Spoilt for choice: When user-system relationship becomes one-to-many

Research-in-Progress

Darshana Sedera
Queensland University of Technology
2 George Street, Brisbane, Australia
d.sedera@qut.edu.au

Sachithra Lokuge
Queensland University of Technology
2 George Street, Brisbane, Australia
s.lokuge@qut.edu.au

Noor Akma Mohd Salleh
University of Malaya
Jalan Universiti, 50603 KL, Malaysia
akmasalleh@um.edu.my

Sedigeh Moghavvemi
University of Malaya
Jalan Universiti, 50603 KL, Malaysia
sedigheh@um.edu.my

Shailesh Palekar
Queensland University of Technology
2 George Street, Brisbane, Australia
s.palekar@qut.edu.au

Abstract

Traditionally, a user would only use one system for a particular task, defining a one-to-one user-system relationship. However, the advances in technology are changing this fundamental premise. An emerging trend is the notion of one-to-many, where a user has a choice of multiple systems to complete the same task. This phenomenon purports to alter the current status quo of potentially many of the individual and group level theories, especially those on how users accept a system. The study engages in analytic induction. Therein, it employs the dual process theory to observe the acceptance journey of users, when they are presented with a choice of systems to complete the same task. The study identifies the importance of the emotional and rational facets of the dual process theory, while introducing compliance as a possible third facet. Finally, the study introduces 'complete agnosticism' as a novel notion that explains how one-to-many user-system relationships are facilitated.

Keywords: Choice, Case studies, Dual Process, Technology acceptance model, Agnosticism, Mobile Apps

Introduction

The relationship between user and system is an important one (Burton-Jones and Gallivan 2007; Burton-Jones and Straub 2006). Prior literature has considered this relationship between these entities as a linear one-to-one (1:1) relationship. Traditionally, in organizational research a user would only have one system to use for a particular task and the device and data were largely specific to the user and the system (Yoo 2010). Appropriately, information systems (IS) theories conceived this relationship as one-to-one (1:1). However, open architectures, increasing hardware and software capabilities and the advent of new pricing models have brought substantial changes to system access and usage (Burton-Jones and Gallivan 2007; Burton-Jones and Grange 2012; Lokuge and Sedera 2014a; Lokuge and Sedera 2014b; Lokuge and

Sedera 2014c; Yoo 2010). An emerging phenomenon here is the ability of a user to access a range of systems to complete the same task. This notion of one user accessing many systems for the same task can be conceived as 'one-to-many' (1:M) user-system relationship. One-to-many system acquisition models are facilitated through Software-as-a-service architectures that allow an organization to move away from a single on premise system to a choice of multiple technologies being available on-demand (Benlian and Hess 2011; Palekar et al. 2015; Walther et al. 2013; Winkler and Brown 2013), giving users a 'choice of systems.'

This research in progress paper aims to investigate how the 'choice' of multiple systems for a particular task in an one-to-many user-system relationship affects the exiting IS theories. The paper begins with a conceptual underpinning of why researchers need to consider 1:M relationships in IS studies. Then, it discusses the effects of purported 1:M relationship on the technology acceptance model as an example theory. The paper then introduces the research method and the data sample. Finally, the paper presents its preliminary results and driving propositions for future studies.

Choice of systems

The 'choice' this paper describes is an act of choosing (between two or more systems) that a user receives when multiple systems are available for completing the same task. As such, a key view in deriving this conceptual discussion is 'ceteris paribus,' meaning that all or other conditions are equal or held constant. In other words, two or more systems that a user would have access to complete the same task must have *similar capabilities and functions*. As such, the resources required for acquisition, maintenance, management or the opportunity costs remain the same (or very similar). Present-day technological advancements like cloud and mobile computing and the growth of consumerization of IT (Eden et al. 2012; Eden et al. 2014; Harris et al. 2012; Sedera et al. 2016; Tan et al. 2016; Weiß and Leimeister 2012), present opportunities to develop architectures and business models that facilitate a choice of systems (i.e. 1:M user-system relationship) (Yoo 2010; Yoo et al. 2012; Yoo et al. 2010). An emerging phenomenon that highlights the choice of 1:M is the use of mobile applications (apps), especially those communication mobile apps (CommApps). For example, a user would have simultaneous access to multiple CommApps such as Skype, WhatsApp and Viber, from which a user selects one to communicate.

It is acknowledged that CommApps may have less functions and features compared to traditional organizational-wide systems. However, considering the broader definition of a 'system,' where a system denotes a set of detailed methods, procedures and routines created to carry out a specific activity, perform a duty, or solve a problem(Gable et al. 2008; Sedera and Dey 2013; Sedera and Gable 2010), the emerging CommApps is a phenomenon epitomizes the structure of a system.

PCmag in April 2016 lists 100+ CommApps available through the three main mobile phone platforms (Minor 2016). As of April 2016, there are 4.5 Billion active user accounts between the top-10 CommApp providers (Statista 2016). More interestingly, on average a user holds 6 CommApps they frequently use (Minor 2016). Each CommApp has the ability to use the data available in the device (e.g., emails, phone numbers, images, location) and then read-and-write to the device as guided by the user. Moreover, each CommApp could have its unique functionality, scope and features. Practitioners envisage that this phenomenon of having many apps (systems) for the same task would become common with regards to all systems, including those organization-wide systems. This is an emerging trend facilitated by the sharing of storage, memory and data through modern communications and architectures. Attesting to this there are 7 patents presented by the Google Corporation on data sharing mechanisms for multi-tenanted cloud-based organizational systems (Google Scholar 2015). As such, systems sold as 'on premise' would soon become available as subscribed 'on-demand' software solutions. Therefore, the choice of systems and devices with similar features, available to complete the same task could alter the current status quo of *potentially* all individual and group level IS theories, especially how users accept a system (technology) when many systems are available.

