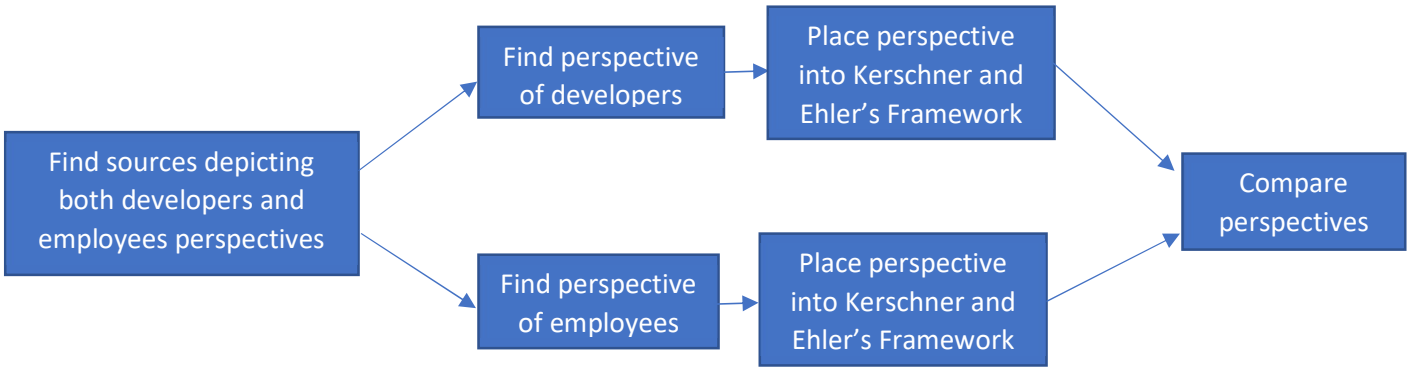

Figure 3: Using different sources for both the developer and employee groups, perspectives of each group could be categorized according to Kerschner and Ehler's framework. These perspectives can then be compared in order to draw conclusions.

In order to understand Limeade One's perspective on their products, the language on their website will be considered. Limeade One offers a platform divided into three parts: improving employee well-being, improving employee engagement, and improving employee inclusion. Limeade describes these programs as "elevate[ing] the employee experience" which they define as "how it feels to work somewhere" (Limeade One, 2020-a, n.p.). The company does not claim to make these changes all by themselves but rather empowers employers to make these changes within their companies. Another important part of this companies' offerings is their claim to bring employees together through their engagement line, "Limeade delivers an employee-first approach to engagement, reinforcing connection between employees and empowering everyone to take action" (Limeade One, 2020-b, n.p.). Limeades final line focusing on inclusion makes very similar statements in saying "We can help you act to improve workplace inclusion" (Limeade One, 2020-c, n.p.). Limeade definitely believes that all companies will use their technology differently based on the culture that is already in place. Thus, Limeade's attitudes

towards its own technologies could not be considered deterministic. However, in pitching their products Limeade makes use of the idea that "novelty" will help push your company forwards. Technological optimism then seems like the broad category that this perspective would fall into, more specifically the technophile sub-category.

We will now look into another competing company offering corporate wellness software, Castlight who was mentioned previously when discussing Walmart's corporate wellness program. At the core of Castlight's offerings are their machine learning models which they discuss in a webinar they have provided on their website (Castlight, 2019, n.p.). These machine learning models are used to place employees into categories. It must first be considered why Castlight feels that these machine learning models are beneficial for a corporate wellness application.

Understanding that many different groups of people will need many different things at all times, Caslight believes the best way to adapt to this is to use machine learning (Castlight, 2019, n.p.). Machine learning is able to take data from the past in order to make predictions about future data points. Figure 4 below provides a basic overview of how these machine learning models work. Castlight believes that in categorizing people using these methodologies, they can more effectively serve content and healthcare offerings to their customers (employees of companies Castlight works with). Thus, Castlight seems to share the same mindset as Limeade One that the "innovative" nature of their offerings will improve employee wellbeing; Castlight's services will always provide enough benefits to solve the problem at hand. Technophile seems like the most fitting description of Castlight's take on their own products and corporate wellness software in general.

