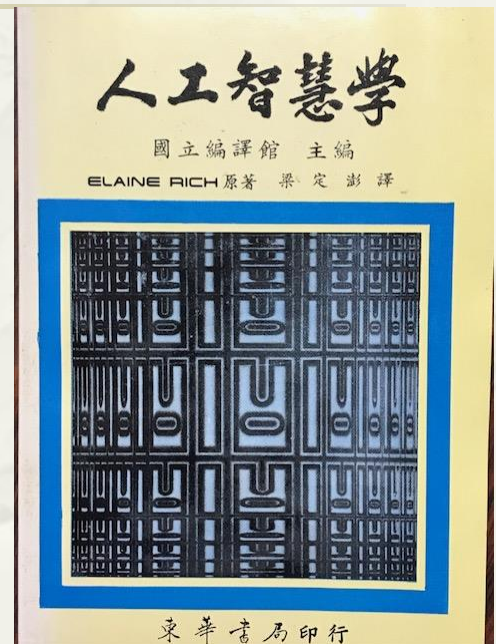# Artificial Intelligence and Smart Commerce

Ting-Peng Liang
Center for Intelligent Electronic Commerce Research
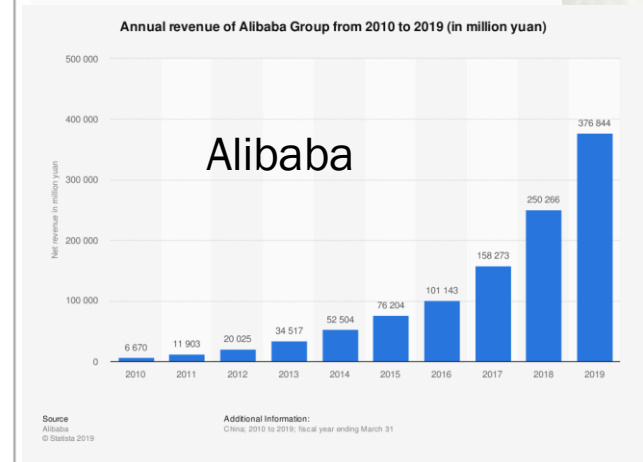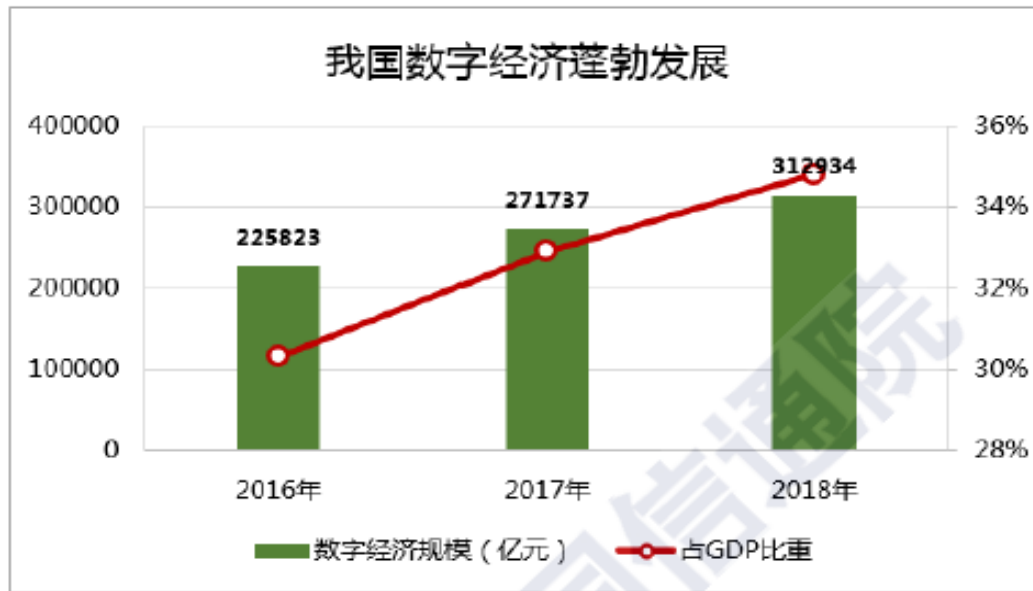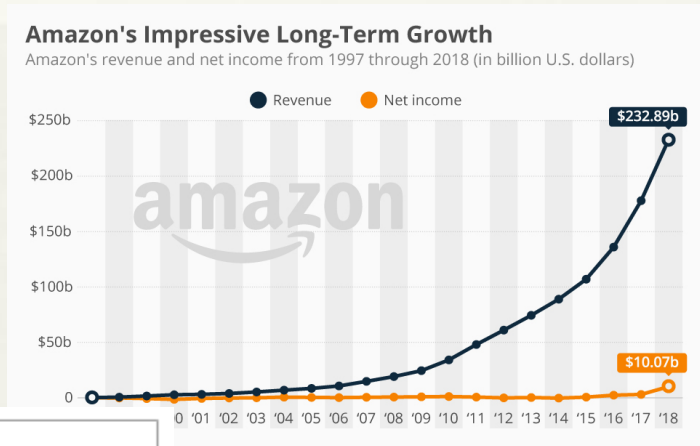National Sun Yat-Sen University

