APPENDIX 1. PRIOR STUDIES EXAMINING THE IMPACT OF FC, CBs AND PBC

A focus on these the four leading: (i.e. Information Systems Research, MIS Quarterly, Journal of Management Information Systems, and Journal of AIS) was expected to provide a representative overview of how IS researchers have theoretically and empirically employed CBs to predict systems use. We specifically examined papers with three criteria: (1) examined individual-level technology acceptance;[1] (2) explicitly stated that they were attempting to include some type of control (actual or perceived) into their nomologcial network; and (3) included intention to use and/or use as a dependent variable.

Authors/ Journal	Label	Definition/Control Measurement Items	Model	Dependent Variable	Results
Venkatesh et al. 2003 (MISQ)	Facilitating conditions (FC)	"Facilitating conditions are defined as the degree to which an individual believes that an organizational and technical infrastructure exists to support use of the system" (p. 453). 1. I have the resources necessary to use the system. 2. I have the knowledge necessary to use the system. 3. The system is not compatible with other systems I use. 4. A specific person (or group) is available for assistance with system difficulties.	1	Intention to use the system System use as duration	UTAUT was tested in two different studies. Each study tested UTAUT at three time periods—i.e., T1, T2, and T3—and across all three time periods with a pooled data set. FC did not have a significant direct effect on intention to use the system at any time period or across all three time periods in either study. In both studies, FC had a significant direct effect on use at T3 and a significant interaction with age on use across all three time periods. This interaction effect with age was not significant in the pooled data set of either study. In addition, FC had a significant three-way interaction with age and experience in the pooled data set of both studies.
Limayem and	Used both	"Perceived belief about how easy/difficult behavior is	1	Intention to use the	Tested 3 different models.

[1] We made an exception for Pavlou and Fygenson (2006). Their dependent variable was purchase intention and purchase behavior. They modeled PBC as a formative construct. Considering the popularity of formative constructs in the IS literature, we felt it was important to include this model in our analysis.

Hirt 2003 (JAIS)	terms FC and perceived behavioral control (PBC)	going to be" (p. 69). 1. Good understanding of how to use WebBoard. 2. Easy access to Internet. 3. Inexpensive access to Internet. 4. Fast Internet connection. 5. Assistance provided by WebBoard experts is adequate. 6. Too busy to use WebBoard.		system System use as frequency	In the first two models, PBC/FC had significant direct effects on intention to use the system and had no significant effect on actual use. In the final model, FC/PBC had a significant direct effect on use.
Brown and Venkatesh 2005 (MISQ)	PBC	"Control beliefs are represented in MATH by five factors: fear of technological advances, declining cost, cost, perceived ease of use, and requisite knowledge" (p. 407). PBC 1: Fear of technological advances 1. The trends in technological advancement are worrisome to me. 2. I fear that today's best home PC will be obsolete fairly soon. 3. I am worried about the rapid advances in computer technology. PBC 2: Declining cost 4. The cost of PCs are constantly declining. 5. I believe the cost of computers will continue to decline in the future. 6. I think we will see better computers for a lower price in the near future. PCB 3: Cost 7. Computers that are available today are too expensive. 8. I think computers are quite pricey. 9. I consider a computer to be big-ticket item. PBC 4: Perceived ease of use 10. My interaction with a computer is clear and	4	Intention to use the system	PBC1-4 had significant direct effects on intention to use the system but not PBC 5. The direct effect of PBC 1 on intention to use the system was moderated by age and income in two different two-way interactions. In addition, the direct effects of PBC on intention were moderated by a three-way interaction with both age and income. The direct effect of PBC 2 on intention to use the system was moderated by a three-way interaction with age and income. The direct effect of PBC 3 on intention to use the system was moderated by age and income in two different two-way interactions. Age moderated the effect of PBC 4 and PBC 5.

