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Mémoire de fin d'études

A comparison between usage and recommendations of Gmail and self-hosted email systems

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Année universitaire 2013-2013

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Acknowledgements

I would first like to thank my thesis director Prof. Dr. Frank G. GOETHALS for all the support and valuable advices he has been giving me during the writing of this thesis, especially through the time he dedicated to answering my questions and giving me directions for my researches. He helped me define my research question and methodology to a great extent and advised me on how to conduct the results analysis.

I would also like to thank Prof. Dr. Shamel ADDAS for his courses regarding statistical analysis and software usage, and all people who participated to this paper through answering the survey and interviews I conducted as part of these researches.

Finally, I would like to thank the IÉSEG, School of Management, for giving me the opportunity to work on this topic. It has been an enriching experience that has lead me to better discover the extent of the motivations for self-hosted systems usage in hacker communities.

Abstract

The use of email as a way of communication has got more and more important over the past decade. Because of this growing trend, people have to choose a system to manage their emails. Using several models of acceptance and resistance to information technologies, we approach the antecedents for users' usages and recommendations of those email systems.

Moreover, this research studies some of the antecedent that relates to the user instead of the system's perception. We thus studied particularly some moderating constructs regarding users' perceived self-efficacy and their ethical motivations. In order to find people that would have particular skills and ethics regarding email management, we focused our analysis on hacker communities.

This research provides results supporting the hypothesis that ethical and hedonic motivations lead users away from Gmail and toward the use of self-hosted email systems, although it also emphasizes the lack of easily accessible resources for people who would like to start using such systems.

Keywords: Acceptance, UTAUT, Resistance, Information Technologies (IT), Recommendations, Email systems, Gmail, Hackers

Table of content

1 Introduction

This thesis looks at the different incentive that lead people to choose between different systems to manage their emails and to recommend those systems to other people around them. Through the study of those information systems and technologies (IST), we can approach how users come to change for and use a certain technology, or on the contrary of how they resist it, in a voluntary environment, and how they talk about it to their friends.

Using several theoretical models of acceptance and resistance of information technologies (IT), and especially the Unified Theory of Acceptance and Use of Technology (UTAUT) model, we would like to explain users' behaviors through measuring different factors that impact these decisions. Those factors include constructs that have been thoroughly studied regarding the acceptance of a technology, like the usefulness and ease of use perceptions of a system over the other, together with some new constructs such as the Trustworthiness of the third party managing the email system.

Moreover, this research studies some of the antecedent that relates to the user instead of the system's perception. Thus, we included some moderating constructs regarding users' perceived self-efficacy and their ethical motivations, for we believe those characteristics may influence the way users evaluate the system.

We narrowed the systems studied to Gmail on one hand, the email system provided by Google Inc., which also is one of the mostly used email system worldwide, and self-hosted email systems on the other hand, that are directly managed by users.

Also, we conducted an important part of this research, among the hacker community. People from this community differentiate themselves from non-hackers through the use of different information systems and technologies. They have particular skills and ethics, which may lead to different choices regarding the technologies they use. Hackers, and especially hacktivists, which are activists hackers, seem to be particularly concerned about email systems because they value privacy protection and the decentralization of services on the internet. They are also more inclined to think about those topics for they are more likely to have the necessary skills and knowledge, and because they usually regard activities that include computer usage as fun.

The central research question can be formulated as follows:

What are the differences in the antecedents of the decision to use and / or recommend a particular email system and can those differences predict the users' choices?

In this thesis, we will first review the existing literature on those topics and develop on the systems and communities we chose to focus on. We will then set up our research model

and hypothesis. Finally, we will analyze and discuss the results we obtain together with the limitations of this research.

2 Literature review

Over the past decades, information systems and technologies have become a more and more important part of our lives, both in professional and personal environments. Thus, a lot of researches have been done regarding this topic. Most of those studies examined the acceptance of IT by users and focused on mandated technologies or work environments.

Most of researchers who concentrated on user resistance in IT studied the resistance to change in the context of implementation of new IS in mandatory environments. On the other hand, researchers studied consumer resistance to some products according to their values and cultural standards, outside of the specific IT focus.

We believe it would be interesting to link those two fields of study: consumer resistance and user behavior toward IT to study the system used by hacker and non hackers to manage their emails.

2.1 Acceptance

As the low usage of information technologies has been identified as one of the main issues constitutive of the "productivity paradox" (Landauer, 1995; Sichel, 1997), defined as the "discrepancy between measures of investment in information technology and measures of output at the national level"(Wetherbe et al., 2007), there have been a lot of researches regarding how individual users accept and use information technologies. Several theoretical models have been developed to help companies understand the successes and failures of their information systems implementations.

Thus, the implementation of information systems in companies functioning on a hierarchical basis has been thoroughly studied until now (DeLone and McLean, 2003, 1992) , especially in the context of mandated use (Brown et al., 2002). User acceptance however has not only been studied in work related environment, but also in households (Brown and Venkatesh, 2005; Brown et al., 2006). The different case studies and researches have led to the definition of models to understand user acceptance as defined by Dillon and Morris (Dillon and Morris, 1996) as "the demonstrable willingness within a user group to employ information technology for the tasks it is designed to support".

