

# **Does mobile payment technology Mnet attract potential consumers? The case of Kuwait**



**Dr Kamel Rouibah**

**Associate Professor of Information Systems**

**Department of Quantitative Methods and  
Information Systems**

**College of Business Administration**

Prepared for the 18<sup>th</sup> ACIS

Toowoomba, Australia, December 5 To 7, 2007

# Outline



⌘ Introduction

⌘ Research motivation

⌘ Theory and background

⌘ Research methodology

⌘ Results and conclusions

# Introduction

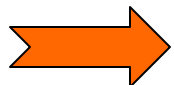


## ⌘ High number of mobile phone users world wide (25<sup>th</sup>/11/ 2007)

- ☒ 2 568 712 945 GSM
- ☒ Population: 6 574 666 417
- ☒ Mobile penetration: 39%
- ☒ Internet users: 1 244 449 601
- ☒ Internet penetration: 18.9%

## ⌘ High percentage of mobile phone penetration in Kuwait (2007)

- ☒ Number of mobile users: 2 millions
- ☒ Population: 2 730 603
- ☒ Mobile penetration: 73%
- ☒ Internet users: 816 700
- ☒ Internet penetration: 29%



Opportunities for mobile commerce and mobile payment

# Introduction (cont')

- ⌘ E-payment methods are well accepted in Kuwait
- ⌘ 2005: Number of electronic cards (ATM and credit cards): 1.3 million
- ⌘ June 2006: Number of electronic cards: 2.56 million
- ⌘ June 2007: Number of electronic cards: 2.78 millions
- ⌘ Increase rate between 2006 and 2007: 12%
- ⌘ Total amount of transactions performed by electronic cards = \$30.10 billions
- ⌘ Total amount of payment transactions= \$ 8.2 billions
- ⌘ Annual rate increase of e-payment: 40%
- ⌘ Amount of withdrawal transactions by ATM cards= \$21.9 billions
- ⌘ Annual rate increase of e-withdrawal : 27%

# Mobile payment

## ⌘ Mobile payments

- ☒ Are payments for goods, services, and bills/invoices with a mobile device by taking advantage of wireless and new communication technologies

## ⌘ Examples where m-payment can be used to purchase

- ☒ Small value physical products (e.g. fast food from a restaurant or coffee from starbucks)
- ☒ Ticketing (e.g. bus tickets)
- ☒ Others: Intangible services (e.g. Internet content, prepaid stored card)

## ⌘ Benefits of M-payment

- ☒ Enable users to perform their transaction independent of their locations
- ☒ Enable users to transform the mobile phone devices in payment systems
- ☒ Alternative to existing e-payment methods: e.g. credit cards, micro-payment systems, internet cards), peer-to-peer payment systems (e.g. [PayPal](#)), digital checking

# Importance of m-payment (Juniper Research 2007)



## ⌘ Total amount of M-commerce

☒ 2000: \$2 million

☒ 2005: \$ 69 billions

☒ 2009: \$ 88 billion.

## ⌘ Total amount of m-payment

☒ 2000: Less \$5 millions

☒ 2010: \$10 billions

# Research Motivation: Paradox of m-payment

- ⌘ **Previous research revealed contradictory results about m-payment**
- ⌘ German National M-Payment Roundtable (2004), showed that 49.6% of the German population is willing to accept m-payments
- ⌘ **Mallat et al., (2004)** ( Helsinki), 55% use m-payment for tram tickets and 10% for public transportation tickets
- ⌘ 66% of the respondents in **Khodawandi et al. (2003)** and 33% in **Eisenmann et al. (2004)** failed to see the benefits of m-payments
- ⌘ **Au and Kauffman (2007)** expect that mobile phones will become consumers' preferred choice for e-payments
- ⌘ **Dahlberg and Öörni (2007)** found m-payment is ranked the least used e-payment alternative after cash, on-line bank cards, credit cards, and Visa Electron.

# Research Motivation: Paradox of m-payment

- ⌘ Between 1990 and 2007s many e-payment services were introduced which were either successful or failure applications
- ⌘ Successful application: such as London city traffic tolls by SMS, Mnet (Kuwait), and other application (Finland), Japan (I-mode of DoCoMo), etc.
- ⌘ Failure applications: Most of the dozens of m-payment services available in EU countries and listed in the ePSO database in 2002 (Carat 2002) have been discontinued
- ⌘ Other failure applications: Paybox (Germany), the Simpay initiative (Europe)
- ⌘ [Dahlberg et al., \(2007\)](#) questioned why have Visa Electron and PayPal succeeded in where m-payment services failed **and suggest carrying more studies to understand factors that attract consumers**, merchants and banks
- ⌘ Two research stream on m-payment:
  - ⊞ **Focus on merchants:** [Dahlberg and Mallat \(2006\)](#), [Mallat and Tuunainen \(2005\)](#)
  - ⊞ **Focus on consumers:** [Dahlberg et al., \(2003\)](#), [Mallat \(2006\)](#), [Dahlberg and Öörni \(2007\)](#)

