

APPENDIX I: Initial Experiment: Questionnaire

A Questionnaire in the adoption and acceptance of Biometric authentication system in Saudi Arabia

Dear Sir/Madam

I am a research student, conducting a questioner on the adoption and acceptance of Biometric authentication system in Saudi Arabia.

I would very much appreciate if you could help me by completing this short questionnaire. Please note that this research is purely for academic purposes. Your responses are also confidential as no information that identifies you will be asked in this questionnaire.

This questionnaire takes about 30 minutes to complete!

Kind Regards!

Part 1: Personal Profile

1) Gender

- Male Female

2) Age

- Under 18, 18 to 25, 26 to 35 36 to 50, Over 50

3) Education Level

- Pre secondary Secondary Undergraduate Postgraduate

Part 2: Attitudes and views

4) In average, how many hours you spend on the Internet every week?

- 0-5hr 6-10hr 11-20hr 21-30hr 31+hr

5) What are your connections types?

- Dial-Up DSL/256 DSL/512 DSL/1 MB or higher Satellite

6) Which online services vendors you trust?

- Local vendors Western vendors No special preference

7) Depending on the language used, what are the most preferred web sites?

- Arabic web sites English web sites Dual language websites

8) How many times do you use online banking, e-transaction or online shopping monthly?

- 0-5 6-10 11-20 21-30 31+

From question 9 to 22, please assign a number from 1 to 5 for each question as appropriate where [1] strongly agree, [2] agree, [3] in between, [4] disagree, [5] strongly disagree.

Part 3: Familiarity with the concept of Biometric

9) Are you familiar with the concept of Biometrics?

1 2 3 4 5

10) Are you comfortable of use and registration of your Biometric Information?

1 2 3 4 5

11) Do you believe it will be acceptable to demand registration of Biometric data for authentication in such a system?

1 2 3 4 5

12) When it comes to simplicity, Biometric authentication will be easy to use comparing to traditional authentication?

1 2 3 4 5

13) When it comes to security, Biometric authentication will be secure comparing to traditional authentication?

1 2 3 4 5

14) Do you believe biometric devices offer more security than traditional authentication User ID/passwords?

1 2 3 4 5

15) Are you aware about interacting with biometric devices on a daily basis?

1 2 3 4 5

16) Would you prefer to use the following Biometrics authentication methods?

a) Fingerprint verification

1 2 3 4 5

b) Face recognition

1 2 3 4 5

- c) Voice recognition
 1 2 3 4 5
- d) Retinal scanning
 1 2 3 4 5
- e) Iris scanning
 1 2 3 4 5
- f) Signature verification
 1 2 3 4 5

17) Do you think Biometrics verification method will improve e-transaction security?

- 1 2 3 4 5

18) Would you be enthusiastic to use a Biometric device such a fingerprint sensor on an everyday basis?

- 1 2 3 4 5

19) In case of implementing a Biometric system, are you willing to buy a biometric device?

- 1 2 3 4 5

20) To what degree each of these items will delay deployment of Biometric authentication in Saudi society?

a) Lack of appropriate legislation and regulation

- 1 2 3 4 5

b) Lagging of Telecommunications

- 1 2 3 4 5

c) Security and privacy reservations

- 1 2 3 4 5

d) Biometrics devices and software cost

- 1 2 3 4 5

e) Cultural influence

1 2 3 4 5

f) Low intention to use Biometrics and inflexible resistance to change

1 2 3 4 5

21) In the case of implementing Biometric authentication, how beneficially it will be for you and Saudi society?

a) Security and confidentiality of e-transaction

1 2 3 4 5

b) Increase of e-transaction process

1 2 3 4 5

c) Protect against any anticipated threats

1 2 3 4 5

d) Reduce of password management cost

1 2 3 4 5

22) Totally, do you think Saudi society is ready to embrace Biometric authentication?

1 2 3 4 5

23) Do you have additional comments that you would like to add?