In order to understand the act of choosing a system, this study draws from dual process theory (Kahneman 2011). A user selects from a collection of similar systems in CommApps, *ceteris-paribus*, is dominated by such characteristics like availability, likability and social and public interpretation (Aamodt and Wang 2008). Here, rational considerations do not need to be factored in *first*, unless the user's selection process is interrupted with his/her prior experiences or extraneous conditions. The

aforementioned highlights the role of intuition and rationality. A leading theory that captures both intuition and rationality is the dual process theory, which originates from the psychology discipline (Greene et al. 2004; Greene et al. 2001). The basic idea premise of the dual process theory is that when weighing-up options, individuals use both an unconscious (emotional or gut-feeling) process and a conscious (rational and structural) process. Psychologist Daniel Kahneman labels the two processes System 1 (intuition) and System 2 (reasoning) (Kahneman 2011). System 1 thinking (intuition) is fast and automatic and often relies on emotional cues. Kahneman (2011) notes that intuition is based on well-established habits; therefore it is very difficult to change or manipulate. However, System 2 thinking (reasoning) is slower and much more volatile, based on conscious judgments and attitudes (Kahneman 2011).

Technology acceptance as the example theory

To test the aforementioned argument of 1:M user-system relationship, this paper uses the technology acceptance model (TAM) as the exemplary theory. Despite its criticism, TAM is used as an example to demonstrate the effects of 1:M user-system relationship due to (i) its substantial citations and (ii) its focus on the first point of the introduction of multiple technologies to a user. TAM and its variants include user's behavioral intentions, attitude, perceived usefulness and perceived ease of the system. It also explains social influences like subjective norm, voluntariness and image (Venkatesh et al. 2003), cognitive instrumental processes like job relevance, output quality and result demonstrability (Wixom and Todd 2005; Wu and Wang 2005) and experience (Venkatesh and Davis 2000). When systems are mandatory, subjective norms have a direct effect on intention through the mechanism of compliance, through which an individual perceives that an important social actor has the ability to punish non-behavior or reward behavior (Warshaw 1980). Yet, when they are voluntary, social influences indirectly impact the mechanism of internalization and identification.

Over the past 3 decades, researchers have used variants of TAM and other IS adoption models to explain technology acceptance related to a particular system for a specific task. Some examples of such study domains include: e-learning (Cheung and Vogel 2013), mobile commerce (Li et al. 2012; Wu and Wang 2005), email advertisement (Hsin Chang et al. 2013), mobile banking (Lai and Li 2005; Zhou 2011), multimedia training (Scott and Walczak 2009), enterprise blog (Hsing Wu et al. 2013; Hsu and Lin 2008), electronic business (Lin 2013), software measures (Wallace and Sheetz 2014) and mobile wireless communication (Kim and Garrison 2009). In all these studies, the relationship between the user and the system was 1:1, meaning that the user had only one system that s/he could have used for completing the task. In light the of the changes alluded above on 1:M relationship for user and systems respectively, a revised definition of technology acceptance is warranted.

Consistent with past studies, technology acceptance is defined here as the extent to which a technology is incorporated and internalized into the users' tasks. The importance of the two terms 'incorporation' and 'internalized' in this study's definition are highlighted. Therein, this study is motivated by an interest in both short-term and long-term process of technology acceptance. Thus, using the term 'incorporation,' the study argues that 'acceptance' is most effective when the system becomes a part of the user's standard operating procedures or daily routines (i.e. the system has been internalized and become part of the user's process knowledge). 'Internalization' refers to the process when an individual incorporates the important referent's belief into his/her own belief structure. Further, it is argued that experimental or casual acceptance, in isolation, may not lead to regular incorporation into the user's tasks and cannot lead to long-term effects on the individual's behavior. At the highest point of acceptance, each user could select the right combination of systems, considering the relevant priorities and their knowledge and experience.

The hypotheses are developed using the dual process theory of Kahneman (2011). As such, the first proposition of the study is '*when many systems are available for the same task, a user will accept a system based on their emotions*' (*H1*). They do so because the human brain favors speed as people would like to make decisions as quickly as possible (Kahneman 2011). However, considering the views of the dual process theory and TAM related studies it can be argued that the user will accept a technology using rationality. This yields the second proposition, '*when many systems are available for the same task, a user will accept a system rational considerations*' (*H2*). The theoretical background of the dual process theory and the novelty that requires openness to other constructs, introduced the researchers of this study to analytic induction (Manning 1982; Patton 2002).