# Literature review

## ⌘ Khodawandi et al. (2003)

- ☒ **Objective:** What factors lead to use m-payment (**Germany**)
- ☒ **Theory based model:** Exploratory study
- ☒ **Quantitative research:** 4432 respondents
- ☒ **Result:** 33% would adopt m-payments to replace other payment instruments, one-sixth would use m-payments for micro-payment transactions because of **ease-of-use**, **short processing time**, **ubiquitous availability**, and the **emotional added value of the technology**.

## ⌘ Dahlberg et al., (2003)

- ☒ **Objective:** Discuss the effect of trust in m-payment (**Finland**)
- ☒ **Theory based model:** Technology Acceptance Model (TAM)
- ☒ **Qualitative research:** Two rounds of focus group interviews with 61 subjects,
- ☒ **Results:** TAM provides a good basis to explain use of m-payment solutions; **perceived usefulness** and **ease of use** (e.g. Freedom of time and space provided by mobility) were mentioned as factors to use m-payment in the interview. Additional factors related to **security** and **trust** were also mentioned.

# Literature review (cont')

## ⌘ Valcourt et al. (2005)

- ⊞ **Objective:** Explore advantages and disadvantages of youths interest in m-payment for a movie ticket purchase service (Canada).
- ⊞ **Theory based model:** Exploratory
- ⊞ **Quantitative research:** 130 youths
- ⊞ **Results:** 76% would use m-payment to buy movie tickets and 78% would use a service whereby their transactions would be charged on their mobile carrier bill.

## ⌘ Dahlberg and Öörni (2007)

- ⊞ **Objective:** How finish consumers intend to change two e-payment habits (m-payment and e-invoice) in the next 6 months and next five years
- ⊞ **Quantitative research:** 978 consumers between 18 and 65 years
- ⊞ **Theory based model:** TAM and IDT
- ⊞ **Results:** **Perceived ease of use** is the most common denominator for consumer adoption of the two technologies

# Literature review(cont')

## ⌘ Mallat (2006)

- ☒ **Objective:** Discuss benefits & barriers of consumers behavior to adopt m-payment (Finland)
- ☒ **Qualitative research:** 46 subject based on six group sessions
- ☒ **Theory based model:** Innovations Diffusion Theory
- ☒ **Results- *benefits of m-payment*:** Relative advantages (**Usefulness**) of m-payments include time and place independence, possibilities for remote purchases, and queue avoidance, m-payments complement small value cash payments.
- ☒ **Results- *barriers to m-payment*:** Premium pricing of payments, **complexity of payment procedures**, lack of widespread merchant acceptance, and perceived risks

# Summary of past studies



- ⌘ Past studies on m-payments used either quantitative or qualitative but none past study used a combined approach
- ⌘ There is no successful model adoption of m-payment system despite high investment (Mnet costs \$ millions in Kuwait)
- ⌘ Potential users may not be using m-payment system despite their availabilities
- ⌘ Most studies focused on m-payment in well developed countries compare to LDC and none study took place in the Arab region
- ⌘ Most past studies focused on subjects who were users of the technology, and seldom used well-know theories (e.g. including TAM or diffusion of innovations theory)
- ⌘ The effect of gender and user experience is unknown in m-payment adoption

# The research question



- ⌘ What factors affect intention to use *Mnet* in Kuwait?
- ⌘ Which external actors play more significant effect on Mnet in Kuwait (Trust or social norm or perceived enjoyment)?
- ⌘ Is there any difference in attitude based on gender and experience?

# What is Mnet (cont')?

- ⌘ Mnet is a new m-payment in Kuwait (start May 2005)
- ⌘ Kuwait is the 1<sup>st</sup> in the Middle East region implementing the M-payment
- ⌘ The M-Net consortium: the National Bank of Kuwait (*the only one that accepts Mnet*), MTC, Al-Shaya Group, and the Al Roudan International Group.



