

## Motivation of Community Pharmacies to Use Biometric Authentication

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### Overview

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The purpose of this study explored and analyzed the experiences and perspectives of the community pharmacists who were familiar with biometric authenticators in a pharmacy setting and those who were not, to answer the question, "Why do community pharmacists use traditional authentication systems rather than biometric systems?" Understanding the pharmacists' thoughts, influences, decisions, and attitudes of using biometric systems identified possible themes that developed a framework.

### Research Questions

- How did community pharmacists describe their experience using passwords and physical objects as authenticators within a pharmacy?
- How did community pharmacists describe their decision to implement an authenticator within a pharmacy?
- How did community pharmacists describe their experience using a biometric system authenticator within a pharmacy?
- How did a biometric system change these pharmacists' lives?

### Framework and Methodology

#### Research Sites

- Community pharmacies
  - Chained pharmacies
  - Independent pharmacies

#### Research Participants

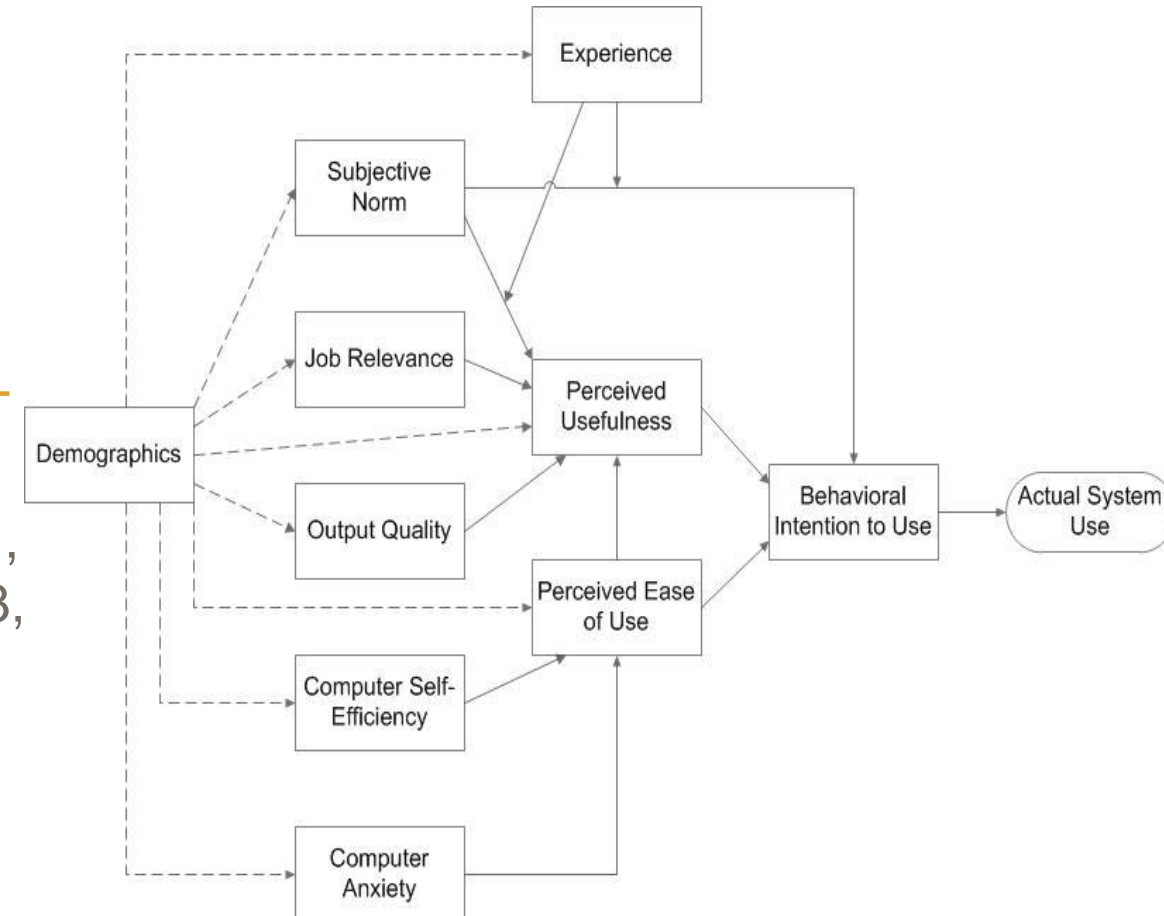
- Licensed community pharmacists
- Registered pharmacists who possesses either a Pharm.D. degree or bachelor degree
- Pharmacy positions
  - First year licensed residents
  - Second year licensed residents
  - Temporary employed
  - Full time employed
  - Administrating pharmacists (e.g. supervisor, manager, owner, chief of pharmacy)