Method and the Sample

The objective of this study is to explore new or extend existing theoretical propositions based on the phenomenon of CommApp use. As such, a qualitative approach is deemed suitable (e.g., Rivard et al. 2011). The overall methodological approach in the study consists of two steps: first, the proposition discerned from the extant mainstream literature are subjected to deductive examination; and second, an inductive approach is adopted "to discover concepts and hypotheses not accounted for in the original formulation" of the hypotheses (Patton 2002, p.494). Such an approach has been used by many researchers in the discipline (e.g., Dibbern et al. 2008; Rivard et al. 2011) and is consistent with the approach some scholars refer to as analytic induction (Patton 2002). The advantage of this approach is that it is possible to critically examine the state-of-the-art knowledge about a topic and incrementally build on the body of work, by retaining the aspects found to be empirically valid and reformulating the aspects found to be questionable or invalid. Data was collected using semi-structured interviews. The sample included 67 respondents representing South-Asia, Western and Gulf. The diversity of the sample is intentional, so that it represents the natural population of users of CommApps allowing generalizability of findings. The interviews, each lasting approximately 30-40 minutes, explored various facets of how a user 'accepts' the system (i.e. CommApp). Having at least two CommApps was the only selection criteria for the study sample. The sample average of CommApps per user was 3.8, possibly establishing a benchmark for future studies of similar nature. The interviews transcribed into 390 pages of text. The analysis commenced by first deriving open codes. A total of 87 unique open codes derived at the end. Then, each open code was mapped into two main classifications of 'emotional' and 'rational,' as per the dual process theory. Sixty-one open codes mapped into the two classifications, leaving 26 unmapped open codes. The unmapped open codes were carefully reviewed and analyzed.

Findings

The preliminary findings presented herein demonstrate the results of the propositions. It first identifies the specific roles of the emotional and rational spheres, as well as 'compliant' as a new sphere that was inductively identified in the study. Second, a descriptive system acceptance journey is presented next with some selected case examples. Third, the study introduces a new notion termed here as 'complete agnosticism' as an explanation to the existence and possible proliferation of multiple systems for the same task.

Three Spheres of Acceptance

Broadly, all participants discussed the influence of emotions and rationality in the process of choosing and using CommApps. Consistent with the definition of the dual process theory, emotion based technology acceptance is fast, automatic and often relies well-established habits. As noted above, rational technology acceptance is slower and much more volatile, based on conscious judgments and attitudes (Kahneman 2011).

In relation to the 'rational' sphere, participants discussed the importance of such aspects like usefulness, ease of use, accessibility, compatibility, risk and cost. Respondent #38 consolidated such views of the rational sphere "*…they all are easy-to-use now…but some are difficult to get access to…you know that there are some compatibility issues with some operating systems…if it's not free, they won't fly…*" The notion of rationality evidenced through the respondent focuses on CommApps features, functions and cost of retention.

Emotional sphere was quite evident in the data analysis. Participants described 'social influence' as one of the key cues (i.e. emotional reactivity to stimuli) in accepting a technology. Participant #12 states "*…The only reason for me to use this [CommApps] was to talk to my friends in my sports team…they all use this…*" The emotional sphere also included attractive emoticons that are beyond the core features and functions of the CommApps. For example, participant #36 explained the expressiveness of the emoticons in one of the CommApps "*…I use Telegraph only when I want to be cheeky and expressive…the other emo[ticon]s are not that cool*" It is noted that emotions in this study go beyond the network externalities that has been commonly employed as a theoretical explanation accepting social media (e.g., Stieglitz and Dang-Xuan 2013).

The 26 un-mapped open codes inductively yielded a new sphere, which tentatively titled as 'compliant.' The term compliant was defined by participant #18 as "*...my company has a complete ban on Facebook...I have to comply with their policies...*" Here the term compliant refers to such aspects like organizational policy, social and cultural pressure, or other limitation that prevent using particular CommApps as facets hindering their system acceptance. The compliance sphere focusses on measured actions by the user according with or meeting rules or standards.

Overall, the number of citations observed for each sphere evidenced that the emotional sphere is more likely to have a greater influence on one's technology acceptance with 39 open codes, then compliant (26 codes), followed by rational sphere (22 codes).

The Acceptance Journey

Having validated the two spheres as per the dual process theory and having identified a possible third sphere through induction, the study then observed how the spheres influence participants' acceptance of a technology.

The analysis revealed that participants commence accepting technologies from any of the three spheres. Participant #4, who was commenting on his introduction to CommApps states that "*...I knew that there were heaps of [Comm]apps, I was looking specifically for reviews of those that are stable and secure...*" Here, technology acceptance of participant #4 originates from the rational sphere (see panel A in Figure 1). On the other hand, participant #19 (see panel B in Figure 1) begins acceptance from the emotional sphere. S/he states that "*...there are many [Comm]apps, but you have to be on the one that your friends are...otherwise you miss out.*" The compliant sphere too was deemed important in the journey of accepting a technology. Participant #17 states that "*...I cannot use Facebook Messenger in China...so when I travel back, my friends were using QQ and WeChat...they are not bad...have the same features like Facebook Messenger...*" Here, the compliance stops the user from accepting the chosen technology (panel C in Figure 1). However, the user does not stop; rather he seeks alternative technology choices (systems) available in his phone. Similarly, respondent #20 (panel D) withdraws the use of Telegraph after a rational evaluation.