# What is Mnet (Cont') ?



- ⌘ Bridge between banks and customers
- ⌘ Pay remotely without your personal attendance at shopping sites
- ⌘ Easy to transfer money between phone of people
- ⌘ Easy to pay any time and any where
- ⌘ Many special offers and exclusive promotions

# What is Mnet (cont')?



**Wallet**  
Street shopping with your mobile phone



**Topup**  
Pay internet accounts and pre-paid phones



**Transfer**  
Send money via your phone, from your bank account to others



**Bill**  
Payment of traffic violations, phone bills, utility bills, E-Gov...  
(product under development)



**Delivery**  
Makes paying for delivery services incredibly easy



**charity**  
Payment of your charity & Zakat wirelessly  
(product under development)

# What is Mnet (cont')?



**You select to pay with M-Net. Enter your mobile phone number**

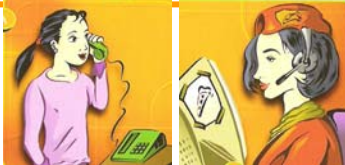


**2**

**M-Net calls you on your mobile phone. You authorize the payment by entering your M-Net PIN**



**1**



**M-Net debits your bank account and credits the money to the delivery service**



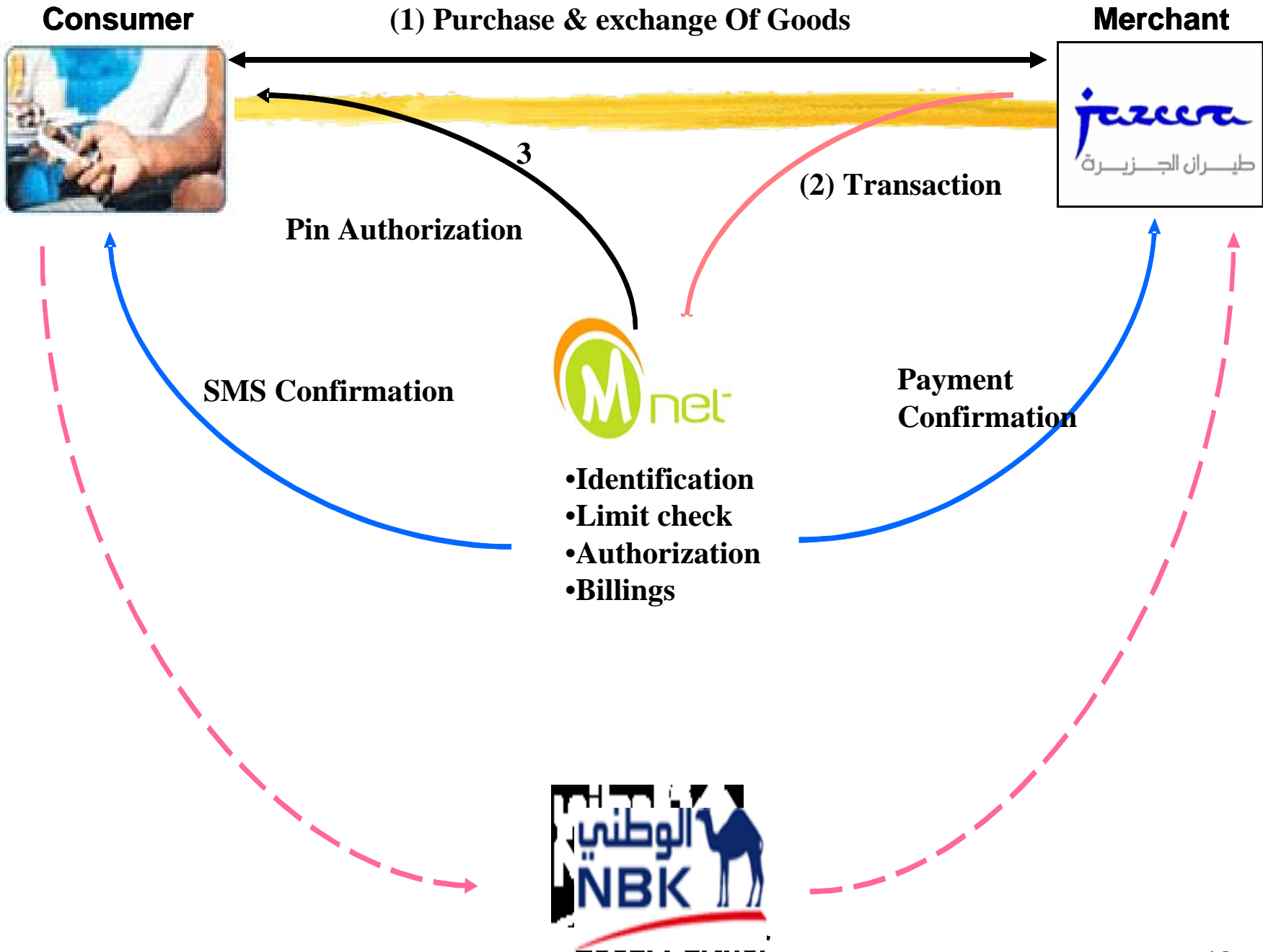