An early book in 1987

Digital Economy and e-Commerce

- Digital economy has contributed to 34.8% of GDP in China.
- Disruptive innovation – new technologies, such as AI and IoT, have impact many business operations
- New business models, such as Uber and Tiktok, have revolutionize business models

Amazon's Impressive Long-Term Growth
Amazon's revenue and net income from 1997 through 2018 (in billion U.S. dollars)

我国数字经济蓬勃发展

Annual revenue of Alibaba Group from 2010 to 2019 (in million yuan)

Alibaba

Evolution of e-commerce

Internet

Personalization

Mobile

Big data
AI

系統
整合

網路
行銷

Website

電子
商務

Platform

行動
商務

Social
Media

智慧
商務

IoT
Softbots
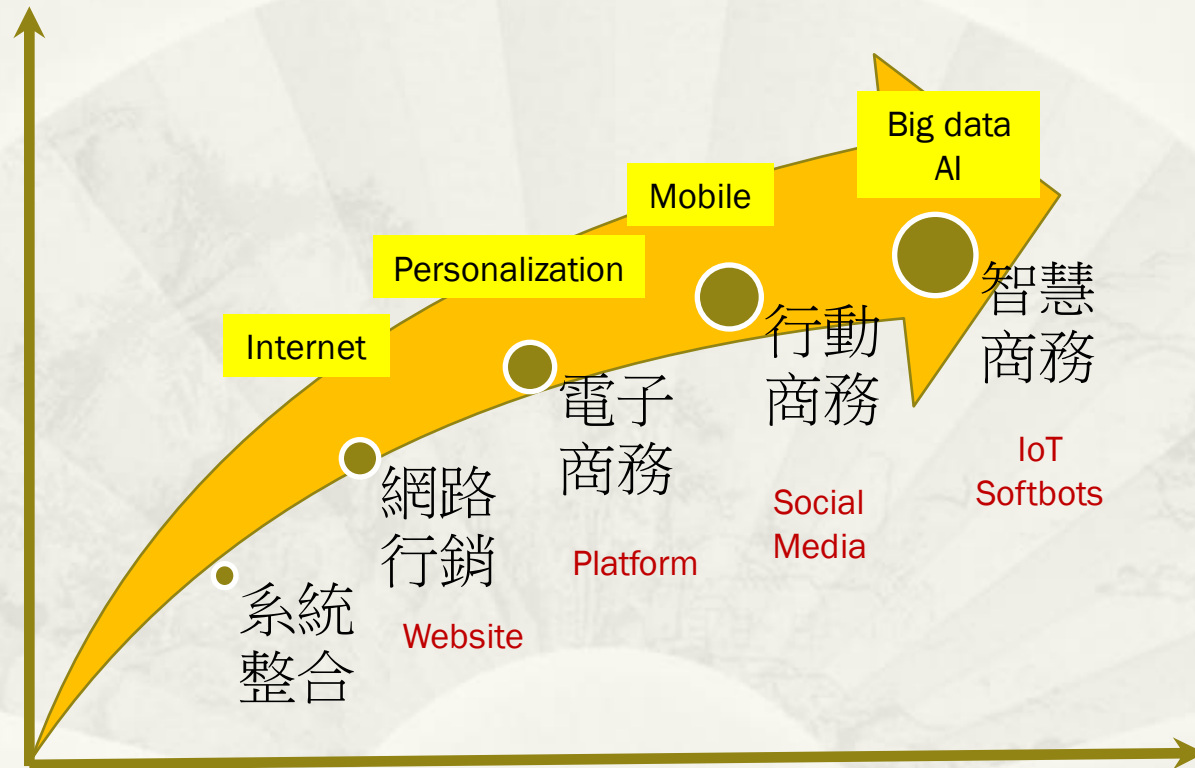
Two Views of AI and AI Family

