Perceptions and people:
Factors associated with adoption of the Vocera Collaboration Suite

Thomas F. Byrd, MD[1], Jane S. Kim[1], Kevin J. O'Leary, MD, MS[1]
[1]Northwestern University Feinberg School of Medicine; Division of Hospital Medicine, Chicago, IL

What might the attendee be able to do after being in your session?

After visiting this poster, attendees will understand the factors that influence the adoption of new health information technology (HIT) within a hospital system. Specifically, attendees will see how clinicians' attitudes towards the Vocera mobile communication platform influence clinicians' intent to use it, which informs strategies to increase technology use in general.

Description of the Problem or Gap

Communication amongst healthcare providers is essential for quality care but remains challenging given high workloads and geographic dispersion of team members. Although pagers have traditionally been used to convey time-sensitive information, they require additional steps (opening portals, making phone calls) to make this happen. Native mobile messaging apps are not secure and thus discouraged as a means to convey patient information. Recognizing these limitations, several vendors (Vocera, Spok) now offer secure, smartphone-based mobile communication platforms.

Northwestern Medicine began a staged implementation of the Vocera Collaboration Suite (including text messaging and voice call functionality) across all health system sites in January 2019. Physician and Advanced Practice Provider (APP) use was optional, and the existing pager system was not changed. Though some physicians and APPs had downloaded the Vocera app, use was inconsistent. Therefore, we aimed to characterize users' beliefs toward this new communication platform to help refine our ongoing implementation strategy, and to inform future HIT implementations.

Methods: What did you do to address the problem or gap?

We created an electronic survey based on constructs from the Technology Acceptance Model (TAM), an established framework for studying the adoption and use of new technologies.(1) We hypothesized that perceived usefulness (is Vocera useful?) would positively influence use behavior (do I intend to use Vocera?) to a greater degree than perceived ease of use (is Vocera easy to use?). We also hypothesized that perceived critical mass (do most of my colleagues use Vocera?) and personal IT innovation (do I like technology?) would positively influence use behavior. We distributed our survey to all physicians and APPs practicing within the six largest hospitals in our system on November 11th, 2019 (n = 6,232). Here, we present the first 10-days' worth of responses (n = 505 completed surveys among those who had downloaded the Vocera app).

Discussion of Results

We applied structural equation modeling to our survey data, revealing the influential relationships shown in Figure 1. Coefficients are standardized with 0 representing no relationship and 1 representing complete correlation. Consistent with the TAM framework, we show a large influence of perceived usefulness on use behavior (0.71, 95% CI 0.66 to 0.76), with usefulness being primarily driven by perceived ease of use (0.58, 95% CI 0.49 to 0.68). Perceived critical mass influences use behavior (0.47, 95% CI 0.37 to 0.57) while personal IT innovation does not (0.10, 95% CI -0.01 to 0.21).
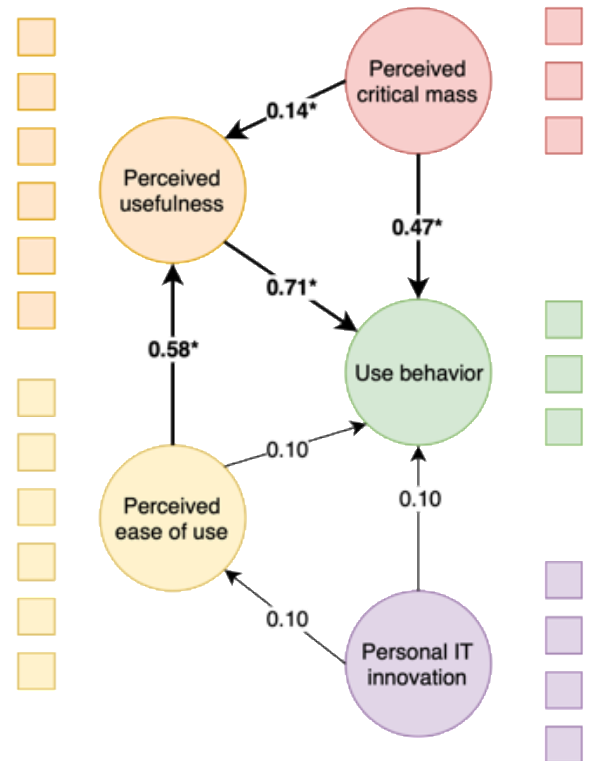

Figure 1. Standardized strengths of relationships between TAM constructs. Small boxes represent individual survey questions defining latent variables (circles). Bold (*) relationships are significant at $p < 0.05$.

Conclusion

Overall, we have shown that clinicians who feel Vocera is useful and is used by most of their colleagues are more likely to intend to use Vocera. From these insights, we envision that targeted interventions like a utility training video and a robust communication policy could be developed to increase adoption. Given the generalizability of these TAM constructs, similar methods to those described here could be used to tailor other HIT implementations to a diverse range of healthcare settings.

Attendee's Take-away Tool

Healthcare professionals only want to use a communication tool if it seems useful and also is used by most of their colleagues. Emphasizing these perceptions is critical to designing successful HIT implementations.

References

1. Davis FD. Perceived Usefulness, Perceived Ease of Use, and User Acceptance of Information Technology. MIS Q. 1989;13(3):319–40.