**4**



**3**

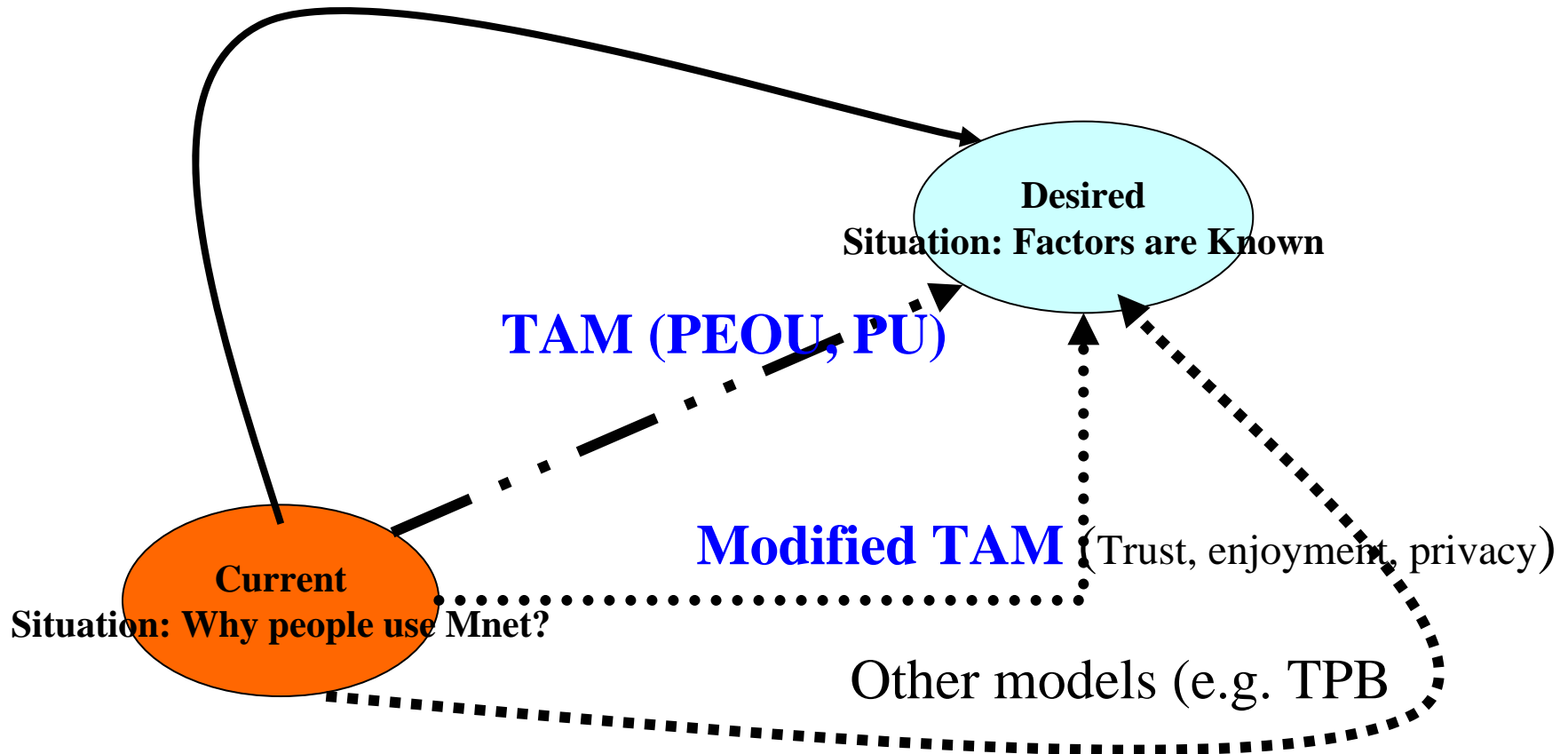
**You receive confirmation of payment immediately**





# Theory and Background (1)

**TRA (SN, ATT)**



# Theory and Background (2)



- ⌘ TAM is the most used model in the IS field and several variations were proposed
- ⌘ Constructs from original TAM 1: PU (similar to relative advantage in IDT), PEOU (similar to complexity in IDT)
- ⌘ Trust was included in TAM for online shopping ([Gefen et al., 2003](#))
- ⌘ Perceived enjoyment (originated from Uses and gratification research): mobile services ([Nysveen et al., 2005](#)), web sites ([der Heijden 2004](#))
- ⌘ Privacy from [Rouibah & Hasan \(2006\)](#)
- ⌘ Attitude was not included in TAM 2 ([Venkatesh and Davis 2000](#)) and unified theory ([Venkatesh et al., 2003](#))
- ⌘ Construct from TRA and TAM 2: Social Norm
- ⌘ Arab culture exhibits high enjoyment and high preference for face-to-face and high respect for social norms