#### Authenticators

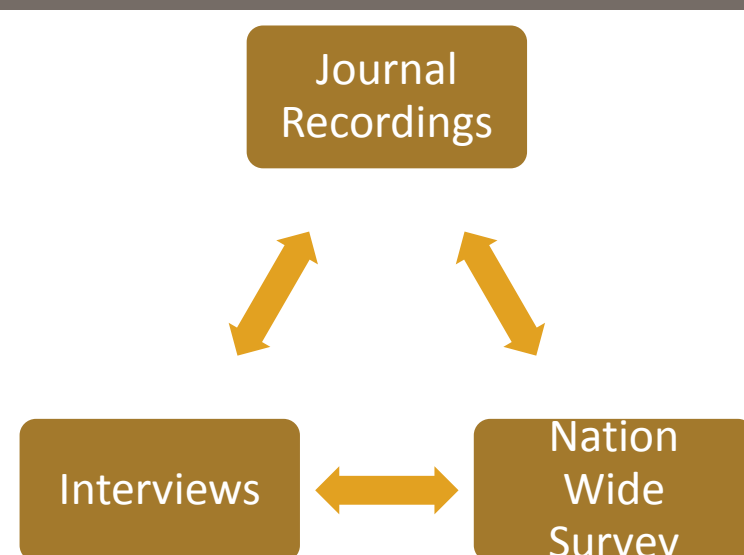
- Biometric system
- Password system
- Physical object system (e.g., ID-card, smart card, USB drive, keys, so forth)

#### Interview and Survey Proposed Model

- Adopted TAM2 (Venkatesh & Davis, 2000, p. 197)
- Adopted UTAUT (Venkatesh, Morris, Davis G., & Davis F., 2003, p. 447) models



#### Data Collection Triangulation



### Data and Analysis Interview

#### Password Issue Themes

Major Themes	Sub Themes	Participants
Password rules issues	Frequently changing	P01 P04 P05 P06 P10
	Complex rules	P04 P05 P06 P10
	Can't use same password	P01 P04 P10
Memorability problems	Remembering	P04 P05 P06 P10
	Many passwords to remember	P06 P08
	Not using a password for a long time	P01 P03
Operational concerns	Typing password issues	P04 P07 P10
	Technical support issues	P04 P10
	Passwords are easily obtainable	P05

#### Physical Object Issue Themes

Major Themes	Sub Themes	Participants
Security vulnerabilities	Lost	P04
	Stolen	P04
	Forged	P09
	Identity theft	P09
	Fallen off	P10
Memorability issues	Remembering	P05 P10
Operational concerns	Convenience	P09

#### AGAINST Biometric Themes

Major Themes	Sub Themes	Participants	Major Themes	Sub Themes	Participants
Social implications	Biometric systems are invasive	P07 P08 P09	Pharmacy irrelevance	Small pharmacy	P01 P04 P07 P08
	Physical objects are not invasive	P08		Traditional authenticators adequate in pharmacy	P03 P07 P08 P10
Operational concerns	Lack of convenience	P02 P06 P07	Lack of awareness and exposure	Not a huge need for biometric systems	P07
	Pharmacist's performance issues	P04 P07		Lack of pharmacy awareness	P01 P02 P03 P04 P07 P08 P09
	Cost	P05 P10		Not enough public knowledge	P01 P02 P10
	Biometric data is not secure	P08 P09		Not enough pharmacy knowledge	P01
	Ease of use	P09			