* **Practical View**: Create innovative computer programs to execute tasks that are currently conducted only by human beings.

* **Scientific view**: Develop a set of methodology with the purpose of solving difficult problems that need human intelligence.

來源: 梁定澎, 決策支援系統，2002 .

Smart Technology

Data Collection
-RFID/IoT
-Pattern Recognition

Data Mgmt
-Blockchain
- Edge Computing

Modeling
- Data analytics
- Machine learning

Interaction/ Decision
- Digital assistant
- Robots

Smart Commerce
Applying Smart Tech to Business

Smart businesses are firms that know how to apply intelligent technologies to enhance their operations for higher competitiveness. Their business cycles include (1) to interact wisely at the frontline, (2) to analyze data at the backend, (3) design services to enhance experience, and (4) to provide services to satisfy their customers

Frontline	Intelligence	Backend

Interaction

Customers

Design

Field design Product design

User experience design

Scenario design Process design

Service blueprint

Analytics

零售業如何透過巨量資料創造獨特競爭力

以巨量資料創造創新商業模式，打造快速時尚王國

「*Zara 是快速時尚(fast fashion)的先驅，從此改變了時尚世界的遊戲規則。*」 - 紐約時報
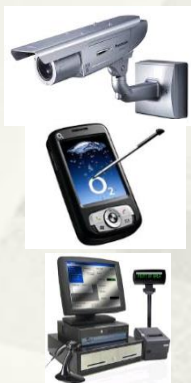
「*全球最創新、具破壞性的零售商，非 Zara 莫屬。*」 -LVMH 集團時尚總監皮耶特(Daniel Piette)

ZARA

西班牙時尚服飾品牌
分店橫跨74國超越2千家
2013市值最高成衣品牌($20B)

整合虛實商店銷售、討論與行為資訊，掌握時尚趨勢，快速生產鋪貨

實體店面(Off-line)

監視影像

顧客意見

銷售紀錄

每日資料回報

分眾快速鋪貨

DATA

→ 流行趨勢分析
→ 分眾偏好掌握
→ 快速設計打版

新品上市前測

即時資料回報

線上商店(On-line)

點擊紀錄

線上討論

試賣紀錄

23.6%毛利率
高於LVMH等精品集團

平均**2週**可推出一新品
約為其他品牌的6倍快

一年**12,000**款時裝
且每天可賣出110萬件產品

Source: 資策會

Sample Applications of Smart Tech

Smart Tech	B2B	B2C
RFID/IoT	Tracing packages	No-man store
Pattern Recognition	Object detection	Security
Data analytics/Machine learning	Supply chain integration	Customer analysis Fault detection
Robot/Softbots	Automation	Automated services
Blockchain	Data security Coin offering	Data security Smart contracts