Among those systems, we can quote the Theory of Reasoned Action (TRA) (Fishbein and Ajzen, 1975), which posits behavioral intention to be the main determinant of the actual behavior, the intention being itself influenced by the attitude toward the behavior and the subjective norm. The Technology Acceptance Model (TAM) (Davis, 1989) that focuses on IT usefulness and ease of use, using the notion of self-efficacy, defined as the "judgments of how well one can execute courses of action required to deal with prospective situations" (Bandura, 1982) and cost-benefit paradigm, defined as "the extent to which decision makers actually tradeoff effort and accuracy, and do so optimally" (Johnson and Payne,

1985). The TAM introduces the importance of the difference between the actual usefulness and ease of use of a system and the way those are perceived by the user. That model was expanded by the TAM 2 (Venkatesh and Davis, 2000) and the TAM 3 (Venkatesh and Bala, 2008), which were two of the studies that lead the authors to the UTAUT model (see below). Those two models, TRA and TAM, were also jointly examined by Davis and al. (Davis et al., 1989), who compared the impacts of attitude, subjective norm, perceived ease of use and perceived usefulness on behavioral intention. The Motivational Model (MM) (Davis et al., 1992), that is based on the study of intrinsic and extrinsic motivation to understand IT adoption. The Theory of Planned Behavior (TPB) (Ajzen, 1991), that focuses on users incentive to accept or resist a specific IT (intentions, perceived behavioral control, subjective norm, …) and that was tested in several environments outside mandated use, including e-commerce (Pavlou and Fygenson, 2006). So as to include both the characteristics of the system and those of the user, Taylor and Todd developed the Combined TAM and TPB (C-TAM-TPB) (Mathieson, 1991; Taylor and Todd, 1995b). The Model of PC Utilization (MPCU) (Thompson et al., 1991) that adapted the work of Triandis (Triandis, 1980, 1971) to the introduction of personal computers in the work environment. The Innovation Diffusion Theory (IDT) (Agarwal and Prasad, 1998; Rogers, 1995) that studied the different characteristics of adopted technologies such as relative advantage, compatibility, compatibility, observability and triability (Agarwal and Prasad, 1997; Moore and Benbasat, 1991) and defines early adopters as young, educated, attuned to mass medias, and having a lot of interpersonal communications (Brancheau and Wetherbe, 1990). The Social Cognitive Theory (SCT) (Compeau and Higgins, 1995) that formalizes the interactions between behaviors, personal factors and external environment.

The UTAUT model developed by Venkatesh and al. (Venkatesh et al., 2003) and its extension the UTAUT 2 (Venkatesh et al., 2012) are a synthesis of those 8 main models used until then and can be used to study the acceptance and use of technology by individual users.

2.2 Resistance to IS

Several studies exist regarding user resistance to IST, although they mainly observe resistance to change in specific case studies in work environments (Hirschheim and Newman, 1988; Norzaidi et al., 2008; Sanford and Oh, 2010). Several important researches have been done to review the literature (Markus, 1983), develop a model of resistance to IT implementation (Cooper and Zmud, 1990; Lapointe and Rivard, 2005), and to determine the ways companies should act / improve to enhance the acceptance of or reduce the resistance to their IST by their employees (Rivard and Lapointe, 2012). This resistance model was later expended with the notion of cynicism as a form of passive resistance (Selander and Henfridsson, 2012).

Some of the main models also include the Equity Implementation Model (Joshi, 1991, 1989) which focuses on a user evaluation of costs and benefits as the TAM did, but also a comparison with the costs and benefits of other users (coworkers or hierarchical management). Building on that model, Kim and Kankanhalli (Kim and Kankanhalli, 2009) linked it to the Status Quo Bias theory (Samuelson and Zeckhauser, 1988). Klaus and Blanton (Klaus and Blanton, 2010) also expanded it with the notion of psychological contract and its violations (Morrison and Robinson, 1997), so as to take into account the expectations of employees regarding the company they work for, and the way they may evolve when implementing a change in IST.

2.3 Forms of resistance

On the consumer point of view, as opposed to observing employees, resistance to non-IST related products has also been thoroughly studied. Several researches have been observing the different characteristics of resistance in general, and some have done an important work in synthesizing the literature around that topic to try developing a unified model (Close and Zinkhan, 2007; Roux, 2007).

Several studies also focus on organized forms of resistance such as boycott through organizations such as Greenpeace or Peta (Innes, 2006), and more specifically on what the users motivations for boycott are (Akpoyomare et al., 2012; Klein et al., 2004; Neilson, 2010). Although there are no organizations focusing on boycotting systems such as Gmail, these studies are interesting here as boycott can be compared to other collective forms of resistance such as the alternative community based systems (Dalli and Corciolani, 2008) that can be formed by hackers social groups (IRC channels, hackerspaces, festivals, …) and the ways they create a cultural form of resistance that can be seen as a creative resistance (Ahuja and Thatcher, 2005; Holt, 2002) or as a way to regain power over important companies (Moraes et al., 2011). (see the Social Influence variable)

2.4 Favorable and adverse recommendations

Users acceptance or resistance to their products or services is not the only user behavior that concerns companies. Studies have shown that users recommendations to their peers can have an important effect on a firm's welfare (East et al., 2005). The literature has been focusing on two main research topics: on one hand, the effect of recommendations, based on the recommendee relationship with the recommender (Gershoff et al., 2007), through characteristics such as the age of a relationship (Verhoef et al., 2002) or the social and temporal distance between the people involved (Zhao and Xie, 2011); and on the other hand the different triggers that lead someone to recommend a particular brand, product or service (Bechwati and Nasr, 2011). Studies have shown that there might be different antecedent for a recommendation to be made, such as the time that passed during one's experience of a product or service and the actual recommendation (East et al., 2013) or the commitment of someone to the company they recommend (Brown et al., 2005). However,

the link between satisfaction and positive recommendation seem to be the most studied antecedent (Anderson, 1998; Brown et al., 2005; Morgan and Rego, 2006; Som et al., 2011), which has also been studied in the opposite for the link between dissatisfaction and adverse recommendation (Richins, 1983).

3 Population studied

3.1 Definition

> *"We're technocrats, we're like 'oh well, if they lock down my ipad, I know how to jailbreak it; if I want to run some code on it that someone else won't let me, I know how to do it'."*
> *(Doctorow, 28c3, 2011)*

Cultural and ethical values and skills of users can have a very important impact on user resistance or acceptance in the context of the population studied. Hackers can be considered as a cultural group with particular ethics (Cross, 2006; Dunbar-Hester, 2008; Leidner and Kayworth, 2006) and skills. Although hackers are often perceived as black hats, who "violate computer security for little reason beyond maliciousness or for personal gain" (Moore, 2010), we will here study hackers that would consider themselves as having a particular sense of ethics, making them white hats or hacktivists.