		understandable. 11. Interacting with a computer does not require a lot of my mental effort. 12. I find a computer to be easy to use. 13. I find it easy to get a computer to do what I want it to do. PBC 5: Self-efficacy 14. I feel comfortable using a computer on my own. 15. If I wanted to, I could easily operate a computer on my own. 16. I can use a computer even if no one is around to help me.			
Pavlou and Fygenson 2006 (MISQ)	PBC	"PBC is defined as a person's perception of how easy or difficult it would be to carry out a behavior" (p. 119). Please rate the difficulty of you getting information about/ purchasing this about this product (…) within the next 30 days. Self-efficacy about getting information If I wanted to, I would be able to get information about/purchase this product (…) within the next 30 days. If I wanted to, I am confident I could get information about/ purchase this product (…) within the next 30 day. Controllability over getting information All necessary resources for getting information about / purchasing this product (…) will be accessible to me within the next 30 days. Getting information about/ purchasing this product (…) within the next 30 days is completely under my control.	3	Two integrated models. Both models have PBC predicting intention and actual behavior. The two intentions are: intention to get information and intention to purchase an item. The two behaviors are getting information and purchasing an item.	PBC had significant direct effects on intentions and actual behavior in both models.
Dinev and Hu 2007 (JAIS)	PBC	"Perceived behavioral control (PBC) is the perceived ease or difficulty of performing a behavior and a personal sense of	2	PBC Intention to use the	External behavioral control belief had a significant direct effect on PBC; however, internal behavioral control belief did not.

		control over performing it" (p. 389). Perceived behavioral control (PBC) 1. Please rate the difficulty for you to clean spyware from your computer using anti-spyware applications. 2. Please rate the difficulty for you to protect your computer from spyware. Controllability 1. I have the skill and resources to clean spyware from my computer. 2. I have the skill and resources to protect my computer from spyware. 3. Whether or not to clean spyware from my computer is completely under my control. Self-efficacy 1. I am confident that I can clean spyware off my system. 2. I am confident I can prevent unauthorized intrusion to my computer. 3. I believe I can configure my computer to provide good protection from spyware.		system	PBC had a significant direct effect on intention to use the system.
Venkatesh et al. 2008 (MISQ)	FC	Definition taken from Venkatesh et al. 2003. 1. I have the resources necessary to use the system. 2. I have the knowledge necessary to use the system. 3. The system is not compatible with other systems I use. 4. A specific person (or group) is available for assistance with system difficulties.	1	Behavioral Expectation System use as duration, frequency & intensity	FC significantly predicted behavioral expectation. The direct effect of FC on behavioral expectation was moderated by a three-way interaction with age and experience and a four-way interaction with age, experience and gender. FC had no significant impact on any type of use.
Titah and Barki 2009	FC	No definition provided.	1	Intention to use the system	FC had no significant effect on intention to use the system.

(MISQ)		1. I have the human and technological resources necessary to use the system 2. I have the knowledge necessary to use the system. 3. A specific person (or group) is available for assistance with system difficulties.			
Sykes et al. 2009 (MISQ)	FC	Definition taken from Venkatesh et al. 2003. 1. The organization has provided the necessary resources for me to use the system. 2. A specific help support person or group is available for assistance with system difficulties. 3. Organizational technical and support infrastructure are available to help me in case of problems.	1	System use as duration	FC had a significant direct effect on duration of use.
Liang et al. 2010 (JAIS)	FC	Definition taken from Venkatesh et al. 2003. 1. I have the resources necessary to use the system. 2. I have the knowledge necessary to use the system. 3. A specific person (or group) is available for assistance with system difficulties.	1	One overall use construct measured with one item for duration, frequency and intensity.	FC had a significant direct effect on use.
Wu 2012 (JAIS)	Perceived Controllability	The difficulty associated with the ability to control "such aspects as when they received alert messages and what type of messages they received" (p.179). 1. I want to have the option to choose what type of emergency messages I receive from Campus Alerts. 2. I want to have control over the volume of text messages to be sent to me from Campus Alerts. 3. I may get a lot of text messages from Campus Alerts. 4. I may get some unwanted messages from Campus Alerts. 5. Receiving Campus Alerts messages can be	1	Non user's intention to use the system System use measured as accept or not.	Perceived controllability had a significant direct effects on use for those who adopted the system. But perceived controllability had no effect on intention to use the system for those who chose not to adopt the system.