資料處理
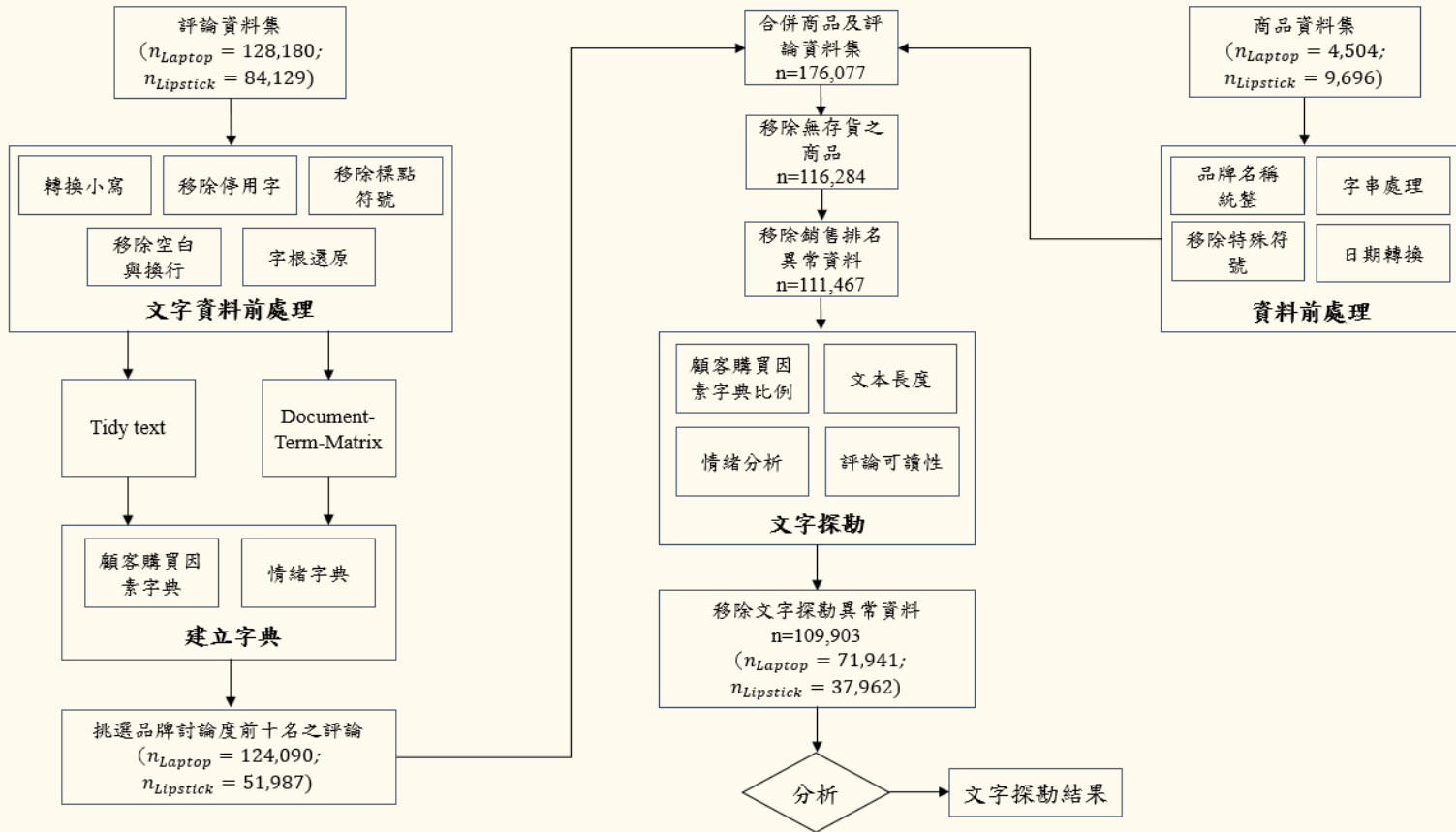
分析方法

- 變數之敘述性統計

表 4-9 所有資料集之描述性統計 (N=109,903)

