A Real World Perspective: Employee Perspectives of Employer Sponsored Personal Health Record (PHR) Systems

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Abstract

Many employers now provide electronic personal health records (PHR) to employees as part of a free or low cost health benefit program. This paper reports findings from a survey distributed to employees of a large U.S. corporation. The survey focused on identifying employee concerns and expectations from an employer sponsored PHR system and to help understand the utilization and adoption of PHR systems sponsored by the employer. Despite some past research showing significant demand for PHR products across the general public, especially those that are offered for free, responses indicated many barriers. Participants responded with their concerns and expectations prior to using the system as well as their difficulty or ease of use. Key issues are discussed, including current and future role of employers in the PHR marketplace, including the need to “tether” these offerings to larger health care provider networks in order for employees to realize the value added.

1. Introduction

The potential value of electronic Personal Health Records (PHRs) has been discussed much in the literature. For example, PHRs have been identified as an important tool to help reduce medical errors [1], improve patient safety [2], facilitate continuity of care [3], improve patient – physician communication [4, 5], improve information handoffs and hospital efficiency [6], and aide in the overall healthcare management of individuals [3].

While the value potential seems apparent, implementations are still far and few between and the acceptance of these systems remains less understood. While many PHRs have been implemented and tested and many more are available in the marketplace, they are offered using a variety of delivery mechanisms (e.g., web based software as a service, off the shelf software application, or some variation of the two), and by a range of interested parties (e.g., health insurance companies, health care providers, software companies, employers). As such, there exist many different proposed models for providing PHRs to end-users. Some research has focused on outlining the various PHR delivery and business models. For example, Smolij and Dunn [7] describe a number of models including stand alone software and web based systems that are either “untethered” or “tethered” to a health care provider, health insurance company or other payor, employer, or other related entity. These and other researchers also explain that the personally controlled and “tethered” model seems most appropriate for consumers [8-10]. Evidence from market growth also shows that consumers are more likely to share their health information if the electronic application being used is tethered, or connected, to a health care related entity or service, much like consumers have found value in using banking software that is connected with their bank of choice [11-12, 46]. Still, very little is known as to which types of organization consumers would like their PHR to be tethered to. This research seeks to understand consumer perspectives on an “employer sponsored” PHR system, or a PHR tethered to an individuals employer.

Employers have long been involved in the health care of its employees. From establishing fitness programs, to wellness programs, to paying for (or subsidizing) health insurance premiums, employees and employers alike have long benefited. More recently, employers have begun to provide “employer sponsored” PHR systems to employees to assist them in managing and keeping track of their health information [16, 18]. While these systems are being implemented, little is known about the employee perceptions of such systems. Furthermore, it is uncertain as to what extent employees value these offerings and the role that employers should, or should not play in terms of offering them.

In this study, we report the results of a survey that was conducted among the employees of a large company in the U.S., which provides free access to a PHR system for all employees. The paper continues with a discussion of the literature on user acceptance...
and barriers to acceptance of health information systems. Next, the research approach, setting, and methodology are detailed. This is followed by the analysis of quantitative and qualitative data that identify employee concerns, expectations, and user satisfaction with the employer sponsored PHR system. Finally, the implications of the findings and relationship of these results to existing and evolving studies are discussed.

2. Conceptual Overview

The purpose of this research is to understand the employee barriers to acceptance of an employer sponsored PHR. Employers are beginning to provide PHR technology with the explicit motivation to empower their employees to manage their health. Yet diffusion of the PHR as a new technology throughout these organizations depends largely on how the employees understand and participate in its implementation [50]. Several years of research has demonstrated that as employees are involved in the decision to implement new technologies, the barriers to acceptance are lower [42-44]. It is less clear how this principle relates to a situation where the employer offers a technology not directly related to occupational activities, but rather to the personal management of employee healthcare.

As alluded to above, a less understood area of study is employee perceptions about the value and challenges associated with employer sponsored PHRs. In today’s corporate workplace, the employer is expected to partner with the employee to build a trusting environment [13]. This relationship can often be viewed, at least psychologically, as a contract with both sides carefully weighing each other’s obligations to the other [14]. The employer often considers the cost to provide a range of benefits to employees as essential and important investments in the organization [15]. As such, the employer may choose to provide a wide range of benefits and tools to empower employees to both take risks and take caution (e.g., take care of ones health). In this way, the two entities work together to build trust within and across the organization [16]. While many have questioned the motives of employers who become more directly involved in employee healthcare, others have seen the relationship as beneficial [47]. One perspective might be that employees perceive the employer sponsored PHR as a valuable resource to find information as well as to input and store information about health and consequently improve health and feelings of well-being. The employee may view the PHR as an additional resource to help monitor and manage his/her health [19]. There is a perception of trust that the employer has the employees’ best interests in mind.