3.2 Skills and competences

Hackers are usually defined as people with an important interest in computers and IT in general. An important branch of hacking regards informatics security and cryptography, which lead those people to get interested in email systems in the continuity of their research about email encryption. Thus, hacker communities are interesting to study in the context of the study of the impact of Self-Efficacy on acceptance of or resistance to IT.

Regarding their skills, the perceived self-efficacy of hackers may be above average. This may be an important factor as the link between fun and self-efficacy has been emphasized by Agarwal and Karahanna (Agarwal and Karahanna, 2000) and several studies have demonstrated the impact of computer self-efficacy on user resistance and acceptance of IST (Marakas et al., 2007, 1998), by expending the Attributional Model of Resistance to IT (Martinko et al., 1996).

3.3 Interest and fun

Another consequence of their interest in IT, is that hackers are usually having fun when using IT. The link between the level of skills and the hedonic motivation has been emphasized in the literature (Venkatesh et al., 2003; Webster and Martocchio, 1992). Moreover, people from the hacker community can be defined as being curious and innovative, which can also increase the hedonic motivation (Agarwal and Karahanna, 2000).

Also, athough it was dropped from the first UTAUT model and reintroduced in the UTAUT 2, the hedonic motivation seems to play an important role in user acceptance of a technology (Venkatesh, 1999), especially with young users (Wahler and Tully, 1991). That

Telecomix is a sociocyphernetic telecommunist feminist cluster of internet and data loving bots and people, always striving to protect and improve the internet and defend the free flow of data. (telecomix.org)

seems to be the case particularly when the function of an IST is not only utilitarian (Van der Heijden, 2004).

3.4 Ethics and activism

Some hackers also developed the context of hactivism. The word is formed of the contraction between "hacker" and "activism", and designate people who use their IT skills in a political context. They often gather in groups such as La Quadrature du Net, Telecomix, …

La Quadrature du Net is a non-profit association defending the rights and freedoms of citizens on the Internet. (laquadrature.net)

As seen above, cultural ethics can be an important motivation for resistance, even in IT related consumption (Leonard et al., 2004). The issue people may have regarding Google and privacy concerns has been documented (Berger and Topol, 2008) especially with the recent revelation regarding the NSA's PRISM program (Greenwald and MacAskill, 2013; *Appelbaum 29c3 Keynote*, 2012). Although the Google company has been trying to reassure consumers on the treatment of their personal data, for instance through their slogan "Don't do evil" (Google, 2012), the skepticism of consumers to "citizen arguments" of retailers has been documented (Mejri et al., 2012).

3.5 Gender diversity

On another level, the hacker community is also perceived as a very masculine group (Dunbar-Hester, 2008) (see the explanation of the Gender variable for more details).

That may be impact the acceptance of IST by users as gender seems to be an important moderator to user acceptance or resistance to IT (Oudshoorn et al., 2004; Venkatesh and Morris, 2000).

Also, the use of information technologies being a traditionally more masculine activity, it is likely that people with a feminine gender or with a non typical masculine gender (effeminate, gay, transgender…) may feel less welcome in this community or have more apprehensions. Thus, the hacker community may be mostly represented by cisgendered heterosexual males or by people pretending to be so (e.g., closeted homosexual men).

4 IST studied

A lot of different email systems can be used by people. We have decided to focus on comparing two kinds of systems: the Gmail service proposed by Google, and the self-hosted email system, where users are responsible for managing both their email servers and clients. Here are below the specificities of each system and their analysis according to three-tier layer architecture point of view.

4.1 Google mail

4.1.1 How it works

Google email service, Gmail, was released on April 1st, 2004 and had 425 million users in January 2012 according to Google.

Regarding the domain name, Google provides several domain names (@gmail.com, @gmail.fr, @gmail.nl, …), however, a user can also set up a gmail account using their own domain name.

4.1.2 The presentation tier

Although Gmail supports POP / IMAP protocols that would enable its users to use a separated email client installed on their computer, and although Google released Gmail Mobile, an application for tablets and mobile users in 2005, we will focus here only on the webmail interface proposed by Google. This interface is based on HTTPS protocols by default and is available in html simplified versions for slower connections. It is available in 40 different languages.

The display of the interface is also customizable by users.

4.1.3 The logic tier

Some of the main advantages of the Gmail system reside in its logic tier. As such, the efficiency of its community-driven spam filter and the speed of its search function, that supports features such as auto-completion or regular expressions, are often quoted as important competitive advantages of the Gmail system (see interviews).

Google also proposes to link its different services with Gmail accounts. That way, it is possible to link an address book with a Google + account, event invitations with a Google Calendar, pictures to Picasa and attached documents to Google drive or to use instant messaging through Google chat or Google voice with one's contacts.

Regarding security, Google has enforced the two-validation, to prevent from password hacking. It is also possible to use PGP keys through extensions such as OpenGPG, that is available on Mozilla Firefox and Chromium based browsers, although there may be some security breach in the JavaScript code running on the webmail page.

4.1.4 The data tier

The user's data is stored on Google servers, allowing a certain safety. Professionally administered servers all over the world allow for a non-stop accessibility of the data, the certainty of not accidentally loosing the data, …

Gmail also proposes to aggregate several mail boxes in one through pop and imap protocols. Thus, the emails one may access through the Gmail platform may not have all been sent directly to the Google servers.

4.2 Self-hosted emails

Self-hosted email systems are defined as any email system where the user can access and modify the server used for storing the system.

Self-hosted email systems are defined as any email system where the user has an administrator access (root) to the server used for storing the system.

4.2.1 How it works

On the opposite to the integrated Gmail system, the self-hosted system is much more adjustable. Thus, it is very difficult to find several users using the exact same configuration.

In order to set up their email accounts, users will also need to register their own domain name, which can also be used if they were to create any other kind of service such as a website, a file sharing server, … Although it usually requires more IT skills than other systems, there are some tools to make it easier for people without important knowledge in IT, such as YunoHost (yunohost.org) or the FreedomBox.