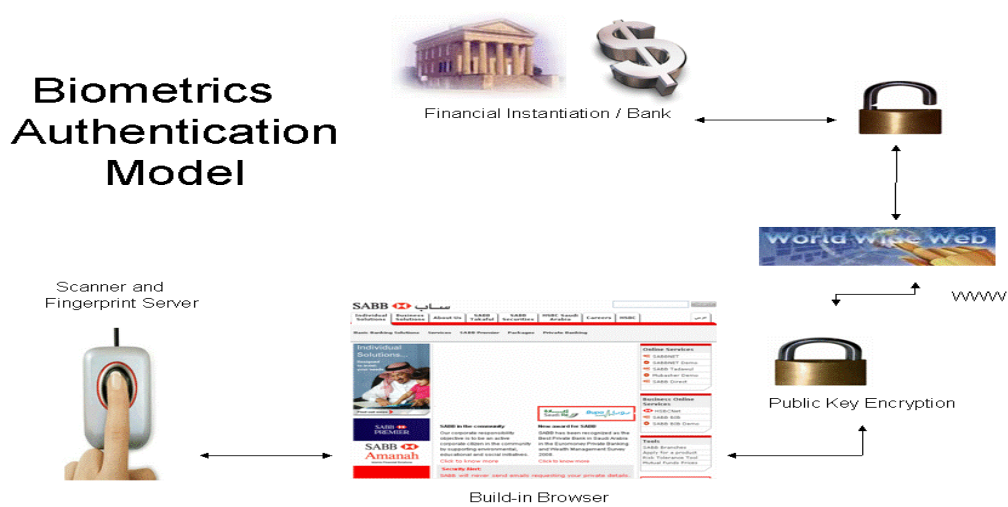
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Many Thanks,

An experiment of users' acceptance of Biometric authentication system in Saudi Arabia

The benefits of using a biometrics authentication system in e-commerce

- Less data vulnerability, no communication with computer before user identification.
- Data Security, upon user identification, there is no access to usernames and passwords.
- Accessibility, no input from user is required.
- Reduced virus effectiveness, browser is based in the hardware with no write access to it. As a result, viruses, worms and alike cannot be injected in there. Reduced phishing effectiveness, while these are not data input by user, harvesting information becomes ineffective.



Part 1: Personal Profile

A) Gender

- Male Female

B) Age

- Under 18) , 18 to 25, 26 to 35 36 to 50, Over 50

C) Education Level

- Pre secondary Secondary Undergraduate Postgraduate

D) Region

- The central region The West region The East region
 The South region The North region

E) Major

Part 2: Attitudes and views

1) In average, how many hours you spend on the Internet every week?

- 0-5hr 6-10hr 11-20hr 21-30hr 31+hr

2) What is your connections type?

- Dial-Up DSL/256 DSL/512 DSL/1 MB or higher Satellite

3) Which online services vendors you trust?

- Local vendors Western vendors No special preference

4) Depending on the language used, what are the most preferred web sites?

- Arabic web sites English web sites Dual language websites

4) How many times do you use online banking, e-transaction or online shopping monthly?

- 0-5 6-10 11-20 21-30 31+

please assign a number from 1 to 5 for each question as appropriate where [1] strongly agree, [2] agree, [3] Neutral, [4] disagree, [5] strongly disagree.

Part 3: Your Experience about the system

1- This Biometric Authentication System is a great idea.

1 2 3 4 5

2-This Biometric Authentication System would be fun to use.

1 2 3 4 5

3-This is the best way to improve the security in e-commerce.

1 2 3 4 5

4-Many people will use this system.

1 2 3 4 5

5-This system is here to stay.

1 2 3 4 5

6-This system fills a real need for me.

1 2 3 4 5

7-This login feature is a big improvement over existing methods in e-commerce

1 2 3 4 5

8-This system can give me real value.

