

### **Project Title**

Tech-savvy technophiles?: Comparing hospital nurses' attitudes towards electronic medical record systems by their technological savviness

### **Project Lead and Members**

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Project members: Jessica Tan, George Glass, Dr. Chan Ee Yuee

### **Organisation(s) Involved**

Tan Tock Seng Hospital, Alice Lee Centre for Nursing Studies, National University of Singapore

### **Healthcare Family Group Involved in this Project**

Nursing

### **Specialty or Discipline**

Nursing Research

### **Project Period**

Start date: February 2021

Completed date: April 2021

### **Aims**

To understand how nurses' technological savviness affects their attitudes towards electronic medical records (EMR).

### **Background**

See poster appended/ below

### **Methods**

See poster appended/ below

## Results

See poster appended/ below

## Lessons Learnt

On an individual level, less savvy nurses are still equally positive towards technology adoption. On an organizational level, this is good as it limits the need for specific change management towards the less savvy nurses on adopting new technologies. In current literature, computer anxiety and lack of digital skills might affect nurses' initial perceptions of technology.

In our study, the participants already had at least 6 months of experience working with the EMR and this will create familiarity and allay computer anxiety among the less savvy nurses. As such, their attitudes and acceptance towards the technology might be comparable with that of tech-savvy nurses.

## Conclusion

See poster appended/ below

## Additional Information

Singapore Health & Biomedical Congress (SHBC) 2021 Best Poster Award (Nursing) - Gold

## Project Category

Applied/ Translational Research, Quantitative Research

## Keywords

Attitudes, Electronic Medical Records, Technology, Survey

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# Tech-savvy technophiles?: Comparing hospital nurses' attitudes towards electronic medical record systems by their technological savviness

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## Background

Widespread end-user acceptance of workplace technologies is critical for their effective adoption<sup>1</sup>. Tech-savvy workers are typically more amenable to adopting new workplace technology<sup>2</sup>. Increasing reliance on technology in healthcare necessitates tech-savviness among healthcare workers<sup>3</sup>. As the largest end-user base of hospital electronic medical record (EMR), nurses' tech-savviness and attitudes could affect its ease of adoption<sup>3,4</sup>. This is the first local study to identify if approaches towards EMR's adoption need to be adapted to nurses' tech-savviness.

## Aim & Hypothesis

### Aim:

To understand how nurses' tech-savviness affects their attitudes towards EMR.

### Hypothesis:

Tech-savvy nurses would have more positive attitudes towards EMR than their less-savvy counterparts.

## Methods

**Study design & Setting:** Cross-sectional survey in a local tertiary hospital

**Eligibility:** Nurses with at least 6 months of working experience with EMR.

### Data collection:

- From February to April 2021, all eligible nurses were surveyed on their self-reported tech-savviness from a scale of 1 to 5, with a higher score indicating greater savviness. We grouped nurses who answered 1 to 3 as "less-savvy", and 4 or 5 as "tech-savvy".
- Their attitudes towards the current EMR were measured using 23 items adapted from UTAUT. Items were scored on a likert scale (1 to 5), with a higher score indicating greater positivity.

### Data analysis:

Independent samples Welch's t-test was used to compare the mean difference (MD) in UTAUT scores between tech-savvy and less-savvy nurses.

## Unified Theory of Acceptance and Use of Technology (UTAUT)

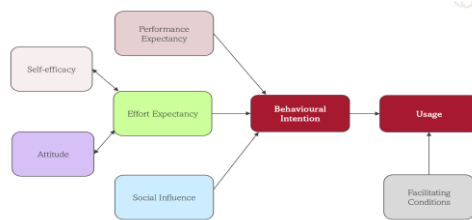


Figure 1. Predictors of behavioural intention and usage of technology<sup>1</sup>

Table 1. Examples of UTAUT items

UTAUT domains	Items
Performance expectancy (PE)	Using the EMR enables me to finish tasks more quickly.
Effort expectancy (EE)	I find the EMR easy to use.
Social influence (SI)	In general, the organisation has supported the use of the EMR.
Attitude (ATT)	I like working with the EMR.
Facilitating conditions (FC)	I have the resources necessary to use the EMR.
Self efficacy (SE)	I could complete a task using the EMR, if there was no one around to guide me.
Behavioural intention (BI)	If I have a choice, I will still use the EMR.

## Results

1,152 nurses responded. Demographics were largely similar between tech-savvy (n=692) and less-savvy nurses (n=490).

Table 2. Demographics of participants (N=1152)

	n (%)	
	Tech-savvy (n=692)	Less-savvy (n=460)
<b>Age (years)</b>		
21-40	577 (83.4%)	323 (70.2%)
41-50	82 (11.8%)	92 (20.0%)
>50	33 (4.8%)	45 (9.8%)
<b>Education</b>		
Nitec/Higher Nitec	32 (4.6%)	36 (7.8%)
Diploma	214 (30.9%)	161 (35.0%)
Bachelor/Degree & above	446 (64.5%)	263 (57.2%)

Tech-savvy nurses reported higher mean UTAUT scores across all domains (MD=0.15-0.31, p<.001), but the magnitude was **too small** to be meaningful.

Table 3. Mean differences in UTAUT domains scores between tech-savvy and less-savvy nurses

	Tech-savvy Mean (SD)	Less-savvy Mean (SD)	MD (95% CI)	p-value
PE (3 items)	3.73 (0.68)	3.42 (0.63)	0.31 (0.23 - 0.39)	< .001
EE (5 items)	3.84 (0.58)	3.56 (0.58)	0.27 (0.20 - 0.34)	< .001
SI (3 items)	3.73 (0.58)	3.53 (0.57)	0.20 (0.13 - 0.26)	< .001
ATT (4 items)	3.57 (0.55)	3.36 (0.51)	0.20 (0.14 - 0.27)	< .001
FC (3 items)	3.73 (0.55)	3.49 (0.55)	0.24 (0.17 - 0.30)	< .001
SE (4 items)	3.70 (0.57)	3.50 (0.53)	0.20 (0.13 - 0.26)	< .001
BI	3.65 (0.77)	3.51 (0.73)	0.15 (0.06 - 0.23)	0.001

PE: Performance Expectancy; EE: Effort Expectancy; ATT: Attitude; SI: Social Influence; FC: Facilitating Conditions; SE: Self-efficacy; BI: Behavioural Intention

## Discussion & Conclusion

Despite reporting higher mean UTAUT scores for tech-savvy nurses, the magnitudes were **too small** to reflect a meaningful difference in attitudes. This suggests that less-savvy nurses are still equally positive towards the adoption of technology. Hence reducing the need for specific change management for them to adopt new technologies.

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