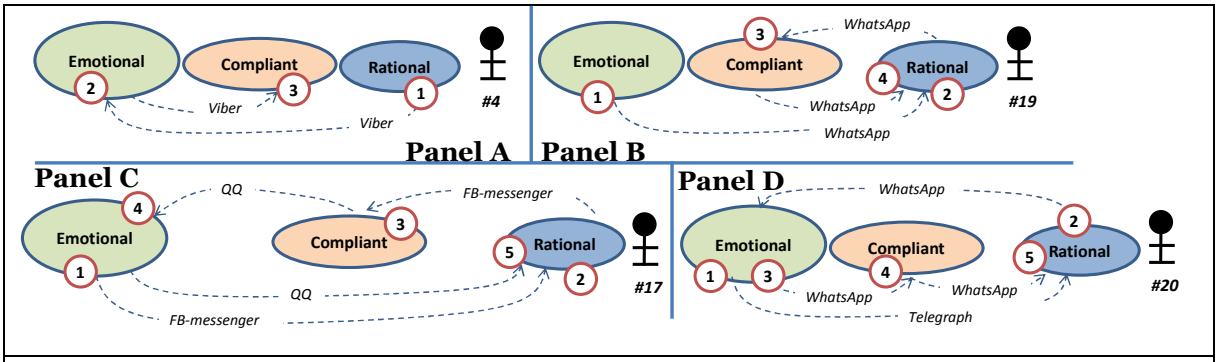

Figure 1. Acceptance Journey

Similar to the four respondents' acceptance journey in Figure 1, the acceptance journeys were drawn for all 67 respondents. Analyzing paths of the 67 respondents yielded Table 1, which explains six salient paths between the constructs, their description, a sample quote and the implications when the user is presented with multiple technologies. Using Figure 1 and Table 1 we make several observations.

Table 1. The six salient paths to technology acceptance					
	Path		**Explanation**	**Sample Quote**	**1:M Implication**
a	Rational >	Emotional	The user takes for this path only when most of the rational requirements are met. The user seeks social and/or personal affinity of their CommApps selection. Common with new users.	"*WhatsApp and Facebook Messenger are pretty same…I downloaded both on to my phone, but I mostly use WhatsApp, because that's where my friends are*" - Participant #11	The choice of systems allow the user to discontinue using a particular system. When users did not have such options (in 1:1), user ended-up unhappy using the only system available.
b	>	Compliant	When the CommApps meets the functional requirements, the user opts for this path usually when there is procedural uncertainty around the use of the CommApps.	"*You can use anything [CommApps] at home…but at work, we can only use Skype for Business*" - Participant #21	When there is only one system, then formal compliance was pre-attained.
c	Emotional >	Compliant	For a user to take this path, we observed that there is a degree of persuasion by the social and/or personal factors.	"*There was a social movement to not to use WhatsApp in my country. I was using this for a period but gave up using it to support the cause"* - Participant #45	The choice of systems allows social compliance to arise. Such notions do not arise from a single system environment.
d	>	Rational	Subsequent to the introduction of a CommApps through socializing, users take this path to investigate the features and functions of the CommApps. Most commonly observed 2nd step.	"*I got Viber because my friends use it…I am still discovering [its] features*" - Participant #05	The choice of systems had not increased the choice of features and functions available to a user. They still engage in activities that are similar in nature.
e	Compliant >	Rational	This is a highly unlikely path. It is unlikely, because for this path to occur, 'compliance' would have to have occurred as the 1st or 2nd step.	"*When they started boycotting apps that Jews developed in the Middle East, I had to see which ones [other CommAppss] would support my needs*" - Participant #01	The choice of systems made it possible for users to engage in selective compliances. Like the example described, social compliance would not have been possible if there was only one CommApps.
f	>	Emotional	This path is likely, only if the compliant sphere stops the use of the existing CommApps. As such, step 4 is likely to happen.	"*I had to switch to QQ and WeChat…FB Messenger was not working and Skype also had some issues*" - Participant #54	The choice of systems makes it possible to mix rational and emotional perspective in decision making.

All spheres are relevant: It was observed that all three spheres influence the technology acceptance process. As suggested in the dual process theory, the study highlights the importance of both emotional and rational spheres and the role of the newly identified compliant sphere. The mappings of the respondents demonstrated that 97% of the participants referred to all three spheres in accepting a technology. To the extent that all spheres are 'ticked-off' by the user, then s/he has acceptance the technology. However, the 'acceptance' of technologies is not a state of permanence with multiple technology options and it describes an iterative process.

Emotional: Eighty-seven percent (87%) of the participants of the study accepted a technology based on their emotional values. The finding is consistent with the dual process theory. When presented with system choices, users are likely to choose the emotional pathways, than rational conditions. The emotional sphere included perspectives like socializing, social influence and individual personality. For example, Skype was the first CommApps for participant #46 because "*…my family was already using it*." Moreover, respondent #31 states "*I don't like Facebook…so didn't want to use anything to do with that*."

Rational: The study found that each respondent would always make a rational evaluation of the CommApps selected through emotions. A rational evaluation included an assessment of the functions and features, ease of use and cost. When a user switches to a new CommApps due to emotional or compliance, the rationality was introduced again for the new CommApps. For example, when participant #17 selected QQ through his emotional assessment, he then makes a rational evaluation of the new CommApps.

Seamless, non-liner, recursive process: Though emotional, rational and compliant constructs can interrupt one's technology acceptance, the task that s/he was engaged in continued seamlessly. This is due to several reasons: (i) most CommApps have similar functionality and are free; (ii) the data requirements (i.e. telephone numbers and emails) are seamlessly drawn to multiple CommApps without restriction. For example, participant #17 changes from Facebook messenger to QQ due to Facebook censorship in China. Yet, the participant does not see this as an issue or a barrier. The technology acceptance, when choices are present, is not a linear process. Rather it is a recursive process, where the user evaluates and re-evaluates options.