1 2 3 4 5

9-This service feature is just another gimmick.

1 2 3 4 5

10-This system fills a need for many people.

1 2 3 4 5

11-Many people will believe that this system is worth the cost.

1 2 3 4 5

12-It is likely that this system will offer advantages to the customer.

1 2 3 4 5

13-The system is likely to perform well.

1 2 3 4 5

14-Assuming that I had access to this system, I intend to use it.

1 2 3 4

15-I will definitely try this system.

1 2 3 4 5

16-It is very likely that I will use this system.

1 2 3 4 5

17-Using the system in my job would enable me to accomplish tasks more quickly.

1 2 3 4 5

18-Using the system would enhance my effectiveness on the job.

1 2 3 4 5

19-Using the system would make it easier to do my job.

1 2 3 4 5

20-I would find the system useful in my job.

1 2 3 4 5

21-If I use the system; I will spend less time on routine job tasks.

1 2 3 4 5

22-Learning to operate the system is easy for me.

1 2 3 4 5

23-My interaction with the system would be clear and understandable.

1 2 3 4 5

24-I would find the system flexible to interact with.

1 2 3 4 5

25-It would be easy for me to become skilful at using the system.

1 2 3 4 5

26-I would find the system easy to use.

1 2 3 4 5

27-Using the system takes too much time from my normal duties.

1 2 3 4 5

28-Overall, I believe that the system is easy to use.

1 2 3 4 5

29-Using the system is a bad idea.

1 2 3 4 5

30-The system makes work more interesting.

1 2 3 4 5

31-Working with the system is fun.

1 2 3 4 5

32-I like working with the system.

1 2 3 4 5

33-People who influence my behaviour think that I should use the system.

1 2 3 4 5

34-People who are important to me think that I should use the system.

1 2 3 4 5

35-In general, the organization has supported the use of the system.

1 2 3 4 5

36-I have the resources necessary to use the system.

1 2 3 4 5

37-I have the knowledge necessary to use the system.

1 2 3 4 5

38-A specific person (or group) is available for assistance with system difficulties.

1 2 3 4 5

39-I intend to use the system in the next 12 months.

1 2 3 4 5

40-I predict I will use the system on a regular basis.

1 2 3 4 5

41-I plan to use the system in the next 12 months.

1 2 3 4 5

42-I feel apprehensive about using the system.

1 2 3 4 5

43-It scares me to think that I could lose a lot of information.

1 2 3 4 5

44-It scares me that hitting the wrong key.

1 2 3 4 5

45-I hesitate to use the system for fear of making mistakes I cannot correct.

1 2 3 4 5

46-The system is somewhat intimidating to me.

1 2 3 4 5

47-I could complete a job or task using the system :

-If there was no one around to tell me what to do as I go.

1 2 3 4 5

-If I could call someone for help if I got stuck.

1 2 3 4 5

-If I had a lot of time to complete the job for which the system was provided.

1 2 3 4 5

-If I had just the built-in help facility for assistance.

1 2 3 4 5

48-It's likely that the system will add value to the user

1 2 3 4 5

49-What are the chances in 100 that you will use the system?

1 2 3 4 5

(1) Zero; (2) 1–10%; (3) 11–30%; (4) 31–50%; (5) 51–70%; (6) 71–90%;

50-Do you have any comments?

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Kind Regards!