Figure 4: Depiction of Machine Learning Classification Process

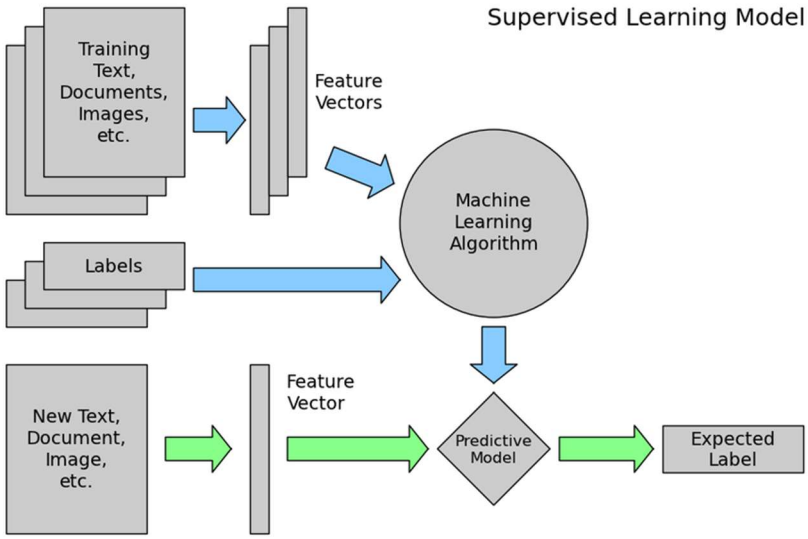

Figure 4: In order to create these models, data that is classified manually must be fed into the algorithm first. These manual classifications are the labels and the employee data are the feature vectors. All of the blue portions represent data used to train the model and all of the green portions represent data from actual users. (Ofer, 2016, n.p.)

Now the employee's perspective will be considered using the survey of potential participants in research utilizing personal health information. Even though this survey is not of users of corporate wellness applications, the views of these participants will still be representative of the same concerns as employees who will use a corporate wellness application. Participants in this survey are being asked about what will make them most willing or most comfortable with providing their own personal health information to be used in health-related research. They are being asked what courtesies and upfront claims they would expect before turning over their personal data to researchers. In the context of the research in this study, rather than data being used for research it is being used to improve use in corporate wellness applications. The end goal is different but the concerns that may exist surrounding achieving that goal will be the same.

Now turning to the questions in the survey, one question asked in the report by Alan Westin was "The privacy of personal medical records and health information is not protected well enough today by federal and state laws and organizational practices" to which 58% of people replied yes (2010, n.p.). The next most relevant question asked participants in the survey to choose a written response from a set of pre-written options to the statement "whether they were ready to have their personally identified health information used by health researchers, and, if so, what kind of notice and consent they would want to have provided" (Westin, 2010, n.p.). The most common responses were as follows, 19% of respondents chose a response stating they would want to be asked permission before their data is used in future studies, and 38% said "I would want each research study seeking to use my personal identified medical or health information to first describe the study to me and get my specific consent for such use". This shows that a total of 57% of all involved in the survey showed some level of distrust in the use of their data in new studies going forwards. Using Kerschner and Ehlers framework, the answers to both of the above questions could be used to describe those falling into the ambiguous aversion subcategory of technological romanticism. Participants in this research do not have an unfailing belief in the need to pursue better technology but can see how under the right circumstances' advancement will be beneficial.

With these clashing perspectives, it seems each party believes that over time the other will begin to see the product from their point of view. Employees believe developers will begin to see that their fears over using applications with access to so much personal information can be unnerving are legitimate. At the same time, developers believe that over time the help provided by their cutting-edge tools will cancel out any fears that employees may have. However, use of the software over time does not seem to cause either side to change their mind. All involved

parties remain with the same perspective they started with. This can lead to employees disengaging and developers remaining confused as to why the benefits provided by their program did not win over all of the employees. Developers may respond to this lack of engagement by rolling out more "novel" features that could create even greater concerns for the employees. In the end this disengagement hurts employees because they are missing out on access to all of the possible health benefits that come from using a corporate wellness program. Because employees feel uncomfortable with the idea of using the platform, they don't ever get the opportunity to use it to better their own lives.

The ability for employees and developers to find a common ground between them would help remedy this situation. However, since the developers are not selling their products directly to employees there is very little opportunity for this to happen. Most often, when developers do reach out to employees it is done while developing the software beforehand. Since this communication will occur while building out the application, those testing the system would typically never actually use the final product. An employee helping provide feedback would have no way of knowing if their employer would eventually decide to purchase the software in front of them. Therefore, when providing feedback employees would not have vested personal interest that would bring up their fears of potential data misuse. When employees do eventually have that personal connection to the system, the time period where the most meaningful interactions that could have occurred between them and the developers has passed. After developing the entire application, the developer's main point of contact would be the companies themselves. Depicted in Figure 5 below, are the ways that the potential avenues for communication between all groups evolve throughout a corporate wellness applications lifecycle.