Self-hosted email systems allow for a decentralization of the information on the Internet network (*Bayart RMLL*, 2007), and thus may be linked to an ethics of protecting web neutrality or to the idea that one's data should only be on their own machine and not managed by multinational companies.

4.2.2 The presentation tier

When self-hosting their emails, users may decide to use either an email client installed on their computer (Mozilla Thunderbird, Microsoft Outlook, …) or a webmail (Horde, Roundcube, …).

4.2.3 The logic tier

Here again, many different applications exist. Search functions, spam filters or address book managers are often linked with the interface chosen by the user and thus vary quite a lot among users. It is also possible to add other kinds of services such as calendars, address books, …

Although a lot of those functions are often natively included in email clients, they may also be separated software or scripts directly based on the email server.

4.2.4 The data tier

There are different ways to self-host one's emails: Users may choose to host their email server on their own physical server either at home with devices such as Raspberry Pi or CubiBoards, or in a datacenter. They may also rent a distant server, a widely spread technique through the existence of mutualized servers such as those proposed by suppliers such as Gandi, OVH, … Several users may also choose to host their emails together to lower the time and energy costs linked to an email server rental, maintenance and daily care.

5 Research Model

Building from the literature review, we propose the models represented in figures 5-1 and 5-2:

Figure 5-1 Research model relative to technology usage.

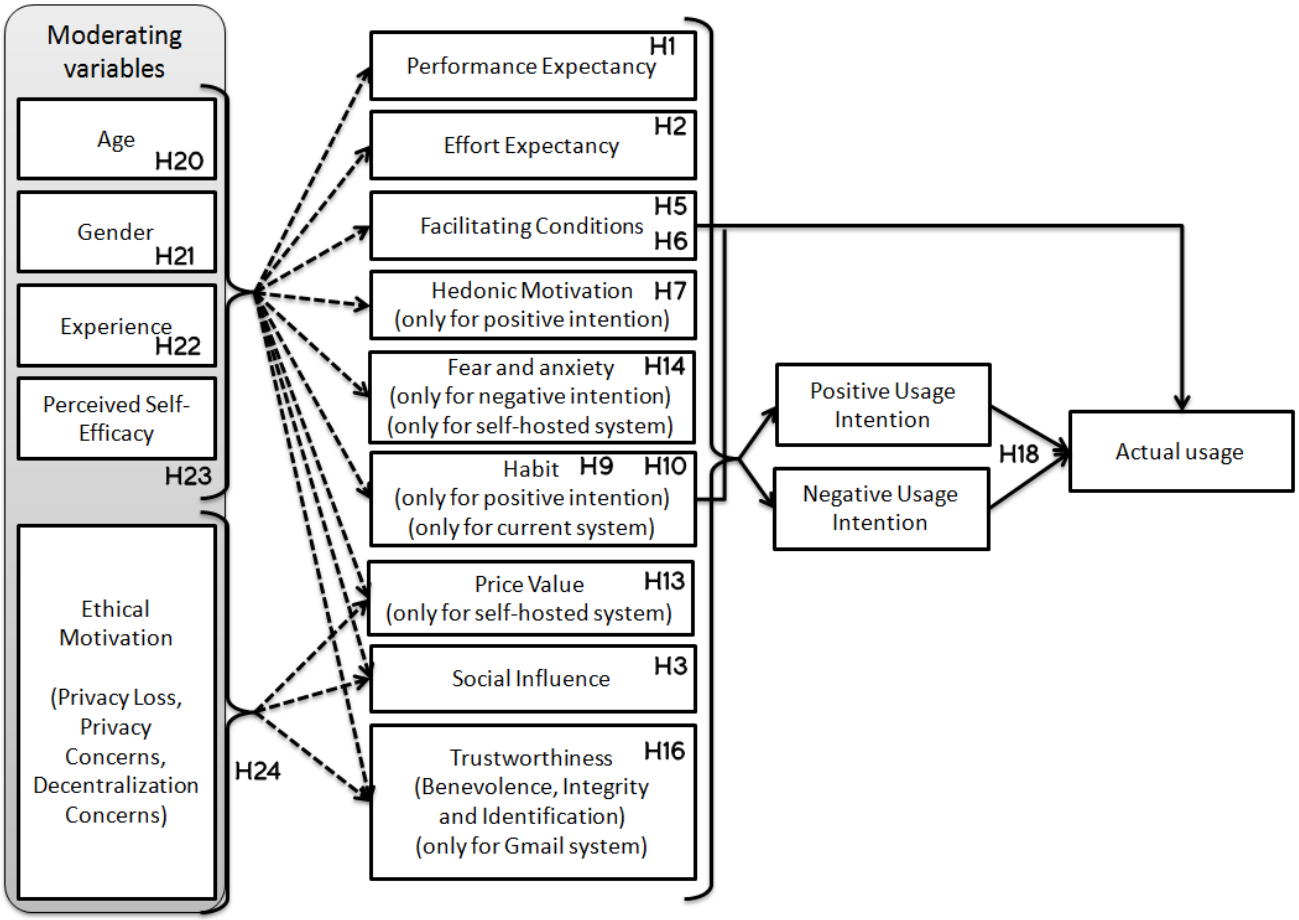
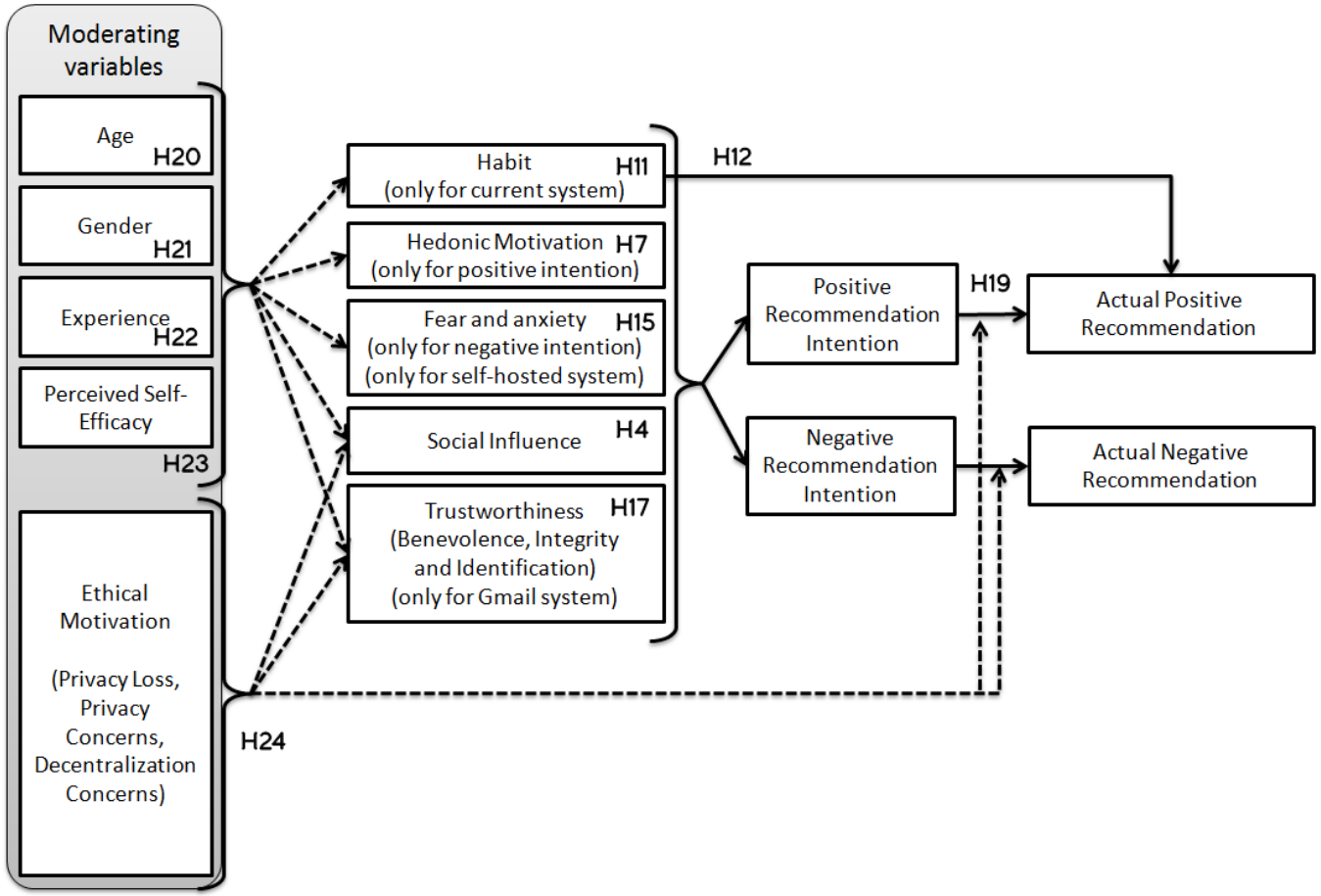