# Theory and Background (3)



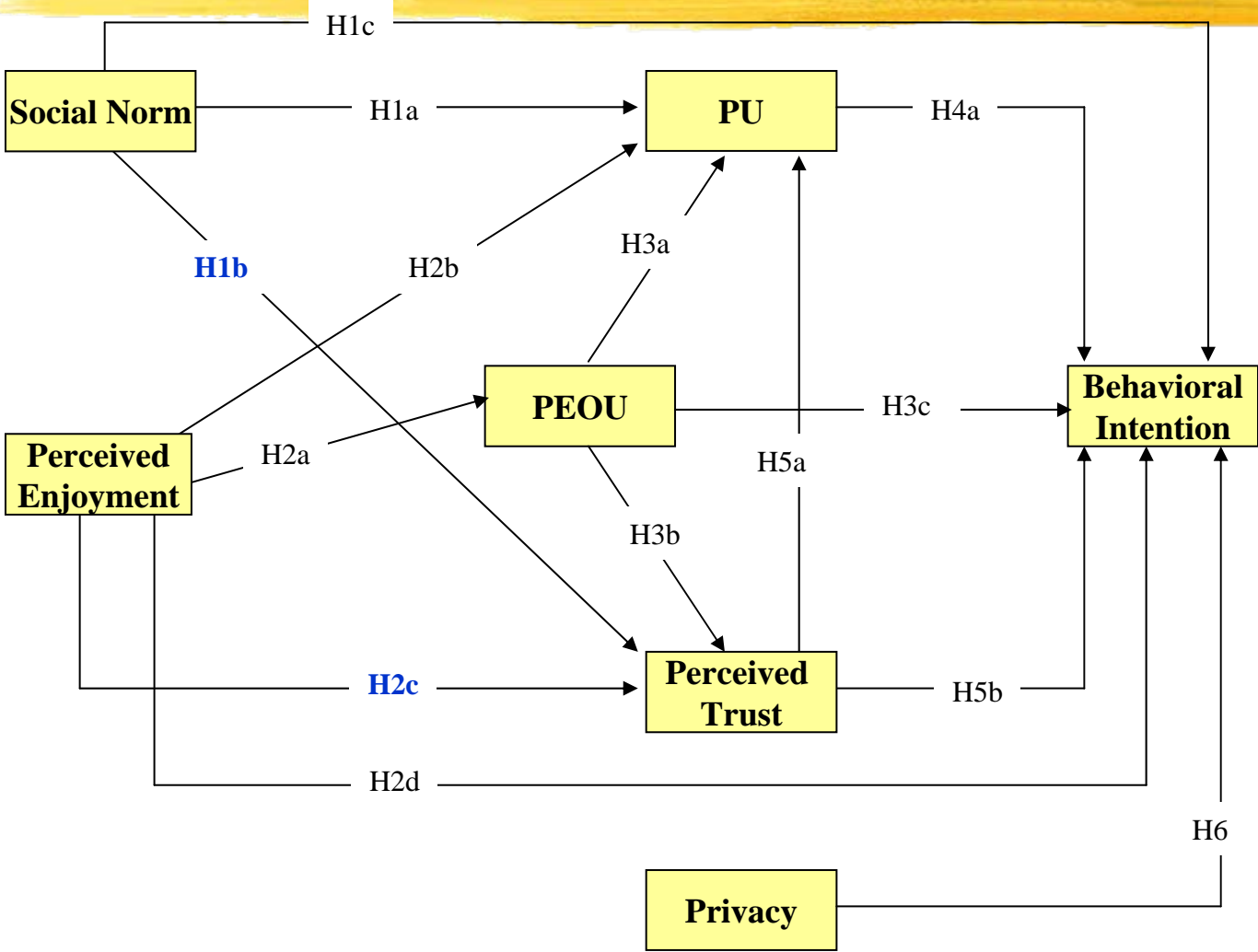
⌘ **Effect of subjective norm** is high on ICT acceptance

- ☒ The most important role on the internet usage in Egypt (Loch et al., 2003),
- ☒ The most important role on IM usage in Kuwait (Rouibah 2008)

⌘ **Effect of perceived enjoyment** is high on ICT acceptance

- ☒ The strongest effect on CMP usage in Kuwait (Rouibah Hasan 2006)
- ☒ The 2<sup>nd</sup> effect after social norm on IM usage in Kuwait (Rouibah 2008)

# Research model



# Research methodology



- ⌘ Qualitative and quantitative research
- ⌘ Identify a list (**List 1**) of driving variables to use Mnet based on Online search databases (ProQuest, ScienceDirect, etc.) based on keywords “mobile payment”, “m-payment”, and “wireless payment”
- ⌘ Identify main variables (**List 2**) that determine intention to use Mnet using brainstorming session with 20 students enrolled in an e-commerce and m-payment course
- ⌘ Comparison between list 1 and list 2 lead to selection of six variables