A somewhat opposing perspective might be that employees don’t see the value in the employer sponsored PHR because it is perceived as additional work to complete the information or unnecessary to fulfilling their job responsibilities. The notion is that health information being released to the employer may harbor an adverse working environment and may impede the trusting environment concept [17, 45]. Trust problems may become more prevalent and significant by introducing health care into the employee-employer relationship [36, 37, 45]. This may be a challenge to the employee, especially if employer motivations are unknown, unspoken, or otherwise viewed skeptically. This may largely be due to the privacy and security concerns of the employees regarding the use of the information being captured in the employer sponsored PHR.

In this way, employees want to understand the motivations of an employer that is providing resources that don’t necessarily support their day to day activities [16, 18]. Resources provided by the employer are often perceived as ways to get more work done faster by the employee [13]. There are the suspicions that the employer is motivated by getting the most out of an employee using as few resources as possible [16]. Having access to an employer sponsored PHR may not be viewed as a tool to enhance employee capabilities to be more productive, or a tool that will refine critical job skills to maintain a professional career [19]. In order for the PHR to prove value in this context, employees would need to move away from fears and anxieties of mistrust and suspicions. Therefore, an employer sponsored PHR may be perceived as a resource that does not add value in the workplace. Usage and non-usage of the PHR may be indicators of this perception.

The intention of this research is to understand the end user perspective of the employer sponsored PHR, highlighting the benefits and challenges of a PHR that is currently being used within a large US corporation. The practical benefit to employers is to help them understand and gauge the satisfaction, expectations, and concerns of an employer sponsored PHR to assist them with the decision on if and how they should provide these tools to employees [46].

3. User Values and Challenges

This research project has taken the end-user perspective; in this case, the employee of a large company who has been offered a free PHR. The
importance of extracting end-user needs and perspectives has been articulated in the information systems literature for several years [27-29]. When the end-user needs are well understood, organizations can expect greater levels of acceptance and diffusion of technology, greater levels of satisfaction, and more effectively aligned systems with organizational needs [30-32, 44]. As in the system development life cycle (SDLC), the end user is consulted during the requirements phase of a project in order to get their ideas and requirements for the development of a system [33, 48]. The end user needs to be coached, trained, and mentored prior to implementing and using a new system or tool [24, 34, 35]. Conversely, when the end user is left out of the process of introducing and implementing new systems and tools, they are less likely to be receptive to using the system. This end-user orientation is extended within this research to investigate the notion of the employer sponsored PHR system.

4. Research Approach: Understanding Consumer Perceptions through Qualitative Methods

Several researchers have indicated that understanding the perceptions of information systems end users from a qualitative perspective is particularly useful for exploring the context of an emerging, not fully mature, information technology system [20-21]. Such an approach allows for extracting issues, challenges, benefits and other contextual information surrounding health information technology that may not be arrived at through quantitative approaches [22]. For example, Kaplan [23] outlined the importance of this approach for emerging systems in the context of consumer health informatics research (CHI).

For the context of this CHI research, the authors have taken the perspective that the PHR is an emerging consumer health informatics technology as there has been very little adoption to date yet a great deal of consumer interest [25]. More specifically, the employer sponsored PHR has had very little adoption and use to date and little is known about the end user perspectives of this model to date. As such, the authors have taken a qualitative approach, coupled with some quantitative analysis, to investigating perceptions from end-users experiences.

5. Research Context and Overview

This research was conducted within a large fortune 500 U.S. company. This company had implemented a PHR system from a major third-party vendor for its 73,000 employees. The PHR system offered features that allowed the employee to populate the PHR with past and present health conditions, medications, and health status for the employee and family members. The PHR system provided online reports, updates, and reminders as requested by the employee. Other features included information searches of databases on medication, diseases, illnesses, wellness and addiction programs. The PHR was offered at no cost to employees. The Human Resources department of the company explained the intent of the employer was to be a “good corporate citizen” to provide new and additional benefits to employees. A prior survey was conducted by the vendor in 2004 to gauge usage, satisfaction, impact and perceived value of the PHR system among the users. The vendor provided a summary of the results. The preliminary study results showed that only 37% of users were satisfied with the employer sponsored PHR and that 20% of employees used the PHR system monthly or more often. The low satisfaction and low usage percentages prompted a closer look at the PHR at the company. Therefore the current study reported herein focuses on identifying more specific issues related to employee satisfaction, expectations, and concerns with the employer sponsored PHR system.