APPENDIX III: Experimental (Phase I & II): Sample Characteristics

Frequencies

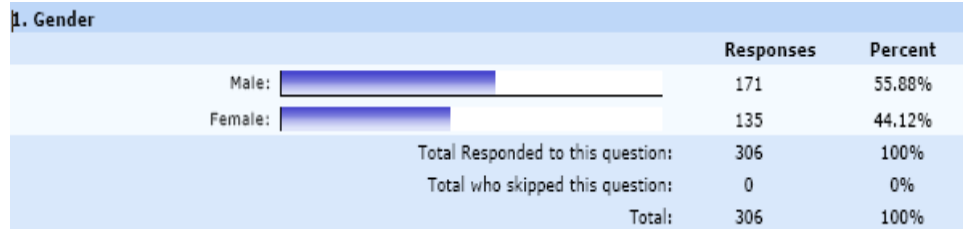
Statistics

		Gender	Age	Education_Level	Region
N	Valid	306	306	306	306
	Missing	0	0	0	0

Frequency Table

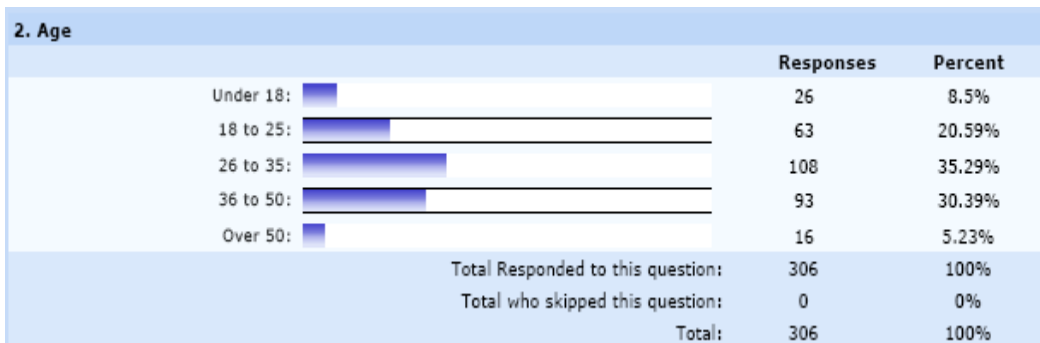
Gender

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Female	135	44.1	44.1	44.1
	Male	171	55.9	55.9	100.0
Total		306	100.0	100.0	



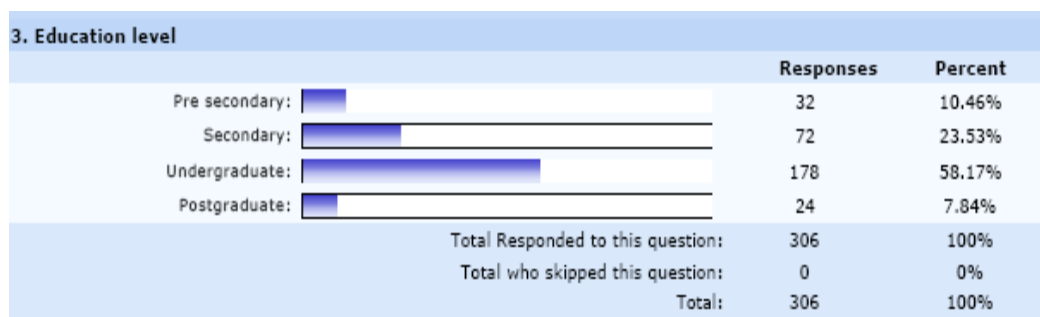
Age

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	18 to 25	63	20.6	20.6	20.6
	26 to 35	108	35.3	35.3	55.9
	36 to 50	93	30.4	30.4	86.3
	Over 50	16	5.2	5.2	91.5
	Under 18	26	8.5	8.5	100.0
	Total		306	100.0	100.0







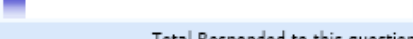
Education_Level

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Postgraduate	24	7.8	7.8	7.8
Pre secondary	32	10.5	10.5	18.3
Secondary	72	23.5	23.5	41.8
Undergraduate	178	58.2	58.2	100.0
Total	306	100.0	100.0	



Region

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Central region	168	54.9	54.9	54.9
East region	27	8.8	8.8	63.7
North region	15	4.9	4.9	68.6
South region	38	12.4	12.4	81.0
West region	58	19.0	19.0	100.0
Total	306	100.0	100.0	