		costly.			
Venkatesh et al. 2012 (MISQ)	FC	Facilitating conditions "refer to consumers' perceptions of the resources and support available to perform a behavior" (p. 159). 1. I have the resources necessary to use mobile Internet. 2. I have the knowledge necessary to use mobile Internet. 3. Mobile Internet is compatible with other technologies I use. 4. I can get help from others when I have difficulties using mobile Internet	1	Intention to use the system System use measured as a formative index composed on variety and frequency.	FC had a significant direct effect on intention to use the system. The direct effects of FC on intention to use the system were also moderated both age and gender. FC had a significant direct effect on use. The direct effect of FC on use was also moderated by both age and experience.
Peace et al. 2003 (JMIS)	PBC	PBC "is the individual's perception of his or her ability to commit the behavior." (p. 157). 1. If I want to, I can commit software piracy. 2. Technically, for me to commit software piracy is:	1	Intention to use the system	PBC had significant direct effect on intention to use the system.
Hong et al. 2011 (JMIS)	FC	Definition taken from Venkatesh et al. 2003. 1. I have the technical resources necessary to use the upgrades of the system. 2. I have the knowledge necessary to use the upgrades of the system.	1	Intention to use the system Intention to use future features	FC had a significant direct effect on both intention to use the system and intention to use future features.

APPENDIX 2. ITEMS.

Note: All items were measured using 7-point Likert agreement scales, unless otherwise noted.

Behavioral intention
I intend to use the system in the next 3 months.
I predict I would use the system in the next 3 months.
I plan to use the system in the next 3 months.

Performance expectancy
I would find the system useful in my job.
Using the system enables me to accomplish tasks more quickly.
Using the system increases my productivity.
If I use the system, I will increase my chances of getting a raise.

Effort expectancy
My interaction with the system would be clear and understandable.
It would be easy for me to become skillful at using the system.
I would find the system easy to use.
Learning to operate the system is easy for me.

Social influence
People who influence my behavior think that I should use the system.
People who are important to me think that I should use the system.
The senior management of this business has been helpful in the use of the system
In general, the organization has supported the use of the system.

CB about Technical Compatibility
The system is compatible with other systems I use.
I believe the system is technically compatible with other important systems I use.
The system is not compatible with other software I use. (reverse-coded)

CB about Resource Availability
There are enough resources to support the use of the system.
I have the resources necessary to use the system.
I have the resources necessary to use the new system.

CB about Computer Self-Efficacy
I could complete the job using this system. . .
. . . if I had never used a system like it before.
. . . if I had only the software manuals for reference.
. . . if I had seen someone else using it before trying it myself.
. . . if I had a lot of time to complete the job for which the software was provided.
. . . if I had just the built-in help facility for assistance.
. . . if I had used similar systems before this one to do the same job.

Duration of use
Measured using system logs.

Deep structure use (not at all… a great deal)
The following are questions about your use of various system features for important job-related tasks:
I use the collate feature to organize all communication with a particular supplier.
I use reports (e.g., communication, supplier performance) related to a particular supplier before placing an order with a supplier.
I use the tracking feature to check on the status of shipments to be received.
I use the review feature to provide a post-mortem report of my interactions with a supplier after an order has been concluded.
I use the history feature to make assessments about competitive pricing and to compare suppliers.