Overall, the first proposition was observed to be true in most cases. When participants are presented with a choice of systems, they are most likely to be influenced by emotions. Proposition 2 was observed to be false in most cases. In contrast to the theoretical structures of TAM, the acceptance when choices are presented is not a linear process and that for most participants all three constructs of emotional, rational and compliant made a substantial influence in their technology acceptance decisions. In these conditions, a rational evaluation becomes less important for 2 reasons: (i) contemporary technologies are much improved (and continue to be improved) to the extent that rational assessments (e.g., ease of use) are (or becoming) superfluous and (ii) one would not choose a technology based on its usefulness, rather they deemed it useful at the point of selection. As such, a user is more likely to make emotional selections of which technology to use from his/her selection. Such findings would allow researchers derive constructs that would complement TAM. However, when a technology is brand new or for a new user, a rational and compliant assessment is likely to take place. Yet, the importance of those spheres diminishes overtime, when the user becomes stable and the emotional assessments take place.

Complete Agnosticism

The aforementioned findings expose a crucial perspective related to technology choice and what technological capabilities allow users to seamlessly move between CommApps. Even though the participants changed CommApps due to emotional, rational or compliant, they viewed their process of engagement with CommApps as a seamless activity with no disruptions. Furthermore, the participants were encouraged by the seemingly simple functionality of adding, editing and managing contact data in one CommApps and that they could be updated in all CommApps. When asked about the complexity of managing many CommApps participant #41 state "*it is fairly easy…you just have to do in one [Comm]App, and it does it in all six.*" Similarly, the participants did not face any challenges in changing from one operating systems to another (e.g., Android to iOS) or changing between types of phones (e.g.,

Samsung to Apple). As such, the study observes evidence of 'agnosticism[1]' between the platform, device and data[2]. Data agnosticism, which defers from agnosticism in platforms (Strîmbei 2013), databases and systems (Fultheim et al. 2015), refers to the ability for a system to use data from multiple systems seamlessly as the data was originating from the system in use. For example, similar to our observations in CommApps, even in a corporate information system, master data of one system could be available to be accessed using other systems. It is the data agnosticism that provides choice to a user with multiple CommApps to be used simultaneously that read, write and modify contact details (see Figure 2).

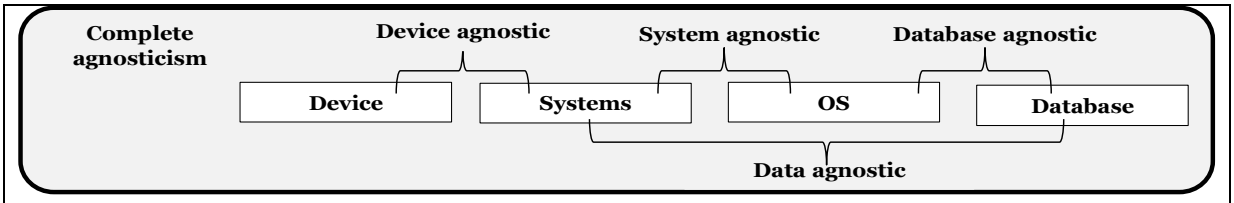

Figure 2. Complete Agnosticism

Herein, a customer master record (i.e. location, photos, emails and telephone numbers) can be updated, accessed and be added by any and all CommApps. This is an emerging area, yet an under-discussed theme.

A-priori Models and Research Propositions for Future Research

The observations made thus far in this research contribute to the derivation of an a-priori research model. Akin to analytic induction employed here (Patton 2002), relevant propositions and the research questions for each model are also derived herein, with due consideration to the research method.

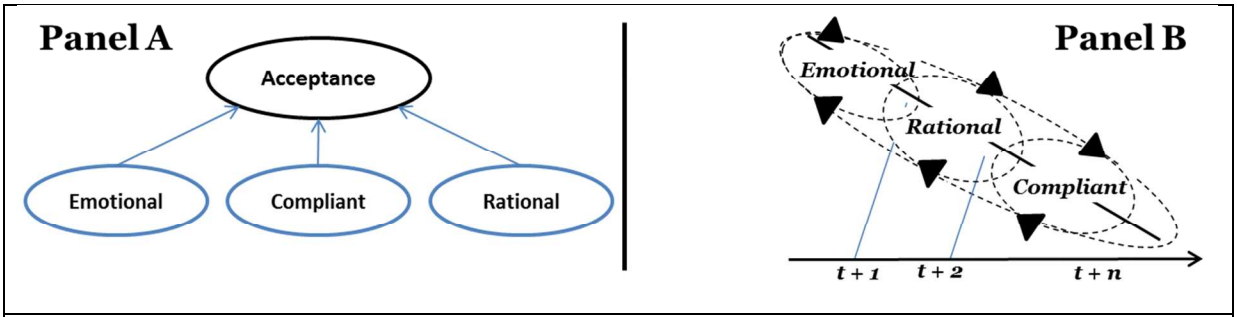

Figure 3. A-priori models of future research

Panel A in Figure 3 is a model for quantitative studies where the three constructs are depicted as formative measures. The formative instrument was developed considering the recommendations of Moore and Benbasat (1991) with elements of more recent scale development procedures (Petter et al. 2007). In developing formative measures, the goal was to promote mutual exclusivity and parsimony, identifying the most-suitable measures to be included in the a-priori model. For example, in a formative model, the accuracy and parsimony of measures is vital, as all measures and dimensions should be necessary. This means there should be minimal redundancy or overlap (mutual exclusivity), but also there should be no unnecessary dimensions or measures. A formative measurement provides specific and actionable attributes of a concept (Mathieson et al. 2001), which is particularly interesting in this case

[1] We acknowledge that the term 'agnosticism' has a long-standing meaning in religious studies, which means that the view that the truth values of certain claims. In an IS context, agnosticism refers to anything that is designed to be compatible across most common systems.