Figure 5-2 Research model relative to technology recommendations.



6 Independent Variables

For details about the impact of moderating variables on the effects of independent variables, see the part on moderating variables.

6.1 Performance Expectancy

6.1.1 Definition

Performance Expectancy is defined as the extent to which the user thinks the system will help them to reach their goals (Venkatesh et al., 2003) or improve their performance (Davis, 1989; Venkatesh et al., 2012). As it has been studied in the UTAUT model (Venkatesh et al., 2003), it relates to the notions of perceived usefulness (TAM/TAM2 and C-TAM-TPB), extrinsic motivation (MM), job-fit (MPCU), relative advantage (IDT), and outcome expectations (SCT). The similarities between those constructs have also been reviewed in that article.

According to the original definition of the UTAUT model, it is the variable that explains the most the behavioral intention to use a system (Venkatesh et al., 2003). However, it seems that most people agree that Gmail is an efficient system. Thus, it may have a greater impact on self-hosted email systems usage than on the Gmail system usage.

H1.Performance Expectancy will have an impact on Usage Intention.

a. Performance Expectancy for the Gmail system will have a positive impact on Positive Usage Intention for the Gmail system.
b. Performance Expectancy for the Gmail system will have a negative impact on Negative Usage Intention for the Gmail system.
c. Performance Expectancy for the self-hosted email system will have a positive impact on Positive Usage Intention for the self-hosted email system.
d. Performance Expectancy for the self-hosted email system will have a negative impact on Negative Usage Intention for the self-hosted email system.

6.1.2 Moderating variables

This variable should be moderated by the gender, age and experience of participants, as prior researches indicate (see Venkatesh et al. 2003 for a review).

Moreover, the Performance Expectancy variable should be moderated by the Perceived Self-Efficacy construct (Compeau and Higgins, 1995; Venkatesh and Davis, 1996)

6.1.3 Measurement

It will be measured through Likert scales with the following questions adapted from the UTAUT and UTAUT2 models:

PE1. I find the system useful in my daily life.
PE2. Using the system enables me to accomplish things quickly.
PE3. Using the system is good for my productivity.

6.2 Effort Expectancy

6.2.1 Definition

Effort Expectancy is defined as the extent to which the user perceives the system to be easy to use. This variable is especially important to explain the model in the early stages of the implementation of the system. Its importance decreases when the user's experience of the system increases and they become more familiar with it (Venkatesh et al., 2003).

The construct is complementary with the Performance Expectancy construct, as some previous researches have shown that users tend to make treads off between the accuracy and thus the quality of the results they expect and the efforts they will need to obtain them (Johnson and Payne, 1985).

According to the user resistance models studied, it should be evaluated both regarding positive assessment (the user feels that the system will require less efforts) and negative assessment (the user feels that the system will require more efforts).