APPENDIX 3. Factor Analysis with Direct Oblimin Rotation

	1	2	3	4	5	6	7
BI1	**.78**	.22	.08	.08	.02	.04	.10
BI2	**.84**	.31	.13	.03	.16	.13	.04
BI3	**.88**	.28	.15	.10	.13	.15	.10
PE1	.28	**.82**	.17	.12	.03	.06	.07
PE2	.20	**.79**	.20	.10	.04	.08	.03
PE3	.13	**.89**	.22	.08	.04	.06	.05
PE4	.31	**.80**	.13	.07	.10	.12	.10
EE1	.24	.18	**.85**	.03	.28	.25	.23
EE2	.22	.19	**.87**	.02	.24	.26	.24
EE3	.20	.20	**.91**	.10	.30	.33	.28
EE4	.21	.14	**.92**	.12	.32	.28	.30
SI1	.08	.13	.10	**.77**	.08	.05	.06
SI2	.13	.10	.10	**.75**	.01	.04	.05
SI3	.04	.20	.13	**.74**	.10	.12	.10
SI4	.08	.17	.10	**.74**	.03	.02	.04
CB-TC1	.10	.10	.24	.10	**.71**	.22	.24
CB-TC2	.12	.13	.28	.13	**.73**	.28	.25
CB-TC3	.13	.10	.33	.08	**.77**	.31	.32
CB-RA1	.10	.20	.32	.03	.33	**.75**	.20
CB-RA2	.08	.14	.28	.04	.29	**.77**	.19
CB-RA3	.08	.10	.29	.02	.24	**.71**	.21
CB-CSE1	.07	.15	.24	.10	.20	.22	**.73**
CB-CSE2	.03	.10	.22	.11	.17	.14	**.73**
CB-CSE3	.13	.13	.17	.07	.15	.16	**.75**
CB-CSE4	.12	.04	.19	.03	.17	.19	**.75**
CB-CSE5	.10	.03	.20	.04	.18	.20	**.78**
CB-CSE6	.08	.02	.15	.02	.22	.21	**.83**

Note: BI: Behavioral intention; CB-TC: Control Beliefs about Technical Compatibility, CB-RA: Control Beliefs about Resource Availability, CB-CSE: Control Beliefs about Computer Self-Efficacy, PE: Performance expectancy; EE: Effort expectancy; SI: Social influence.

APPENDIX 4. Moderation Plots

Figure 2(a): CB-RA X CB-AC → Duration of Use

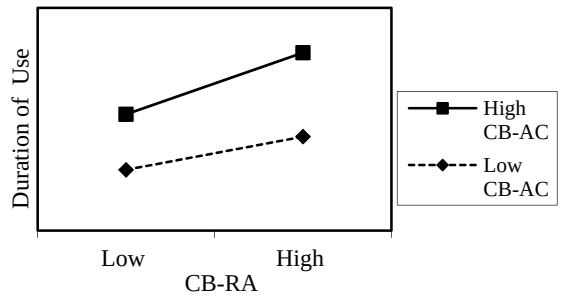

Figure 2(b): CB-CSE X CB-AC → Duration of Use

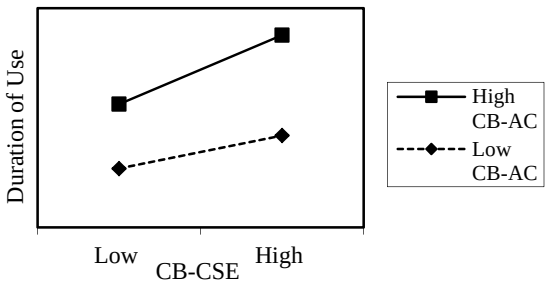

Figure 2(c): CB-TC X CB-AC → Deep Structure Use

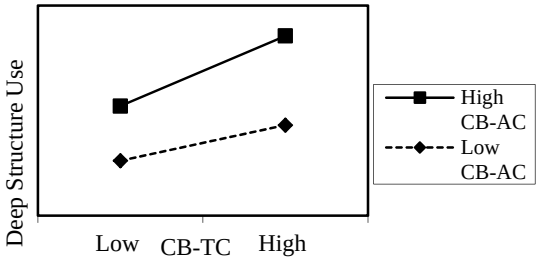

Figure 2(d): CB-RA X CB-AC → Deep Structure Use

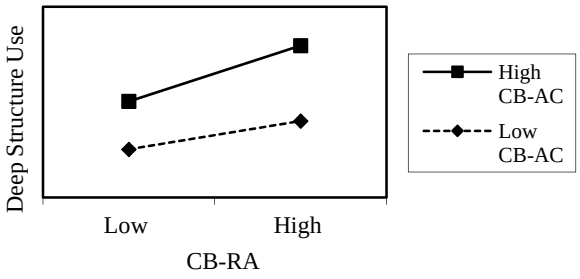

Figure 2(e): CB-CSE X CB-AC → Deep Structure Use