# Research methodology (cont')

- ⌘ Development of instrument and use of convenient sample
- ⌘ Subjects: Students enrolled in MIS course, after they had been introduced to e-commerce and e-payments.
- ⌘ Among 230 distributed questionnaires 175 were fully completed, and split into 2 groups.
- ⌘ ***Experienced users:*** 97 students who were initiated and introduced to Mnet with several life experience orders from different merchants with the presence of Mnet manager
- ⌘ ***None experienced users:*** 78 students who were just briefly introduced to Mnet without life demonstration and orders

# Sample description



- ⌘ 73 % of the respondents were female students
- ⌘ 98.2% are young (ages are less than 25)
- ⌘ 88.5% own a mobile phone
- ⌘ 68.5% use credit card payment system, the most used one
- ⌘ 58.9% use ATM card
- ⌘ 16% use Internet cards (prepaid) to purchase online
- ⌘ 11.5% use CashU, a stored value card
- ⌘ Very few (8.5%) use Mnet

# Research methodology/ **construct measurement**



## ⌘ **Perceived usefulness**

☒ 4 items from Davis (1989)

## ⌘ **Perceived Ease of Use**

☒ 4 item from Davis (1989)

## ⌘ **Perceived enjoyment**

☒ 3 items from Davis et al., (1992)

## ⌘ **Subjective norm**

☒ 3 items, 2 (effect of family and friends) from Taylor and Todd (1995), and a new item (effect of lecturer)

## ⌘ **Trust**

☒ 4 items from Gefen et al., (2003) and customized to fit the Mnet context

☒ These items are related to the trust of respondents in the bank “NBK”, with whom Mnet operates

# Research methodology/ **construct measurement**



## ⌘ **Perceived privacy**

☒ Two items from Rouibah and Hasan (2006)

## ⌘ **Behavioral intention**

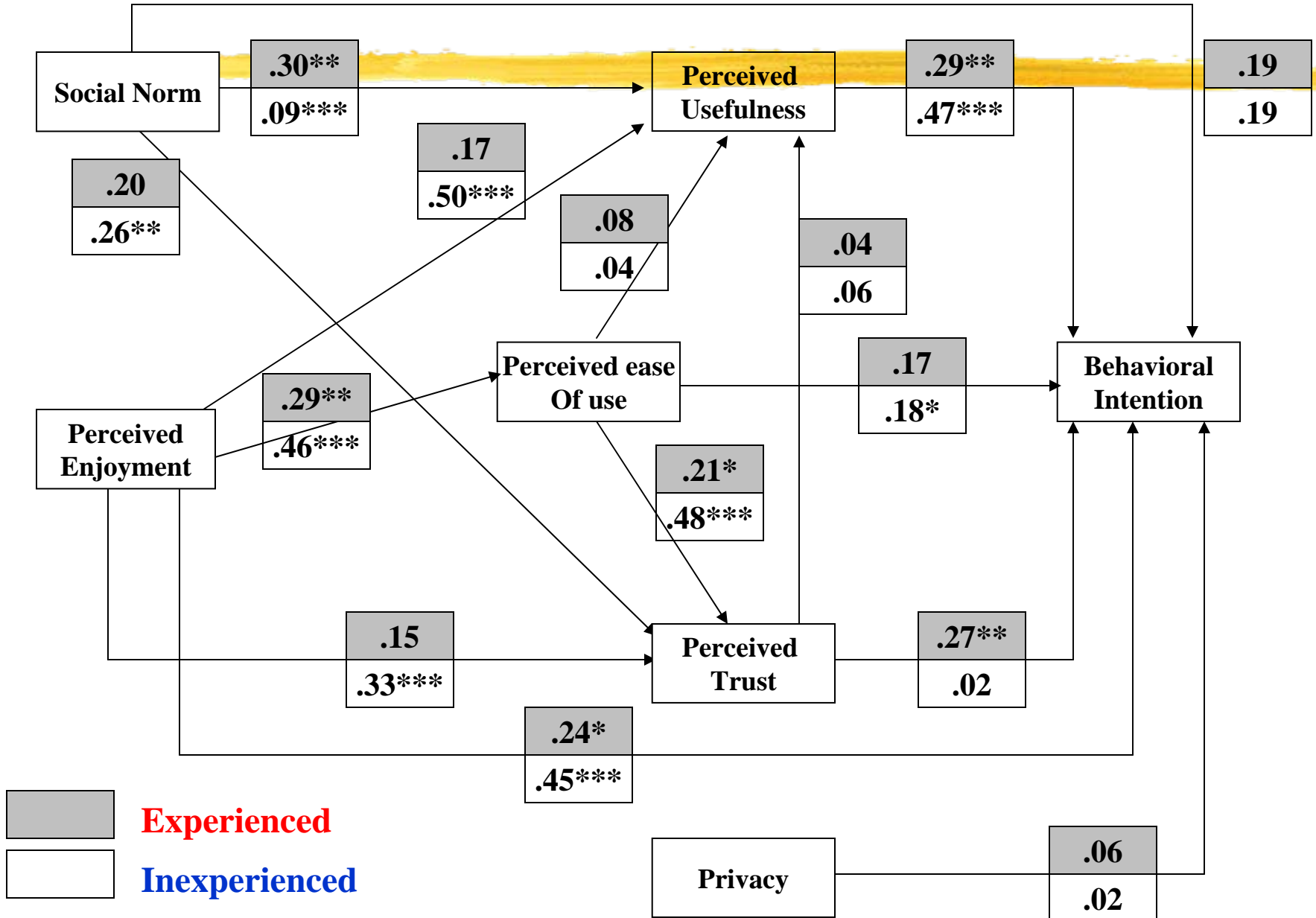
☒ Measured with 4 items: two items taken from TAM model (Venkatesh and Davis 2000) and two new ones