Employees were asked to participate in an online questionnaire to collect data for the research project. The satisfaction, expectations, and concerns of users of this employer sponsored PHR system is the focus in the questionnaire.

6. Research Procedures and Methods

Data was collected in a single-stage survey accessible by internet only using a secure, online survey tool. Participants completed an online survey that included questions on end-user satisfaction, expectations, and concerns with the PHR system. Survey questions regarding user expectations were taken from [25]. Survey questions regarding user satisfaction were taken from [26]. There were 9 open-ended questions to capture expectations and concerns. Responses to the qualitative portion of the study (9 open-ended questions) are reported herein.

Data analysis of the qualitative responses included an inductive approach to coding responses into logical themes that emerged through the process of reading them. Prominent mention of topics such as security, privacy, accuracy, availability, accessibility and others emerged as themes and were used to code the responses. Researchers organized responses into
these themes using a Microsoft Excel database. These themes are reported in the Findings section below.

7. Research Participants and Recruitment

All 368 employees from a single corporate business unit were invited to participate in the questionnaire. Participants were notified of the survey availability via e-mail that included a link directly to the survey.

The survey did not require participants to enter personally identifiable information. There was an opportunity for participants to disclose their contact information at the end of the survey if they desired to participate in focus group discussions to be held at a later time. However, this was not necessary to complete the survey.

Of the 368 questionnaires distributed, 132 valid and usable responses were received giving a response rate of 35%. Demographic data is reported in straight percentages. The respondents for the survey were 59% male and 41% female; 36% were managers and 64% were non-managers. The demographic profile of the sample is shown in Figure 1.

8. Findings and Discussion

The authors have taken an end-user perspective to understand User Satisfaction, User Expectations, and Concerns of this emergent system within a specific IT delivery model – an employer providing the system to employees. Overall satisfaction with the PHR is shown in Figure 2. 45% of the respondents reported being satisfied with the system, 32% of respondents were dissatisfied in some way with the PHR, and 23% of respondents remained neutral on the satisfaction of the PHR.

Findings from 132 responses include a lack of demand for the product offered in its current form largely due to the desire employees have to maintain a clear distance between their health information and their employer. Participants responded with their concerns and expectations prior to using the system as well as their difficulty or ease of use. Their responses included: a lack of trust in the employer and other employees who might gain access to personal health information; lack of confidence that the PHR could provide utility in the event of a health care visit, even in the case of an emergency; insufficient communication by the employer about the information sharing rules of engagement; lack of understanding by employees about the role of the employer versus the role of the PHR vendor in the PHR relationship. The survey questionnaire focused on identifying employee concerns and expectations from an employer sponsored PHR system and to help understand the utilization and adoption of PHR systems sponsored by the employer. Several respondents volunteered to participate in future focus or discussion groups. There were several areas that respondents were curious about and wanted more information or discussion. Those areas included: pharmacy and prescription connections, usage during disaster recovery and emergencies, usage of the system during work hours, denial and receipt of benefits.

As mentioned previously, the questionnaire included 9 open-ended questions to capture expectations and concerns with the PHR system. These are described in more detail below.

The first open-ended question asked respondents about their concerns with the PHR system. As shown in Figure 3, 22% of the individuals responded to this question by describing a lack of trust in the employer and other employees who might gain access to their personal health information. These responses included, for example:

- “I’m afraid of the risk to allowing 3rd party to access my information”.

![Figure 1. Demographic profile](image1.png)

![Figure 2. Overall Satisfaction](image2.png)
Some employees are unsure about the privacy and security of their health information. Comments included,

- “Not sure I trust having my employer and others with access to my health information”
- “Thanks, but no thanks. Too many eyes on my records”
- “Wonder why my employer all of a sudden wants to help me keep track of my health information”

These comments reflect attitudes that are often found in the workplace [36, 37]. Employee participants discussed the need to guard their personal information from the employer and other employees. Employees seemed hesitant to trust the PHR that has been sponsored by their employer. In sum, these responses suggest the hesitancy employees have in their relationship with the employer.