Variables	Min	Max	Median	Mean	S.D.
Sales Rank	15.00	1317672.00	8957.00	32506.00	75438.40
Length	1.00	3465.00	28.00	60.21	109.35
Readability	-94.00	185.44	56.23	57.92	14.47
Rational Ratio	0.00	1.00	0.06	0.08	0.08
Volume	1.00	5753.00	378.00	1077.00	1534.47
Ratings	1.00	5.00	3.70	3.67	0.44
Reviewer Ratings	1.00	5.00	4.00	3.72	1.55
Emotional Ratio	0.00	1.00	0.02	0.05	0.07
ValenceAvg	0.02	1.00	0.65	0.66	0.11
ArousalAvg	0.07	0.95	0.42	0.43	0.07
DominanceAvg	0.05	0.99	0.53	0.53	0.08
Longevity	1.00	4148.00	615.00	704.30	508.38

研究結果
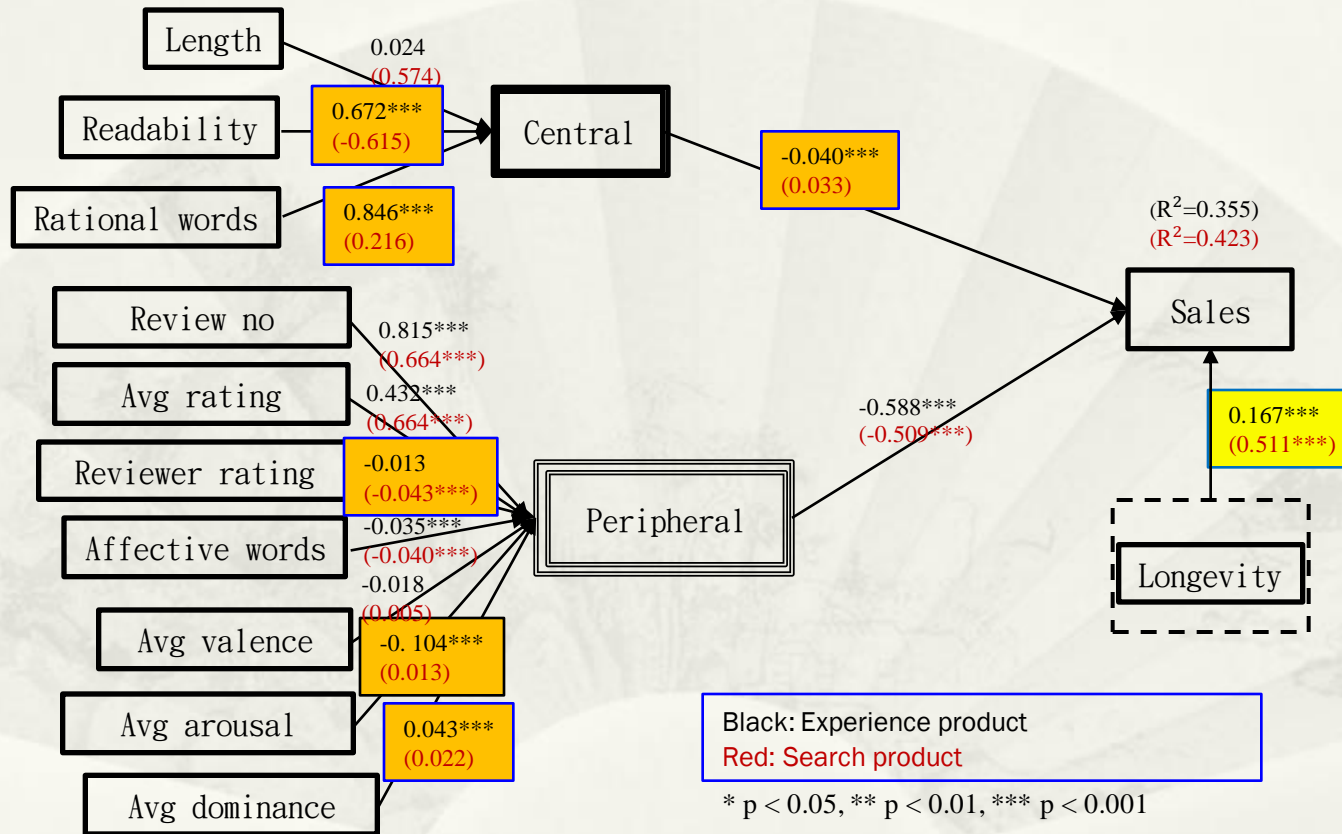
- Model 0為所有資料集迴歸分析結果
- Model 1為筆記型電腦(NB)資料集迴歸分析結果
- Model 2為唇膏(LS)資料集迴歸分析結果
- 本研究透過 Fisher Z檢定衡量群組間的迴歸係數是否有顯著差異