> *« It's a burden to always care for your own server. »*
> *A German CCC member, OHM2013*

H2.Effort Expectancy will have an impact on Usage Intention.

a. Effort Expectancy for the Gmail system will have a negative impact on Positive Usage Intention for the Gmail system.
b. Effort Expectancy for the Gmail system will have a positive impact on Negative Usage Intention for the Gmail system.
c. Effort Expectancy for the self-hosted email system will have a negative impact on Positive Usage Intention for the self-hosted email system.
d. Effort Expectancy for the self-hosted email system will have a positive impact on Negative Usage Intention for the self-hosted email system.

6.2.2 Moderating variables

This variable should be moderated by the gender, age and experience of participants, as prior researches indicate (see Venkatesh et al. 2003 for a review).

Also, in the UTAUT model, this construct was more relevant on the first time of measurement, which means that it has a stronger impact on a system with which a user doesn't yet has any experience with (Venkatesh et al., 2003). Thus, as its importance decreases when the user's experience of the system increases and they become more familiar with it (Venkatesh et al., 2003), and as we are studying systems that respondents

are either familiar with or don't use at all, the experience of participant should be a very important moderator.

Moreover, it should be moderated by the Perceived Self-Efficacy construct (Lewis et al., 2003), as empirical support has been found for a significant relationship between those constructs (Agarwal et al., 2000; Igbaria and Iivari, 1995; Venkatesh and Davis, 1996; Venkatesh, 2000).

6.2.3 Measurement

It will be measured through Likert scales with the following questions adapted from the TAM2, UTAUT and UTAUT2 models (Venkatesh and Davis, 2000; Venkatesh et al., 2012, 2003):

EE1. My interaction with the system is clear and understandable.
EE2. It is easy for me to become skillful at using the system.
EE3. Learning to use the system is easy for me.

6.3 Social Influence

6.3.1 Definition

Social Norm is defined as "the degree to which an individual perceives that important others believe he or she should use the new system" (Venkatesh et al., 2003).

> *« Il ya vraiment des trucs identitaires qui se mettent en place des fois où juste t'es pas cool parce que t'as pas le bon nom de domaine. »*
>
> *There are really identity things that are being set up sometimes where you're just not cool because you don't have the right domain name.*
> *Lunar, OHM2013*

Social Influence is defined as the extent to which the user perceives they will gain more recognition from their peers for using the system. It is similar to the notion of Status Gain in the MATH model (Brown and Venkatesh, 2005), defined as "The increase in prestige that coincides with [the usage of the technology] (Venkatesh and Brown, 2001)", or to the notion of Image defined as "The degree to which use of an innovation is perceived to enhance one's image or status in one's social system" (Moore and Benbasat, 1991).

In the construction of the UTAUT model (Venkatesh et al., 2003), the Social Norm and the Status Gain were gathered in the Social Influence variable.

As emails are a very social activity, it is likely that the Social Influence variable should have a very strong impact in the models tested.

6.3.1.1 Impact on Usage

According to Venkatesh and al. (Venkatesh et al., 2003), this variable should be less important in a voluntary context. That is because both acceptance and resistance models have mainly been tested in enterprises, where social influence is mainly perceived by people as recognition from their hierarchical superiors. Thus, people working in volunteering based organizations may consider the recognition from their peers not to be an important motivation enough to use the system. However, this variable may also measure the social recognition from peers, as the use of a system compared to the other may give a particular image of self and be used as a recognition mark among users from the group. (Piquer-Louis, 2012)

The importance of this construct in the context of emails has also been emphasized through the face to face interviews conducted at OHM2013.

H3.Social Influence will have an impact on Usage Intention.

a. Social Influence for the Gmail system will have a positive impact on Positive Usage Intention for the Gmail system.
b. Social Influence for the Gmail system will have a negative impact on Negative Usage Intention for the Gmail system.
c. Social Influence for the self-hosted email system will have a positive impact on Positive Usage Intention for the self-hosted email system.
d. Social Influence for the self-hosted email system will have a negative impact on Negative Usage Intention for the self-hosted email system.

6.3.1.2 Impact on Recommendations

As several studies identified involvement with others to be an antecedent for recommendation (Bechwati and Nasr, 2011), and as people more sensitive to Social Influence may also be considered as involved with the people in their environment, Social Influence should have an impact on the Behavioral Intention to Recommend a system.

Moreover, some studies have identifies several motives for engaging in online word of mouth, among which the Approval Utility (Hennig-Thurau et al., 2004) that is defined as the satisfaction gained by a person who made a recommendation when others people approve of their contributions, which is linked to the Social Influence concept, as the people making recommendation may gain some prestige in their community.

H4.Social Influence will have an impact on Recommendation Intention.

e. Social Influence for the Gmail system will have a positive impact on Positive Recommendation Intention for the Gmail system.
f. Social Influence for the Gmail system will have a negative impact on Negative Recommendation Intention for the Gmail system.

g. Social Influence for the self-hosted email system will have a positive impact on Positive Recommendation Intention for the self-hosted email system.
h. Social Influence for the self-hosted email system will have a negative impact on Negative Recommendation Intention for the self-hosted email system.

6.3.2 Moderating Variables

This variable should be moderated by the gender, age and experience of participants, as prior researches indicate (see Venkatesh et al. 2003 for a review).

Moreover, it should be moderated by the Perceived Self-Efficacy construct, as empirical support has been found for a significant relationship between those constructs (Lewis et al., 2003).

When one has a particular ethical sensibility, it is likely that they will surround themselves with people with similar ethics (Kozinets and Handelman, 2004). Thus, there should be more incentive to use ethical IT from people around them. That is why we think Ethical Motivation should also be a moderating variable for the Social Influence construct.

6.3.3 Measurement

It will be measured through Likert scales with the following questions adapted from the UTAUT and UTAUT2 models:

SI1. People who are important to me think that I should use / continue to use the system.
SI2. People who influence my behavior think that I should use / continue to use the system.
SI3. People whose opinions I value prefer that I use / continue to use the system.