Approximately 34% of the respondents were also concerned with the privacy and security of their information, but in a more general sense. Comments included,

- “Is my health information behind the firewall?”
- “Who else inside or outside the company can see my personal information?”
- “I’m not sure how private or secure my information will be and for how long”

Comments demonstrated that privacy and security of information within a PHR are concerns of the respondents. The employees perceive that their health information is at risk of being exposed to others internal and external to the corporation [38]. Employee perception is a barrier to their usage of the employer sponsored PHR. Employers must be cognizant of these barriers when considering a PHR implementation [11].

Just 8% of the respondents expressed concerns about the challenges associated with consistently updating their records to ensure the accuracy and completeness of their health information. They commented,

- “How do I know that the data from the system is correct?”
- “Who updates the data? What credentials do they have?”

The responses indicated that some employees are unsure as to how the employer sponsored PHR would be updated by health care providers with information that they could use to assist in managing their health. Approximately 36% of the respondents expressed no concerns with the PHR. Their responses were either “n/a” or “none”.

The next open-ended question asked about the expectations that employees had prior to using the PHR system (see Figure 4). Here, 55% of the employees surveyed reported no expectations. The remaining responses described expectations that personal information would be kept private and secure, accurate and up to date, and that there would be a high level of usability, or user friendliness, of the PHR. Among all the respondents, 23% expected the PHR to be private and secure. Responses included,

- “My health information needs to be private and out of the site of others”
- “A secure environment for my information is expected”
- “In a big company like this, I want my health information in a secure and private location”
- “Privacy and security are my #1 expectation”

Prior to using the employer sponsored PHR, most respondents expected a private and secure PHR to store and update their health information [17, 39]. The comments and responses indicated that employees have set some expectations in the type systems they will accept.

A small number of respondents (8%) expected the PHR to be:

- “User friendly and easy to navigate”
- “Less cumbersome and easy for the non computer user to use easily”

Statements included:
- “I’ve used a system like this before, but this one is easier to use”.
- “The system was very helpful and I found the information that I needed very quickly.”

Approximately 14% of the respondents expected the PHR to have accurate and up to date information. For example, individuals commented that,
- “A lag in updating medical definitions would not be a good thing”
- “Medicine (i.e. sulfa, benzocaine) usage information will need to be accurate and dependable”.

While the concerns described in question one are similar in nature to the expectations described in question 2, it should be noted that this may be an indication that user expectations were not met, but could be if enhancements were to be made in the PHR system.

The questionnaire asked participants if they would use a PHR in a time of medical emergency (see Figure 5). Almost half of the respondents (45%) responded “n/a” that they were not sure if they would use the PHR. However, 27% of respondents indicated that they would use a PHR in the time of emergency for the purpose of providing accurate information to emergency responders. They commented that:
- “I want to have accurate information available in case of an emergency.”

Some of respondents (11%) said that they would use a PHR in a time of medical emergency because,
- “Information is available if I can’t speak for myself.”

![Figure 5. PHR use for emergencies](image1)

These responses indicate that the employer sponsored PHR may be a valuable place to have health information stored for use in the time of an emergency. The employer can speculate that this was an unintended consequence and use of the employer sponsored PHR. Future improvements to the employer sponsored PHR can enable additional features for use in the time of an emergency.

Among all the respondents, 17% said that they would not use a PHR in the time of a medical emergency because, for example,
- “It is faster to speak with someone.”

While several respondents recognized that communication in the time of an emergency is important, others noted that the mode of communication is faster and possibly more effective if it is done speaking with someone as opposed to taking the information from the employer sponsored PHR.

Continuing with the previous theme (and illustrated in Figure 6), participants were also asked to describe the type of emergency in which they would use a PHR. Approximately 40% responded that they would use a PHR in the case of accidents including falls and automobile crashes. They commented that,
- “In a car accident, I would use my GPS system, so having a PHR connected would be useful also.”

Moreover, 32% of respondents indicated that they would use a PHR in the case of heart attacks, chest pain, choking, bleeding, and poisoning. Some comments were,
- “I would use a PHR to gather information on the type of poison and suggestions to counteract the poison.”
- “I used it to look up how to stop bleeding”

In addition, 28% responded that they would use a PHR in the time of a natural and environmental disaster. A respondent commented that,
- “During Hurricane Katrina, families could have used a PHR to get prescriptions filled.”

![Figure 6. Type of emergency](image2)
may not have the log on ID and password or access to the internet required in a time-critical situation, and 45% responded “n/a” that they were not sure if the information was useful in an emergency situation or not. Some comments included,
- “The system may not be available. I need to speak with someone”
- “I can’t rely on a computer system or the internet”
- “What if the internet is down or connectivity is bad? I’m up a creek!”