表格中為未標準化及標準化之迴歸係數，括號內數值為標準誤，*代表p值顯著性

Variables	Value	Model 0 (All)		Model 1 (Laptop)		Model 2 (Lipstick)		調節效果
		未標準化係數 B	標準化係數 β	未標準化係數 B	標準化係數 β	未標準化係數 B	標準化係數 β	
中央路徑	β_1: log(Length)	-0.140 (0.004)	-0.091***	0.012 (0.004)	0.010**	0.014 (0.005)	0.012*	
	β_2: Readability	-0.001 (0.000)	-0.009**	-0.001 (0.000)	-0.011**	-0.002 (0.000)	-0.024***	
	β_3: Rational Ratio	-3.742 (0.064)	-0.157***	-0.120 (0.059)	-0.006*	-0.594 (0.084)	-0.030***	V
周邊路徑	β_4: log(Volume)	-0.351 (0.003)	-0.326***	-0.452 (0.003)	-0.495***	-0.375 (0.003)	-0.493***	V
	β_5: Ratings	0.142 (0.012)	0.033***	-0.670 (0.010)	-0.185***	-0.944 (0.017)	-0.234***	V
	β_6: Reviewer Ratings	-0.010 (0.004)	-0.008**	-0.035 (0.003)	-0.035***	-0.004 (0.004)	-0.005	V
	β_7: Emotional Ratio	5.375 (0.075)	0.190***	-0.047 (0.112)	-0.001	0.328 (0.060)	0.024***	V
	β_8: ValenceAvg	1.968 (0.067)	0.114***	0.189 (0.069)	0.013**	0.141 (0.064)	0.014*	
	β_9: ArousalAvg	0.466 (0.082)	0.017***	0.195 (0.080)	0.008*	0.866 (0.082)	0.054***	V
	β_{10}: DominanceAvg	-4.200 (0.095)	-0.182***	-0.275 (0.098)	-0.014**	-0.286 (0.094)	-0.020**	
控制變數	β_{11}: Longevity	0.833 (0.005)	0.468***	0.884 (0.004)	0.583***	0.203 (0.005)	0.169***	V
Adjusted R^2		0.349		0.457		0.356		
Observations		109,903		71,941		37,962		
Number of Products		1,815		1,544		271		