6.4 Facilitating Conditions

Facilitating conditions are defined as the extent to which organizational and technical support may be available if a user needs it (Venkatesh et al., 2003).

In this model, outside of a particular organization, the Facilitating Conditions may refer to the extent to which users feel that they can easily or not find information, through hacker groups, internet forums or wikis, dedicated IRC channel, ...

The importance of Facilitating Conditions for self-hosted email systems has also been emphasized through the face to face interviews conducted at OHM2013.

> *« C'est impossible de tout faire tout seul. »*
>
> *It's impossible to do it all alone. Skhaen, OHM2013*

6.4.1 Facilitating conditions effect on Usage Intention

According to Venkatesh and al. (Venkatesh et al., 2012), this variable effects on behavioral intention to use a system should be moderated by both age, gender and experience, for people with more experience may know better than others where to find resources to get help if they need it, and for older people of feminine gender may face more difficulties adapting to a system or feel a greater need for information availability as they may have less self confidence in their abilities (Venkatesh et al., 2012).

H5.Facilitating Conditions will have an impact on Usage Intention.

a. Facilitating Conditions for the Gmail system will have a positive impact on Positive Usage Intention for the Gmail system.
b. Facilitating Conditions for the Gmail system will have a negative impact on Negative Usage Intention for the Gmail system.
c. Facilitating Conditions for the self-hosted email system will have a positive impact on Positive Usage Intention for the self-hosted email system.
d. Facilitating Conditions for the self-hosted email system will have a negative impact on Negative Usage Intention for the self-hosted email system.

6.4.2 Facilitating conditions effect on Actual Use

As a person may want to use a system, they may or may not have the necessary resources to actually use it. Thus, the Actual Use of a system is impacted by the presence of Facilitating Conditions to use that system.

This variable should be moderated by the age and experience of participants, as prior researches indicate (see Venkatesh et al. 2003 for a review).

The UTAUT model and its extension the UTAUT 2 state that gender should not be a moderating variable regarding the effects of the facilitating conditions on use behavior. However, one can argue that as girls are educated to be less confident in their skills in general (Belotti, 2002) and in their computer skills in particular, they may have less experience regarding where to find information, especially for older people of feminine gender (Venkatesh and Morris, 2000). People of a feminine gender may also face more difficulties to ask for online support from their peers, because of a fear or of previous experiences of sexism (MarLard, 2013, 2012; Wolf, 2012). That is why the gender moderating variable has been added to the effect of facilitating conditions to the use of the system.

H6.Facilitating Conditions will have an impact on Actual Use.

a. Facilitating Conditions for the Gmail system will have a positive impact on Actual Use for the Gmail system.
b. Facilitating Conditions for the self-hosted email system will have a positive impact on Actual Use for the self-hosted email system.

6.4.3 Moderating variables

This variable should be moderated by the gender, age and experience of participants, as prior researches indicate (see Venkatesh et al. 2003 for a review).

Moreover, it should be moderated by the Perceived Self-Efficacy construct, as empirical support has been found for a significant relationship between those constructs (Venkatesh, 2000).

6.4.4 Measurement

It will be measured through Likert scales with the following questions adapted from the UTAUT and UTAUT2 models:

FC1. I have the resources necessary to use the system.
FC2. The system is compatible with other systems I use. (Calendar, mobile devices, encryption softwares, …)
FC3. If I had difficulties using the system, I could get help from others.

6.5 Hedonic Motivation

6.5.1 Definition

Hedonic motivation is defined as the extent to which a user may enjoy the use of information technology (Venkatesh et al., 2012). It is similar to the concept of intrinsic motivation (Venkatesh, 1999), which "refers to the pleasure and inherent satisfaction derived from a specific activity (Vallerand, 1997)".

> *« It's more fun to do things by yourself. That's the main reason why I don't use [Gmail]. »*
> *Anonymous, survey's commentaries*

6.5.1.1 Impact on Usage

The importance of this construct as an antecedent for the intention to use a system has been emphasized during the face to face interviews and in the survey's commentaries.

> *« J'ai appris en cassant, en essayant, et vraiment avec cette démarche de curiosité, d'essayer de comprendre […] comment ça marchait. »*
>
> *I learned by breaking, trying, and really with this process of curiosity, to try to understand how it worked.*
> *Taziden, OHM2013*

H7. Hedonic Motivation will have an impact on Positive Usage Intention.
   a. Hedonic Motivation for the Gmail system will have a positive impact on Positive Usage Intention for the Gmail system.

b. Hedonic Motivation for the self-hosted email system will have a positive impact on Positive Usage Intention for the self-hosted email system.

6.5.1.2 Impact on Recommendation

The Hedonic Motivation has been linked to the satisfaction of users with a system (Beaudry and Pinsonneault, 2010), and it has been shown that this satisfaction has an impact on positive recommendations (Anderson, 1998).

H8. Hedonic Motivation will have an impact on Positive Recommendation Intention.

a. Hedonic Motivation for the Gmail system will have a positive impact on Positive Recommendation Intention for the Gmail system.
b. Hedonic Motivation for the self-hosted email system will have a positive impact on Positive Recommendation Intention for the self-hosted email system.

6.5.2 Moderating Variables

This variable should be moderated by the gender, age (Wahler and Tully, 1991) and experience of participants, as prior researches indicate (Venkatesh et al., 2012).

This variable may be more relevant in a hacker community for it is a context where people usually have a better computer self-efficacy, and the link between those two variables has been suggested in the literature (Venkatesh et al., 2003; Webster and Martocchio, 1992).

> *« Faire son serveur, c'est fun. »*
> *Making your own server, it's fun.*
> *Ocela, OHM2013*

6.5.3 Measurement

It will be measured through Likert scales with the following questions adapted from the UTAUT2 model:

HM1. Using the system is fun.
HM2. Using the system is enjoyable.
HM3. Using the system is very entertaining.