⌘ All constructs were measured using 5-point scales

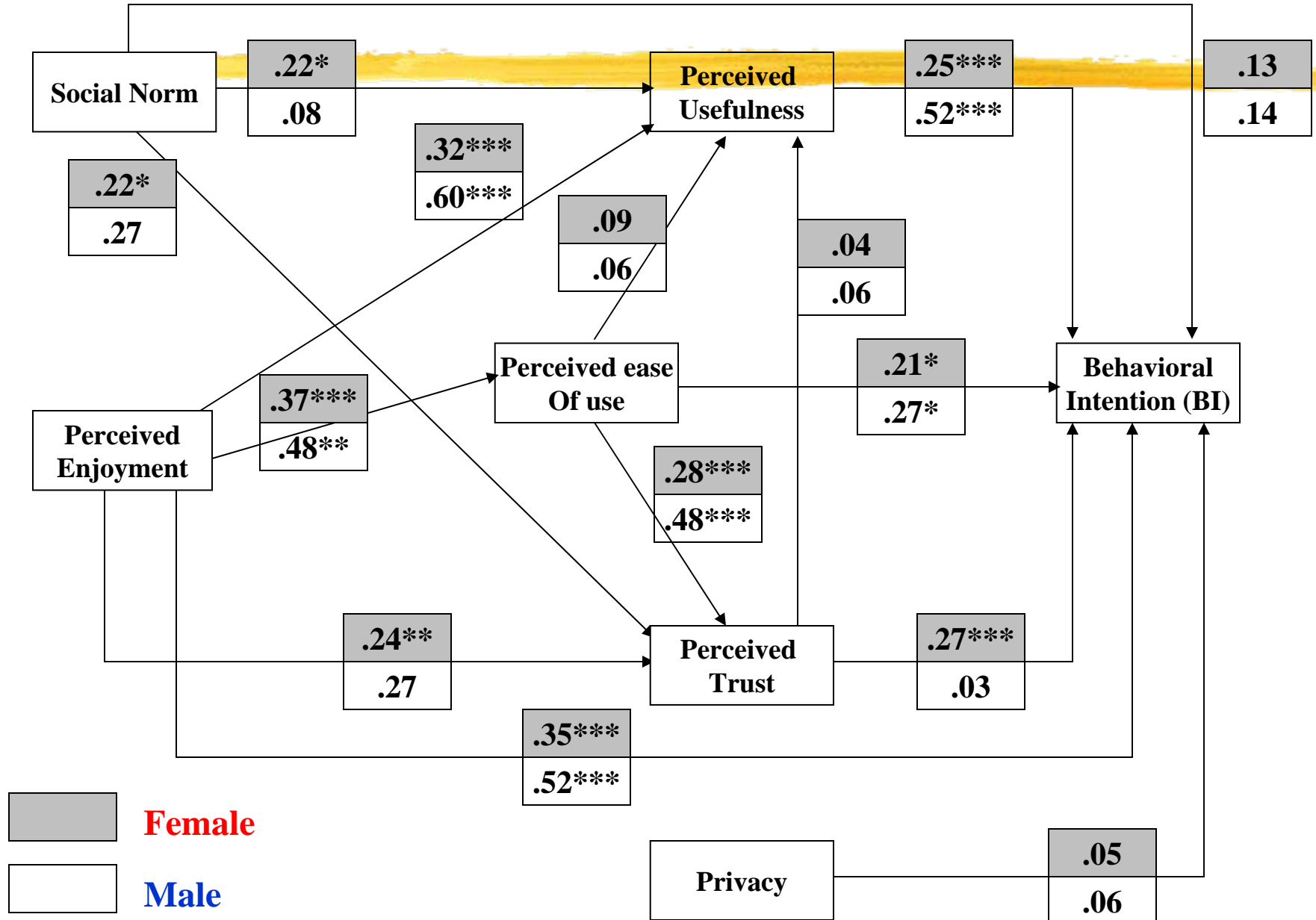
# Research methodology/ procedure to test the model