Figure 5: Communication Channels Available throughout Corporate Wellness Application Lifecycle

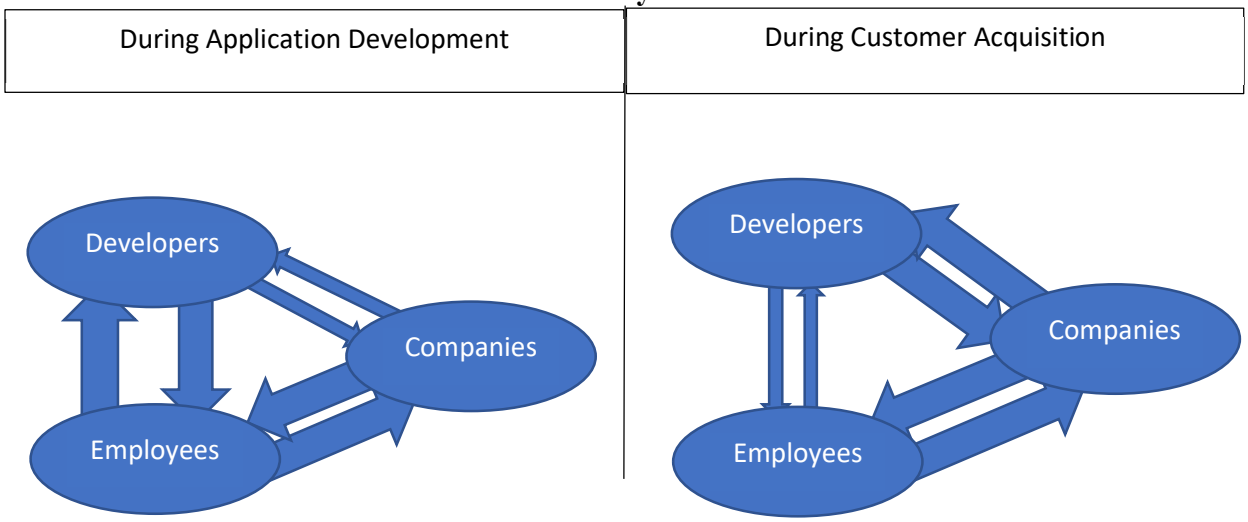

Figure 5: In the above diagrams the arrows between different groups represent how much communication occurs during the listed stage of the corporate wellness application lifecycle. Larger arrows signify more possibility for communication. The key change between the two stages is the group mainly in communication with the developers.

Using these ideas, it can be concluded that companies purchasing these corporate wellness applications can most easily accomplish finding common ground between both the perspectives of developers and employees. Companies themselves will have the most apt communication channels for finding commonality during the phase where it matters most ("During Customer Acquisition" in Figure 5) when developers are trying to find potential customers for their services. Those who decide what corporate wellness options will be provided need to be in charge of facilitating understanding between the developers and their own employees. This group must use both the perspective of the developers to make sure their employees see the benefits of the product being offered but at the same time give space for the skepticism of their employees. By maintaining some aspects of the attitudes held by developers and still respecting the aversions felt by employees the application can be made more welcoming.

This does not mean that employees will be able to understand exactly what is going on behind the scenes within these applications. For example, in Castlight's case, the inherent black box nature of machine learning models makes it almost impossible for companies to ever explicitly describe to their users how the application is functioning. Instead, if companies can recognize this drawback when advertising this new corporate wellness program to their employees it can be made clear that the company understands why this type of technology seems daunting. But, at the same time they can explain what benefits it will provide. For this strategy to work, companies must also make commitments to their employees to avoid unethical practices when it comes to utilizing the data found in these applications. As mentioned in previous sections companies have to make binding promises to not abuse the data made available to them in order for engagement with these applications to be maximized.

Conclusion

When employees and developers' beliefs about corporate wellness applications clash, the company's position is key to maximizing the effectiveness of their purchased application. Companies have to commit to respecting perspectives of the developer while also recognizing their employees' apprehensions. A company's ability to establish trust between the other two parties will allow employees to improve their own wellbeing, developers to see their products work as intended and companies see their own productivity increase along with decreases in their operating costs.

The manner by which companies go about establishing this trust is not set in stone but it must be done in concise a manner as possible. Whether that be in the format of a short video, podcast or other easily digestible medium it has to be done in a way that is not overly burdensome to the employee. Employees feel that these programs have to prove themselves

worthwhile so any extra pressure placed onto employees will not help in increasing their likelihood of actually using the application.