[2] Not database, which describes the capacity of software to function with any vendor's database management system.

from a practical viewpoint. Based on the findings above and staying true to formative measurement guidelines seeking completeness, a proposition derived. A proposition (H_a) '*in technology acceptance when one user has multiple systems, all three constructs (rational, emotional and compliant) make a sufficient and statistically significant contribution*' can investigate such perspectives. An assumption herein is that each construct is measured adequately using mutually-exclusive set of measures. Similarly, a researcher could develop the relative impact of each of the constructs, by establishing the individual contributions to r^2. As such, the second proposition can be established as follows. A proposition like (H_b) '*in technology acceptance when one user has multiple systems, emotional aspects will make the most significant contribution to technology acceptance*' could investigate this. Similarly, the contributions of each construct can be measured. It is acknowledged that the three constructs can be misconstrued for a composite measure. It is recommended that future studies be employing guidelines of formative construct development and validation of Diamantopoulos and Winklhofer (2001) and Jarvis et al. (2003).

Panel B of Figure 3 depicts a technology acceptance model in a funnel for a qualitative investigation. With the objective of capturing the richness of a context (i.e. how? and why?), in terms of the technologies, geopolitical or demographics, a qualitative study could focus on conditions, process and the deep reflections to understand how individuals come to a stable collection of technologies. As such, for example, a researcher could observe the dynamics between the spheres. Proposition (H_c) '*An individual user will arrive at a stable collection of technologies over a period of time*' can investigate this. Moreover, future research can focus on the factors that influence the selection of how and under what conditions individuals choose to use intuition or reasoning. Such research will benefit from theories like the elaboration likelihood model of Petty and Cacioppo (1986). Triangulation of data sources using quantitative data can also improve the generalizability of the research findings (Flick 2016; Jick 1979).

Conclusion

This study made several observations relating to the emerging choice of system that purport to provide a 'choice' to the user to complete a task/business process. Using TAM as the designated IS theory, the study employed the dual process theory, which describes the decision making process where choice is at present through emotional and rational dimensions. The analytic induction method followed in this study demonstrates that, when a choice is present, a user alters the established rational process of technology acceptance and skews towards emotional aspects. In addition, the study observed the emerging 'compliant' view. The acceptance process suggests that a user engaged in emotional, rational as well as compliant aspects and that the process is continuous, dynamic and iterative. It was highlighted that most will commence their acceptance process through emotional, yet rationality is apparent in every participant. Finally, staying true to the mechanisms of analytic induction, several propositions were derived that can be tested using quantitative methods. Future research is planned to further the body of knowledge of the impact of data agnosticism and its implications to research and practice.

It is through the complete agnosticism that a selection of systems for the same task can be developed. This research makes several research contributions. John Gage's notion of "the network is the computer" is a reality now and will only grow with the rapid proliferation of cloud computing, SaaS architectures and subscription pricing models. Such changes will make it indisputable that the future of computing will give the user multiple systems for the same task or business process. This paper discussed the theoretical implications of how such changes would influence the IS theories using TAM as an exemplar. The discussion and related assessment provides a guideline for future studies. For TAM specifically, this study provides a novel approach by conceiving technology acceptance as a continuous, dynamic and iterative process. As Lamb and Kling (2003) discussed unlike the traditional IS users, the contemporary IS users are immersed in complex and diverse socio-technical environments. Going beyond the traditional organizational IS users, Yoo (2010) explained, experiential computing such as mobile apps must be further investigated. For the practitioners, this research demonstrates the influence of emotions, rational and compliant in technology acceptance. For example, companies can capitalize the emotional promotions through the family, friends, peers, as well as social movements to promote use of CommApps. However, this study demonstrated that the features and functions of a CommApps have the potential to interrupt the process, where only those CommApps that were deemed acceptable in their features and functions were continued.

References

Aamodt, S., and Wang, S. 2008. Welcome to Your Brain: Why You Lose Your Car Keys but Never Forget How to Drive and Other Puzzles of Everyday Behavior. USA: Bloomsbury Publishing

Benlian, A., and Hess, T. 2011. "Opportunities and Risks of Software-as-a-Service: Findings from a Survey of IT Executives," Decision Support Systems (52:1), pp 232-246.

Burton-Jones, A., and Gallivan, M.J. 2007. "Toward a Deeper Understanding of System Usage in Organizations: A Multilevel Perspective," MIS Quarterly (31:4), pp 657-679.

Burton-Jones, A., and Grange, C. 2012. "From Use to Effective Use: A Representation Theory Perspective," Information Systems Research (24:3), pp 632-658.

Burton-Jones, A., and Straub, D.W. 2006. "Reconceptualizing System Usage: An Approach and Empirical Test," Information Systems Research (17:3), pp 228-246.

Cheung, R., and Vogel, D. 2013. "Predicting User Acceptance of Collaborative Technologies: An Extension of the Technology Acceptance Model for E-Learning," Computers & Education (63:1), pp 160-175.