- ⌘ Factor analysis was carried using SPSS version 13
- ⌘ Factor loading  $\geq 0.50$
- ⌘ Reliability test using Cronbach's alpha, (alpha  $\geq 0.70$ )
- ⌘ All factors were found to be greater than 0.91
- ⌘ Testing the model using regression analysis

# Qualitative Results : Model for Awareness / experience



# Qualitative Results: Effect of gender



# Summary results

Hypotheses	Support vs. not support
SN-PU (H1a)	Yes for female users, but not for male users Yes for experienced and inexperienced users
SN-Trust (H1b)	Yes for female users but no for male users No for experienced users but yes for inexperienced users
SN-BI (H1c)	<b>No</b>
PE-PEOU (H2a)	Yes
PE- PU (H2b)	Yes for male and female users No for experienced users, but yes for inexperienced
PE-Trust (H2c)	Yes for female users, no for male users No for experienced users, Yes for inexperienced users
PE-BI (H2d)	Yes
PEOU – PU (H3a)	<b>No</b>
PEOU-Trust (H3b)	Yes
PEOU – BI (H3c)	Yes for male and female users, Yes for inexperienced users, and no for experienced users
PU – BI (H4a)	Yes
Trust-PU (H5a)	<b>No</b>
Trust-BI (H5b)	Yes for female users, and no for male users Yes for experienced users, and no for inexperienced users
Privacy-BI (H6)	<b>No</b>

# Qualitative results/Discouraging factors to use Mnet

<b>Discouraging factors to use Mnet</b>	<b>Time cited</b>
Limited number of stores /shops/merchants that accept Mnet	31
Consume more time complete transactions than does ATM card	25
Users need to have a bank account only with one bank to operate Mnet	18
Complex procedure to complete a transaction	15
Eliminate face to face interaction	11
Not enough privacy and security protection, i.e. someone may pick up phone number	10
<b>Total</b>	<b>110</b>

# Qualitative results/Encouraging factors to use Mnet

<b>Encouraging factors to use Mnet</b>	<b>Time cited</b>
Mnet is a convenient payment in absence of cash or lose wallet or bank's cards	33
Easy to use during payments	28
Enable remote payments any time and anywhere	26
Saves time and efforts during purchases	26
Allow easy transfer of money from Mnet accounts to others (of friends and family)	21
Guarantee high security transactions since it enables to use a pin code and requests confirmation of transactions	21
Guarantee high privacy of transactions since it enables to use alias	18
Convenient to pay for home delivery using mobile phone	16
Get discounts and especial offers from companies dealing with Mnet	14
Solve problems of currency changes	14
Don't need to carry, withdraw cash money or wallets	10
Is adequate for transactions that are mainly small and frequent	10
<b>Total</b>	<b>237</b>

# Conclusions/ contributions

- ⌘ Shedding light on factors that affect intention to use Mnet in Kuwait using a mix approach of quantitative and qualitative approach
- ⌘ First study that shows experience and gender moderate the effect of external factors on intention to use Mnet.
- ⌘ Gender and experience are two important factors in ICT acceptance in Kuwait
- ⌘ Mnet is usefulness and trust driven for experienced while it is usefulness and enjoyment driven for inexperienced users
- ⌘ Mnet is enjoyment and trust driven for female users, while it is enjoyment & trust for male users
- ⌘ The role played by perceived enjoyment as the most determinant on intention to use Mnet, is not unique for m-payment technology since previous studies conducted in Kuwait have also shown same for CMP adoption ([Rouibah and Hasan 2006](#)) and IM ([Rouibah 2008](#))

# Limits and perspectives



## ⌘ Limits

- ☒ Focus on potential consumers not on merchants
- ☒ Convenient sample composed of students
- ☒ Focus on the intention to use one m-payment technology & not on comparative e-payment methods

## ⌘ Perspectives

- ☒ Need to extend the model to include additional variable since the variance explained is low
- ☒ Variance explained by experienced users is 35% and 45% by inexperienced users
- ☒ Variance explained by female is 34% and 67% by male users
- ☒ Different norms guide attitude: initiate comparative studies between Arab and non Arabs (e.g. Australian)... **it is on the way**



**Thank you very much for your attention**  
**Any questions?**