*** if $p<0.001$; ** if $p<0.01$; * if $p<0.05$

19

搜尋品與經驗品的比較

Factors Affecting Robo-Advisor Adoption
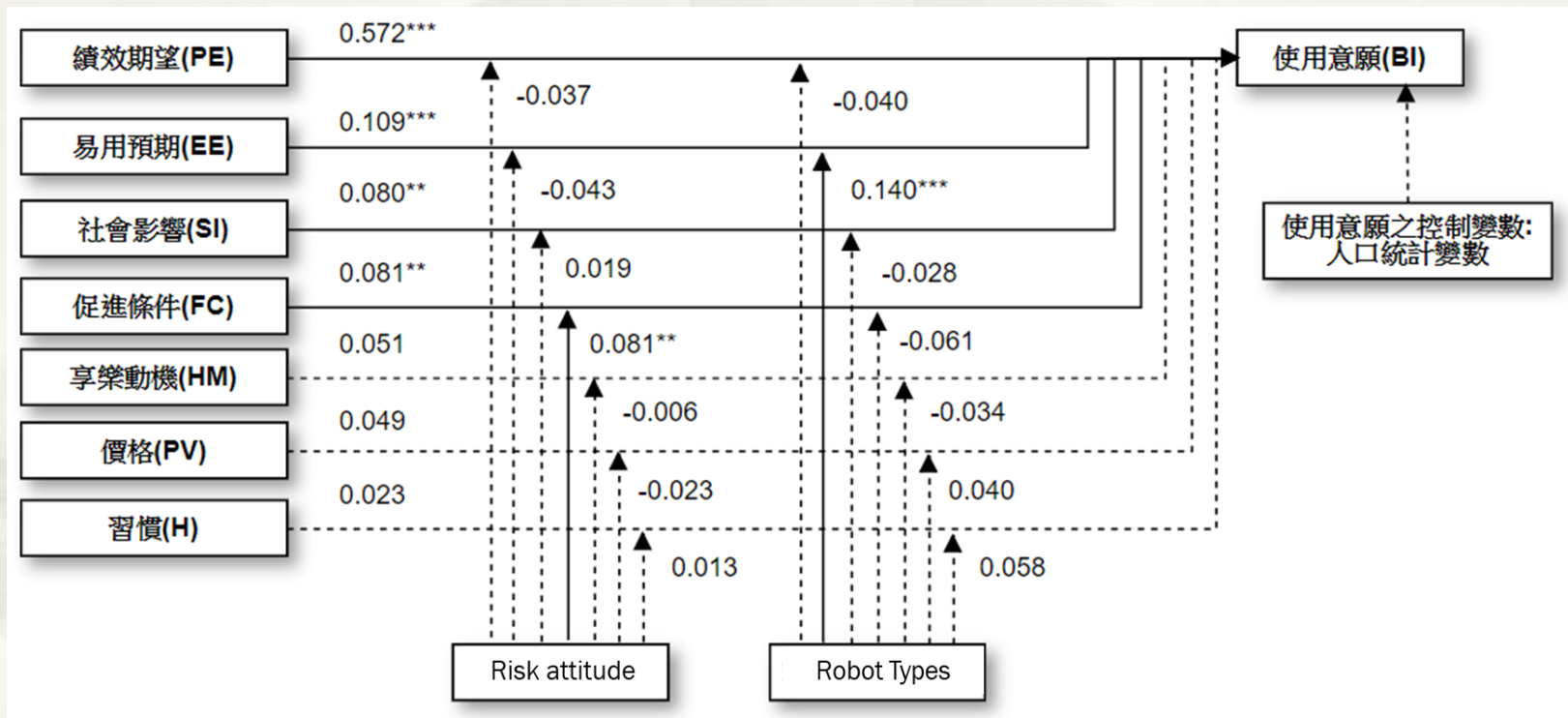
Moderation of Robot Types

	Asset Management (H)	Asset Management (L)	Consulting
Pef Exp-> BI	0.460	0.691	0.619
Ease Exp -> BI	0.258	0.140	n/s
Soc Inf -> BI	n/s	n/s	0.136
Faci Cond -> BI	n/s	n/s	0.215
Hed Mot -> BI	n/s	0.131	n/s
Price -> BI	n/s	n/s	n/s
Habit -> BI	n/s	n/s	n/s

Key Issues for Discussion

* What is the status of AI applications in Taiwan's economy?
* Where can AI technologies be developed and applied properly to increase business competitiveness?
* What AI technologies are valuable for the future of Taiwan's economy?
* How can Taiwanese companies be ready for the new AI age?
* What impact can AI created on Taiwan's digital economy?
* What are the main challenges for Taiwanese business to transform to smart business?
* What can the government do to transform Taiwanese business to smart business?
* What negative impact may AI brings to business?

Discussion