4. Region			Responses	Percent
Central region:			168	54.9%
West region:			58	18.95%
East region:			27	8.82%
South region:			38	12.42%
North region:			15	4.9%
Total Responded to this question:			306	100%
Total who skipped this question:			0	0%
Total:			306	100%

Statistics

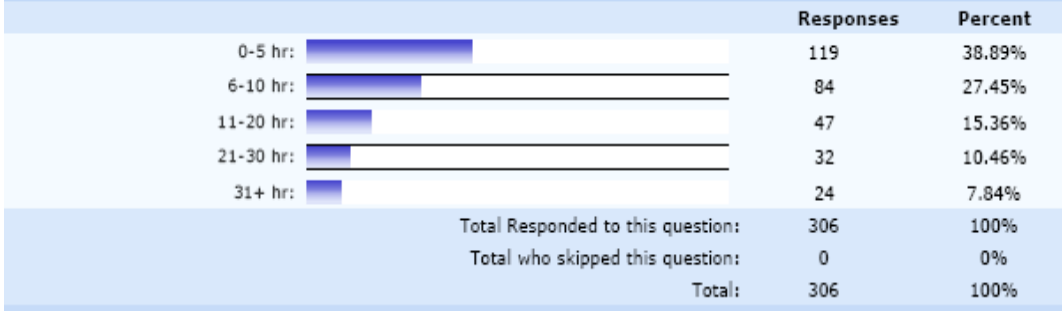
		6. In average, how many hours you spend on the Internet every week?	7. What is your connection type?	8. Which online service vendors you trust?	9. Depending on the language used, what are the most preferred web sites?	10. How many times do you use online banking, e-transaction or online shopping monthly?
N	Valid	306	306	306	306	306
	Missing	0	0	0	0	0

Frequency Table

6. In average, how many hours you spend on the Internet every week?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0-5 hr	119	38.9	38.9	38.9
	11-20 hr	47	15.4	15.4	54.2
	21-30 hr	32	10.5	10.5	64.7
	31+ hr	24	7.8	7.8	72.5
	6-10 hr	84	27.5	27.5	100.0
	Total	306	100.0	100.0	

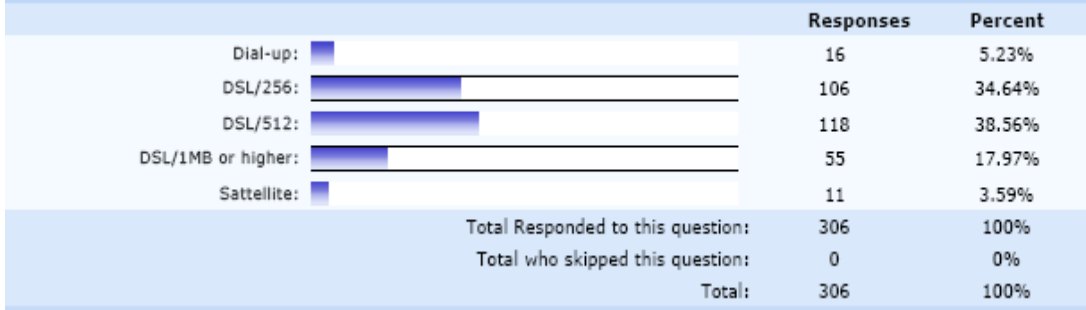
6. In average, how many hours you spend on the Internet every week?