#### FOR Biometric Themes

Major Themes	Sub Themes	Participants	Major Themes	Sub Themes	Participants
Access control	Access computers	P01 P02 P04 P05 P06 P07 P09 P10	Operation	Ease of use	P02 P04 P06 P07 P09 P10
	Access inventory	P02 P03 P05 P06 P08 P09		Convenient	P02 P04 P06 P09 P10
	Access sensitive information	P05 P06 P09		Fast	P02 P06 P07 P10
	Access software	P04 P10		Can't forget identifier	P01 P06 P10
	Access pharmacy	P08 P10		Secure	P02 P09 P10
	Access certain rooms	P05			
Pedigree	Accountability	P01 P02 P03 P05 P08 P09	Pharmacy relevance	Can't lose identifier	P01
	Tracking	P03 P04 P05 P06 P07 P08		Large pharmacies	P02 P04 P07 P08 P10
Prescription security	Filling prescription	P01 P02 P04 P07 P09	Representation	High foot traffic	P04
	Authenticate prescription	P02 P03 P08 P10		Claim of identity	P04 P06 P07 P09
	Authenticate authorized person	P03	Identification	P03 P09	
	Drug diversion	P04			

### Data and Analysis Survey

- 35 Community pharmacists participated
- 33 pharmacists used password systems in their pharmacy
- 6 pharmacists used biometric systems in their pharmacy
- 6 pharmacists used physical object systems in their pharmacy

#### Password and Biometric Question Response Comparison Themes

Rank	System	Theme: Control	System	Theme: Ease of use
2	Biometric	Granted me access that I should have obtained	Password	I am knowledgeable
3		Assists important components of my work		Granted me access that I should have obtained
4		Resistant to unauthorized access		Able to use WITH NO assistance
5		I am knowledgeable		Operating is simple

#### Password System Model (Unauthorized Access)

Parameter	DF	Estimate	Standard Error	t Value
Intercept	1	4.909606	0.661676	7.42
Type_Employed Rural	1	-1.650064	0.528206	-3.12
Type_Employed Urban	0	0		
Years_Experience	1	0.048106	0.023607	2.04

#### Password System Model (Unhygienic)

Parameter	DF	Estimate	Standard Error	t Value
Intercept	1	5.166667	0.500597	10.32
Education Graduate	1	-1.500000	0.742505	-2.02
Education Undergraduate	0	0		

#### Password System Model (Misidentification)

Parameter	DF	Estimate	Standard Error	t Value
Intercept	1	5.933333	0.401431	14.78
Type_Employed Rural	1	-1.600000	0.543540	-2.94
Type_Employed Urban	0	0		

#### Password System Model (Knowledgeable)

Parameter	DF	Estimate	Standard Error	t Value
Intercept	1	-0.041667	0.666667	0.547619
Security_Decision I do not know				
Security_Decision I do know				
Security_Decision IT security department				
Security_Decision Owner				

#### Password System Correlation Matrix

Strength	Question #	Variable	Question #	Variable	R	Pr > F
High > 0.70	32	Productivity	33	Performance	0.8610	<.0001
	31	Work Components	32	Productivity	0.6911	<.0001
	17	Unauthorized Access	18	Misidentification	0.6769	<.0001
Medium 0.70-0.50	29	Operating Convenience	30	Operating Simplicity	0.6527	<.0001
	29	Operating Convenience	31	Work Components	0.6043	0.0002
	31	Work Components	33	Performance	0.5987	0.0002
	29	Operating Convenience	32	Productivity	0.5636	0.0006
	20	Fraud	21	Theft	0.5307	0.0015
	29	Operating Convenience	33	Performance	0.5157	0.0021