Bibliography

Abraham, J., & White, K. (2017). Tracking the changing landscape of corporate wellness companies. *Health Affairs, 36(2)*, pp. 222-228. Retrieved from https://doi.org/10.1377/hlthaff.2016.1138

Ajunwa, I., Crawford, K., & Ford, J. S. (2016). Health and big data: An ethical framework for health information collection by corporate wellness programs. *The Journal of Law, Medicine and Ethics, 44*(3), pp. 474-480. Retrieved from https://journals.sagepub.com/doi/full/10.1177/1073110516667943

Aldana, S. (2019a, September 4th). *The 7 Best Reasons to Have a Wellness Program: Benefits of Wellness.* Retrieved from https://www.wellsteps.com/blog/2018/07/04/reasons-to-have-a-wellness-program-benefits-of-wellness/

Aldana, S. (2019b, September 5th). *10 Things your Workplace Health and Wellness Software Should Do.* Retrieved from https://www.wellsteps.com/blog/2019/08/01/health-wellness-software/

Baicker, K., Cutler, D., & Song, Z. (2010) Workplace wellness programs can generate savings. *Health Affairs 29*(2) pp. unknown. Retrieved from https://www.healthaffairs.org/doi/full/10.1377/hlthaff.2009.0626

Barret, S. E, & Puryear, J. S. (2006) Health literacy: Improving quality of care in primary care settings. *Journal of Health Care for the Poor and Underserved*. 17(4) pp.690-697 Retrieved from https://muse.jhu.edu/article/206208/pdf

Byrd, J. C., Lee, M., & Meade, C. M. (1989) Improving patient comprehension of literature on smoking. *Am J Public Health. 79*(10) pp. 1411-1412. Retreived from https://ajph.aphapublications.org/doi/pdf/10.2105/AJPH.79.10.1411

Castlight (2019). More than a buzzword: Improving healthcare with machine learning and artificial intnelligence [on-demand webinar]. Retrieved on March 5th, 2020 from https://content.castlighthealth.com/2019-Q4-Dec-10-Machine-Learning-Webinar_Webinar-Page.html

Ishikawa, H., & Yano, E. (2008) Patient health literacy and participation in the health-care process. *Health Expectations, 11*(2), pp. 113-122. Retrieved from https://onlinelibrary.wiley.com/doi/full/10.1111/j.1369-7625.2008.00497.x

Kerschner, C., & Ehlers, M. (2014). A framework of attitudes towards technology in theory and practice. *Ecological Economics, 126,* pp. 139-151.

Limeade-One. (2020-a). About limeade [corporate website]. Retrieved March 5th, 2020 from https://www.limeade.com/en/our-story/

Limeade-One (2020-b). Limeade engagement [corporate website]. Retrieved March 5th, 2020 from https://www.limeade.com/en/limeade-engagement/

Limeade-One (2020-c). Limeade inclusion [corporate website]. Retrieved March 5th, 2020 from https://www.limeade.com/en/limeade-inclusion/

Merrill, R., Aldana, S., Pope, J., Anderson, D., Coberley, C., Whitmer, R. (2012). Presenteeism according to healthy behaviors, physical health, and work environment. *Population Health Management, 15(5)*, pp. 293-301. Retrieved from https://doi.org/10.1089/pop.2012.0003

Muir, M. (1997) Enlightened self-interest. Corporate wellness programs find a new paradigm. *Alternative & Complementary Therapies, 3*(1), pp. 6-12. Retrieved from https://www.liebertpub.com/doi/pdf/10.1089/act.1997.3.6

Ofer, D. (2016). Supervised learning model [Image]. Retrieved from https://www.researchgate.net/figure/ML-classification-pipeline-Feature-extraction-from-raw-data-ML-model-fitting-and_fig3_301841976

Öörni, A. & Kelders, Saskia & Gemert-Pijnen, Julia & Oinas-Kukkonen, Harri. (2014). Designing, modeling and evaluating influence strategies for behavior change support systems. CEUR Workshop Proceedings. 1153. 1-6.

Stovall, L. (2019, June 25). *Building a Successful Workplace Wellness Program.* Retrieved from https://www.thebalancecareers.com/how-to-build-a-successful-workplace-wellness-program-1917966

Westin, A. (2010). Public views in *Institute of Medicine (US) Roundtable on Value & Science-Driven Health Care. Clinical Data as the Basic Staple of Health Learning: Creating and Protecting a Public Good: Workshop Summary*. Washington, DC: National Academies Press. Retrieved from: https://www.ncbi.nlm.nih.gov/books/NBK54293/'