Only 3% of respondents indicated that the PHR information would be useful as a quick reference.

It is important to note that other research has indicated a strong preference for PHRs for emergency situations. Lafky and Horan [40] for example showed that certain individuals (e.g., disabled, chronically ill) are keenly interested in PHRs for emergencies and believe they would provide significant benefits. Individuals who use a PHR that is tethered to a health care provider have also indicated high value of PHRs for emergency situations [41, 49]. We believe the hesitancy of participants in this questionnaire may be due to the looming trust issues with an employer sponsored PHR as shown above.

On the other hand, 19% of respondents commented that it could be useful to let the emergency responder have any available information about their personal health. They commented that:
- “Give them all available information that can help to save my life or others”
- “It is not helpful to hold back important information from people that are trying to help you”

As explained previously, this participant group as a whole is largely opposed to sharing their information with emergency responders, which may be due to the employer trust issues described earlier and/or a lack of interest due to the general good health of the group.

**Figure 7. PHR usefulness in emergency**

<table>
<thead>
<tr>
<th>PHR Useful in Emergency</th>
<th>18%</th>
<th>34%</th>
<th>45%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Availability, rather talk to someone in person</td>
<td>3%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Accessibility may not have log on ID and password or access to internet</td>
<td>3%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>As a quick reference not to replace doctor’s care and advice</td>
<td>N/A</td>
<td></td>
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</tbody>
</table>

**Figure 8. PHR available to emergency responders**

Participants were asked if the PHR was difficult or easy to use (see Figure 9). Approximately 30% of responded that the PHR was easy to navigate between screens. In addition, 22% responded that the PHR had a nice format and layout on the screen. On the contrary, 21% responded that the PHR was hard to navigate between screens. While this question was open-ended, the answers were targeted and well distributed across the scale of easy vs. hard. This provided researchers with a basic understanding that the level of “ease of use” likely did not play a significant role in influencing the participant responses to other questions. A quantitative analysis will ensue hereafter for a more detailed analysis in this regard and will be reported at a later date.
Participants were asked about their expectations in terms of the ease or difficulty of use (see Figure 10). A large number of the respondents (62%) had no expectations. However, 31% expected to be able to easily find the information, 5% expected it to be private and secure, and 2% expected to see a standard user interface.

A final open-ended question asked participants to provide other areas of interest not addressed in the questionnaire (see Figure 11).

Participant responses included inquiries into two key areas: additional PHR functionality and expanded access to information. Functionality responses included:
- “I would like to see the pharmacy and prescriptions connected to the PHR”
- “Can we use the company PHR system for a disabled child or parent?”
- “I’d like to download the PHR information to my blackberry”

PHR access responses included:
- “Can my spouse or others use the system on my behalf?”
- “Will health insurance deny or give benefits based on the information that I input into the PHR?”

9. Conclusion

As employers grapple with the decision to extend PHRs to employees as part of an added corporate benefit, many complex considerations arise. While employer sponsored PHR systems may be intended to assist employees in managing and keeping track of their health information [42], these same employers face obstacles in employee usage of the system due to user concerns and unmet expectations concerning the privacy and use of their information. There is still a perception of trust of the employer that the employees’ best interests are not being considered. Usage and non-usage of the PHR may be indicators of this perception. As shown in the findings from this study, a significant amount of employee demand for the PHR system was not prevalent prior to or during implementation. Rather, the employer assumed employees would adopt and appreciate using the PHR system without first asking them. Survey data collected from employees indicated that employees want to maintain a clear distance between their health information and their employer. They seemed hesitant to trust the PHR that has been sponsored by their employer. The responses describe a lack of trust in the employer and other employees who might gain access to their personal health information.

Past research in technology acceptance demonstrates the importance of an employer-employee partnership when introducing and implementing new information technology. The same may be true when implementing employer sponsored PHRs, even if the technology is being offered as a “gift” with good employer intentions. It is important to note that in the case of the employer sponsored PHR in this study, employees were not consulted to
get an understanding of the requirements for a PHR or the need or desire for a PHR in the workplace. Trust issues were prevalent as indicated by the responses. It would be an interesting follow-on research project to assess acceptance and diffusion of a PHR across end-users in an environment where employees were first engaged. In that type of scenario, the diffusion of the PHR technology across the organization may be realized, more appreciated, and could lead to a successful implementation and usage as seen with other technologies [16]. Employers that acknowledge the need for this type of partnership realize greater returns as their employees embrace and use the PHR to manage their health and wellness [16, 18].

10. Acknowledgments

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11. References