Diamantopoulos, A., and Winklhofer, H.M. 2001. "Index Construction with Formative Indicators: An Alternative to Scale Development," Journal of Marketing Research (38:2), pp 269-273.

Dibbern, J., Winkler, J., and Heinzl, A. 2008. "Explaining Variations in Client Extra Costs between Software Projects Offshored to India," MIS Quarterly (32:2), pp 333-366.

Eden, R., Sedera, D., and Tan, F. 2012. "Archival Analysis of Enterprise Resource Planning Systems: The Current State and Future Directions," International Conference on Information Systems, Orlando Florida, USA: AIS Electronic Library (AISeL).

Eden, R., Sedera, D., and Tan, F. 2014. "Sustaining the Momentum: Archival Analysis of Enterprise Resource Planning Systems (2006–2012)," Communications of the Association for Information Systems (35:3), pp 39-82.

Flick, U. 2016. "Mantras and Myths the Disenchantment of Mixed-Methods Research and Revisiting Triangulation as a Perspective," Qualitative Inquiry).

Fultheim, S., Zlotogorski, H., and Romem, Y. 2015. "Cluster-Based Operating System-Agnostic Virtual Computing System." Google Patents.

Gable, G.G., Sedera, D., and Chan, T. 2008. "Re-Conceptualizing Information System Success: The IS-Impact Measurement Model," Journal of the Association for Information Systems (9:7), pp 377-408.

Google Scholar. 2015. "Templating and Provisioning of Collaborative Facilities for a Data-Agnostic Collaboration Service." from https://scholar.google.com.au/scholar?cites=13724951413239249701&as_sdt=2005&sciodt=0,5&hl=en

Greene, J.D., Nystrom, L.E., Engell, A.D., Darley, J.M., and Cohen, J.D. 2004. "The Neural Bases of Cognitive Conflict and Control in Moral Judgment," Neuron (44:2), pp 389–400.

Greene, J.D., Sommerville, R.B., Nystrom, L.E., Darley, J.M., and Cohen, J.D. 2001. "An Fmri Investigation of Emotional Engagement in Moral Judgment," Science (New York, N.Y.) (293:5537), pp 2105–2108.

Harris, J., Ives, B., and Junglas, I. 2012. "IT Consumerization: When Gadgets Turn into Enterprise IT Tools," MIS Quarterly Executive (11:3), pp 99-112.

Hsin Chang, H., Rizal, H., and Amin, H. 2013. "The Determinants of Consumer Behavior Towards Email Advertisement," Internet Research (23:3), pp 316-337.

Hsing Wu, C., Kao, S.-C., and Lin, H.-H. 2013. "Acceptance of Enterprise Blog for Service Industry," Internet Research (23:3), pp 260-297.

Hsu, C.-L., and Lin, J.C.-C. 2008. "Acceptance of Blog Usage: The Roles of Technology Acceptance, Social Influence and Knowledge Sharing Motivation," Information & Management (45:1), pp 65-74.

Jarvis, C.B., MacKenzie, S.B., and Podsakoff, P.A. 2003. "A Critical Review of Construct Indicators and Measurement Model Misspecification in Marketing and Consumer Research," Journal of Consumer Research (30:2), pp 199-216.

Jick, T.D. 1979. "Mixing Qualitative and Quantitative Methods: Triangulation in Action," Administrative Science Quarterly (24:4), pp 602-611.

Kahneman, D. 2011. Thinking, Fast and Slow. Macmillan.

Kim, S., and Garrison, G. 2009. "Investigating Mobile Wireless Technology Adoption: An Extension of the Technology Acceptance Model," Information Systems Frontiers (11:3), pp 323-333.