7. What is your connection type?

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Dial-up	16	5.2	5.2	5.2
DSL/1MB or higher	55	18.0	18.0	23.2
DSL/256	106	34.6	34.6	57.8
DSL/512	118	38.6	38.6	96.4
Sattellite	11	3.6	3.6	100.0
Total	306	100.0	100.0	

7. What is your connection type?



8. Which online service vendors you trust?

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	.3	.3	.3
Local vendors	148	48.4	48.4	48.7
No special preference	125	40.8	40.8	89.5
Western vendors	32	10.5	10.5	100.0
Total	306	100.0	100.0	

8. Which online service vendors you trust?

	Responses	Percent
Local vendors:	148	48.52%
Westren vendors:	32	10.49%
No special preference:	125	40.98%
Total Responded to this question:		305 99.67%
Total who skipped this question:		1 0.33%
Total:		306 100%

9. Depending on the language used, what are the most preferred web sites?

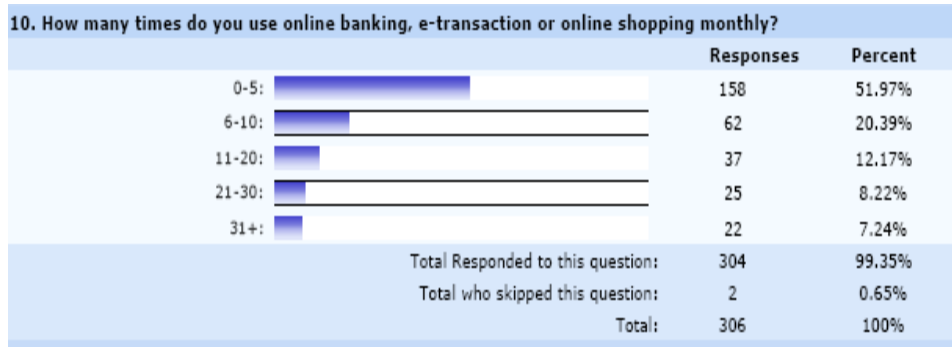
	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	.3	.3	.3
Arabic websites	134	43.8	43.8	44.1
Dual language websites	136	44.4	44.4	88.6
English websites	35	11.4	11.4	100.0
Total	306	100.0	100.0	

9. Depending on the language used, what are the most preferred web sites?

	Responses	Percent
Arabic websites:	134	43.93%
English websites:	35	11.48%
Dual language websites:	136	44.59%
Total Responded to this question:		305 99.67%
Total who skipped this question:		1 0.33%
Total:		306 100%

10. How many times do you use online banking, e-transaction or online shopping monthly?

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2	.7	.7	.7
0-5	158	51.6	51.6	52.3
11-20	37	12.1	12.1	64.4
21-30	25	8.2	8.2	72.5
31	22	7.2	7.2	79.7
6-10	62	20.3	20.3	100.0
Total	306	100.0	100.0	



APPENDIX IV: Main Experiment: SPSS analysis

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.735 ^a	.541	.536	.56439

a. Predictors: (Constant), SI, PU, ATU

Coefficients^a

Model		Unstandardised Coefficients		Standardised Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.084	.124		.675	.500
	ATU	.716	.068	.568	10.505	.000
	PU	.185	.052	.189	3.543	.000
	SI	.054	.041	.057	1.332	.184

a. Dependent Variable: BI

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.702 ^a	.493	.490	.46957

a. Predictors: (Constant), PEOU, PU

Coefficients^a

Model	Unstandardised Coefficients	Standardised Coefficients	t	Sig.
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		B	Std. Error	Beta		
1	(Constant)	.600	.093		6.442	.000
	PU	.437	.036	.564	11.994	.000
	PEOU	.202	.042	.225	4.782	.000

a. Dependent Variable: ATU

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.643 ^a	.414	.410	.65155

a. Predictors: (Constant), NPA, PEOU

Coefficients^a

Model		Unstandardised Coefficients		Standardised Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.493	.132		3.739	.000
	PEOU	.339	.057	.293	5.999	.000
	NPA	.494	.053	.459	9.406	.000

a. Dependent Variable: PU

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.435 ^a	.189	.186	.66107

a. Predictors: (Constant), NPA

Coefficients^a

Model		Unstandardised Coefficients		Standardised Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.315	.111		11.884	.000
	NPA	.404	.048	.435	8.416	.000

a. Dependent Variable: PEOU