Technology Adoption Model-Based Comparison of Clinical Trial Software:
A Case Study Using Jeeva and REDCap

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ABSTRACT

Clinical research management systems are mainly used by both pharmaceutical companies and biotechnology companies to manage the clinical trial process from start to finish. Due to the very nature and complexity of the clinical research process, having a system that is easy to use and understand as well as navigate will ensure that the whole process is streamlined, with very few bottlenecks and limitations. In this work, the authors examined the use of two different clinical research systems, JEEVA and REDCAP, with the aim of understanding users' intentions and behavior towards the use of both systems. The authors used the original technology adoption model (TAM) on the perceived usefulness, perceived ease of use, usage behavior (attitude towards using), intention to use, to determine the extent of the user's acceptance of the JEEVA and REDCAP technology tools. The authors' current data analysis of the survey was collected, and findings show that JEEVA fares well compared to REDCAP. The authors also share feedback from users on their perception of the usefulness of both systems and improvement areas.

KEYWORDS

Clinical Research, Clinical Trials, TAM, Technology Acceptance Model, Technology Adoption Model

1. INTRODUCTION

As with any new software, in addition to having usability and functionality features being user-friendly is very important (Choi et al., 2005). Any software that is not user-friendly leads to low software

DOI: 10.4018/IJARPHM.315803 *Corresponding Author

adoption rates and pushbacks. This can be a major issue, as it results in slow productivity, frustration, and in some instances sabotage by the users.

Clinical trials have inherent limitations that software like Jeeva and RedCap are deemed to lessen. For biopharma clinical trials, patient recruitment provides the biggest hurdle. The PhRMA report (2018) states that in most clinical trials, 97% of eligible patients choose not to enroll at all, and 25% report that the travel burden makes it impossible for them to enroll. Further, 85% of clinical trials experience patient drop-out, with an average dropout rate of 30%. To minimize the travel burden, clinical trial software offers a decentralized study design with remote screening for eligibility, consent between participants and staff, and real-time communication and data collection (Harsha & Brown, 2021).

Initiating and seeing a clinical trial to the end is such a complex process that each clinical trial requires multiple software tools and has its own unique protocols. The initial phase of Clinical trials is generally frustrating characterized by repetitive manual configurations, and software and tool training. According to a Pharma report (2018), the cost of developing just one therapy exceeds $2.5 billion lasting over 10-15 years. Organization, therefore, wanta well-researched software that can provide all the features including a range of web technology, and still reduce bottlenecks that affect most trials. JEEVA provides an integrated solution by ensuring that the user end site has a strong user interface.

The main purpose of this work is to compare both systems and based on the user survey/ questionnaire recommend ways to improve the user adaptability of JEEVA as a tool/software for clinical study and research, and as a tool for collecting data. With other clinical study solutions, one of the questions to ask is what makes JEEVA different from other software solutions. This paper will be extracting information from both previous and ongoing clinical trials, as well as conducting a comparative analysis of both Jeeva and REDCap sites. We will also use e-consent forms to send participant surveys to patients and utilize similar metrics and features in both sites to make the comparison. By responding to a series of questions based on perceived ease of use for both JEEVA and REDCap, the work centered on understanding how consumers will adapt to a new technology. We compare REDCAP features and interfaces with JEEVA in addition to analyzing various workflow processes in both sites. We'll utilize the TAM Model and surveys with a sample population that ask respondents a series of questions as our solutions. The study of these questions will reveal which system the consumers prefer between the two. We'll identify and analyze features in both systems that can be used to complete workflow processes. Furthermore, By comparing JEEVA and REDCap, we will determine what factors affect users' preference for one system over the other. With the current COVID-19 pandemic and the need for limited travel, we identify how JEEVA can be a solution for easier interaction and better user experience.

Research questions we seek to answer in this paper include (i) what is the ease of finding information and directive on the website?, (ii) what are the guidelines that can be added to JEEVA sites?, (iii) is there a step-by-step directive that can improve the availability of information for easy and effective use?, and (iv) how do users perceive the Jeeva system?

Participant surveys using e-consent forms are used to determine how users perceive and interact with the systems. The paper is organized as follows. Section 2 discusses the related works; Section 3 elaborates on the materials and methods employed in this paper. Section 4 discusses the result findings. Section 5 elaborates on the limitations of such a study and lastly, Section 6 draws the conclusion.

2. RELATED WORK

Clinical trial software is grounded in telemedicine tools and offers site-less trials that contribute to a reduction in trial costs, increased patient recruitment, and quality data (Harsha & Brown, 2021). This also has a direct impact on health outcomes. Clinical trials require a flexible tool that is easily accessible, offers a wide range of web-technology and security (Choi et al, 2005). Research that compares clinical trial software is very limited. Having an understanding in healthcare practices of technology and software are vital for software and providers to work jointly. Treasure-Jones et al.