Lai, V.S., and Li, H. 2005. "Technology Acceptance Model for Internet Banking: An Invariance Analysis," Information & Management (42:2), pp 373-386.
Lamb, R., and Kling, R. 2003. "Reconceptualizing Users as Social Actors in Information Systems Research," MIS Quarterly (27:2), pp 197-236.
Li, M., Dong, Z.Y., and Chen, X. 2012. "Factors Influencing Consumption Experience of Mobile Commerce," Internet Research (22:2), pp 120-141.
Lin, P.-H. 2013. "Shopping Motivations on the Internet: An Empirical Study of Trust, Satisfaction and Loyalty," International Journal of Electronic Business Management (11:4), p 238.
Lokuge, S., and Sedera, D. 2014a. "Deriving Information Systems Innovation Execution Mechanisms," Australasian Conference on Information Systems (ACIS 2014), Auckland, New Zealand: AIS Library.
Lokuge, S., and Sedera, D. 2014b. "Enterprise Systems Lifecycle-Wide Innovation," Americas Conference on Information Systems (AMCIS 2014), Savannah, Georgia: AIS Library.
Lokuge, S., and Sedera, D. 2014c. "Enterprise Systems Lifecycle-Wide Innovation Readiness," Pacific Asia Conference on Information Systems (PACIS 2014), Chengdu, China: AIS Library.
Manning, P.K. 1982. "Analytic Induction," in: Qualitative Methods: The Handbook O F Social Science Methods, R.B.S.P.K. Manning (ed.). Cambridge, MA: Ballinger Publishing Co., pp. 273-302.
Mathieson, K., Peacock, E., and Chin, W. 2001. "Extending the Technology Acceptance Model: The Influence of Perceived User Resources," Database for Advances in Information Systems: (32:Summer (3)), pp 86-112.
Minor, J. 2016. "The 100 Best Iphone Apps of 2016," in: PC Magazine.
Moore, G.C., and Benbasat, I. 1991. "Development of an Instrument to Measure the Perceptions of Adopting an Information Technology Innovation," Information Systems Research (2:3), pp 192-222.
Palekar, S., Atapattu, M., Sedera, D., and Lokuge, S. 2015. "Exploring Spiral of Silence in Digital Social Networking Spaces," International Conference on Information Systems (ICIS 2015), Fort Worth, Texas: AIS.
Patton, M.Q. 2002. Qualitative Research and Evaluation Methods. Thousand Oaks, CA: Sage Publications.
Petter, S., Straub, D., and Rai, A. 2007. "Specifying Formative Constructs in Information Systems Research," MIS Quarterly (31:4), pp 623-656.
Petty, R.E., and Cacioppo, J.T. 1986. "The Elaboration Likelihood Model of Persuasion," in: Communication and Persuasion. Springer, pp. 1-24.
Rivard, S., Lapointe, L., and Kappos, A. 2011. "An Organizational Culture-Based Theory of Clinical Information Systems Implementation in Hospitals," Journal of the Association for Information Systems (12:2), pp 123-162.
Scott, J.E., and Walczak, S. 2009. "Cognitive Engagement with a Multimedia ERP Training Tool: Assessing Computer Self-Efficacy and Technology Acceptance," Information & Management (46:4), pp 221-232.
Sedera, D., and Dey, S. 2013. "User Expertise in Contemporary Information Systems: Conceptualization, Measurement and Application," Information & Management (50:8), pp 621–637
Sedera, D., and Gable, G.G. 2010. "Knowledge Management Competence for Enterprise System Success," The Journal of Strategic Information Systems (19:4), pp 296-306.
Sedera, D., Lokuge, S., Grover, V., Sarker, S., and Sarker, S. 2016. "Innovating with Enterprise Systems and Digital Platforms: A Contingent Resource-Based Theory View," Information & Management (53:3), pp 366–379.
Statista. 2016. "Most Popular Global Mobile Messenger Apps 2016 (Fee-Based)." The Statistics Portal, from http://www.statista.com/statistics/258749/most-popular-global-mobile-messenger-apps/
Stieglitz, S., and Dang-Xuan, L. 2013. "Emotions and Information Diffusion in Social Media—Sentiment of Microblogs and Sharing Behavior," Journal of Management Information Systems (29:4), 2013/04/01, pp 217-248.
Strîmbei, C. 2013. "Data Integration Architecture Using Web Service Data Objects," Global Journal on Technology (2).
Tan, F.T.C., Tan, B., Wang, W., and Sedera, D. 2016. "Management Innovation for IT-Enabled Operational Agility: An Interdependencies Perspective," Information & Management).
Venkatesh, V., and Davis, F.D. 2000. "A Theoretical Extension of the Technology Acceptance Model: Four Longitudinal Field Studies," Management Science (46:2), pp 186-204.
Venkatesh, V., Morris, M.G., Davis, G.B., and Davis, F.D. 2003. "User Acceptance of Information Technology: Toward a Unified View," MIS Quarterly (27:3), pp 425-478.

Wallace, L.G., and Sheetz, S.D. 2014. "The Adoption of Software Measures: A Technology Acceptance Model (Tam) Perspective," Information & Management (51:2), pp 249-259.
Walther, S., Sedera, D., Sarker, S., and Eymann, T. 2013. "Evaluating Operational Cloud Enterprise System Success: An Organizational Perspective," European Conference on Information Systems (ECIS 2013), Utrecht, p. 16.
Warshaw, P.R. 1980. "A New Model for Predicting Behavioral Intentions: An Alternative to Fishbein," Journal of Marketing Research (17:2), pp 153-172.
Weiß, F., and Leimeister, J.M. 2012. "Consumerization, IT Innovations from the Consumer Market as a Challenge for Corporate IT," Business & Information Systems Engineering (4:6), pp 363-366.
Winkler, T.J., and Brown, C.V. 2013. "Horizontal Allocation of Decision Rights for on-Premise Applications and Software-as-a-Service," Journal of Management Information Systems (30:3), pp 13-48.
Wixom, B.H., and Todd, P.A. 2005. "A Theoretical Integration of User Satisfaction and Technology Acceptance.," Information Systems Research (16:1), pp 85-102.
Wu, J.-H., and Wang, S.-C. 2005. "What Drives Mobile Commerce?: An Empirical Evaluation of the Revised Technology Acceptance Model," Information & Management (42:5), pp 719-729.
Yoo, Y. 2010. "Computing in Everyday Life: A Call for Research on Experiential Computing," MIS Quarterly (34:2), pp 213-231.
Yoo, Y., Boland Jr, R.J., Lyytinen, K., and Majchrzak, A. 2012. "Organizing for Innovation in the Digitized World," Organization Science (23:5), pp 1398-1408.
Yoo, Y., Henfridsson, O., and Lyytinen, K. 2010. "The New Organizing Logic of Digital Innovation: An Agenda for Information Systems Research," Information Systems Research (21:4), pp 724-735.
Zhou, T. 2011. "An Empirical Examination of Initial Trust in Mobile Banking," Internet Research (21:5), pp 527-540.