6.6 Habit

6.6.1 Definition

Habit is defined as whether or not the user did have any previous experience with the system and the extent to which the user's previous experiences with the system have led to an automatic behavior (Aarts and Dijksterhuis, 2000; Kim and Malhotra, 2005; Limayem et al., 2007; Venkatesh et al., 2012).

6.6.1.1 Impact on Usage

There are two main ways of considering the Habit construct: the habit/automaticity perspective (HAP) and the instant activation perspective (IAP). Although both perspectives consider that habits can be triggered by environmental precursors, the IAP, that is consistent with the TPB, assumes that those precursors trigger an attitude or an intention (Ajzen and Fishbein, 2000), while the HAP assumes that they will directly trigger a behavior (Kim et al., 2005). Thus, the main difference between the two approaches regards whether a cognitive process will be involved or not. Because of that, the Habit construct may have an impact both on Usage Intention and Actual Use (Venkatesh et al., 2012).

The fact that a user feels they have an automatic behavior, involves that they will lose this habit during the change. Thus, this variable could also measure the extent to which a user may feel like it will be difficult to re-gain a habit with the new system. However, this should already be measured by the Effort Expectancy construct.

H9. Habit will have an impact on Usage Intention.
   a. Habit for the Gmail system will have a positive impact on Positive Usage Intention for the Gmail system.
   b. Habit for the Gmail system will have a negative impact on Negative Usage Intention for the Gmail system.
   c. Habit for the self-hosted email system will have a positive impact on Positive Usage Intention for the self-hosted email system.
   d. Habit for the self-hosted email system will have a negative impact on Negative Usage Intention for the self-hosted email system.

H10. Habit will have an impact on Actual Use.
   a. Habit for the Gmail system will have a positive impact on Actual Use for the Gmail system.
   b. Habit for the self-hosted email system will have a positive impact on Actual Use for the self-hosted email system.

6.6.1.2 Impact on Recommendation

Because they have been developing a habit of using a particular system, users may be more likely to recommend it whenever asked for their opinions, for they tend to associate the general concept of email systems with the particular system they are using. Thus, the Habit variable should have an impact on Recommendation Intention and Actual Recommendation.

H11. Habit will have an impact on Recommendation Intention.
   a. Habit for the Gmail system will have a positive impact on Positive Recommendation Intention for the Gmail system.
   b. Habit for the Gmail system will have a negative impact on Negative Recommendation Intention for the Gmail system.

c. Habit for the self-hosted email system will have a positive impact on Positive Recommendation Intention for the self-hosted email system.
d. Habit for the self-hosted email system will have a negative impact on Negative Recommendation Intention for the self-hosted email system.

H12. Habit will have an impact on Actual Recommendation.

a. Habit for the Gmail system will have a positive impact on Actual Positive Recommendation for the Gmail system.
b. Habit for the Gmail system will have a negative impact on Actual Negative Recommendation for the Gmail system.
c. Habit for the self-hosted email system will have a positive impact on Actual Positive Recommendation for the self-hosted email system.
d. Habit for the self-hosted email system will have a negative impact on Actual Negative Recommendation for the self-hosted email system.

6.6.2 Moderating Variables

This variable should be moderated by the experience of participants, as prior researches indicate (Venkatesh et al., 2012).

In order for a habit to be set up, a user thus needs consistent precursors, and thus a stable environment, which can be difficult to obtain in the context of IT where rapid change has been theorized as one of the defining character in the technology market (Venkatesh et al., 2012).

Thus, the way users will perceive their environment as more or less rapidly changing is very important to measure the Habit construct. Yet, the personal characteristics of users have been proven to impact on users' sensitivity regarding their environment. Older people seem to be less sensitive to the changes around them, because they tend to rely on automatic processing to accomplish their daily tasks (Hasher and Zacks, 1979; Jennings and Jacoby, 1993).

Also, studies have shown that women seem to pay more attention to details (Gilligan, 1982; Meyers-Levy and Maheswaran, 1991), and thus would be more affected by small changes in their environment.

People with a stronger self-efficacy may also create a stronger habit with a self-hosted email system, and those with a lower self-efficacy, may create a stronger habit with the Gmail system. See the part on Perceived Self-Efficacy for details.

6.6.3 Measurement

Habits being defined as "the extent to which an individual believes the behavior to be automatic (e.g., Limayem et al. 2007)", it will be measured on with perception-based approach, and thus we will use a survey item to measure it.

As habits can only be formed with a technology used, we will only be measuring this construct for the system that users indicate they are currently using.

It will be measured through Likert scales with the following questions adapted from the UTAUT2 model:

HT1.The use of the system has become a habit for me.
HT2.I am addicted to the use of the system.
HT3.I must use the system.

6.7 Price Value

6.7.1 Definition

The price values of the different system vary a lot from a configuration to another. Although the basic set up of a Gmail account is free of charge, users may pay to have a personal domain name or a larger storage space. For self-hosted emails, users will have to pay for their domain name and to buy or rent the machine supporting their server. The softwares used however are often free and/or open source systems that do not need payment, but users may also work with proprietary systems that they would have to pay for.

According to the UTAUT 2, Price Value is defined as "consumers' cognitive tradeoff between the perceived benefits of the applications and the monetary cost for using them (Dodds et al., 1991)" (Venkatesh et al., 2012). As there is no monetary cost for mostly used offer of the Gmail system, this variable will only be evaluated regarding the self-hosted email system. However, we believe the price of the system remains very low and thus won't have an important impact on the usage of the system.

> *« Pour moi la question du coût, […] c'est quelque chose à prendre en compte, mais ce n'est pas un inconvénient. »*
>
> *To me, the question of the cost is something to be taken into account, but it is not an inconvenient.*
> *Taziden, OHM2013*

The negative impact of Price Value on self-hosting systems has also been emphasized during the face to face interviews.

H13. Price Value will have an impact on Usage Intention.
   a. Price Value for the self-hosted email system will have a positive impact on Negative Usage Intention for the self-hosted email system.
   b. Price Value for the self-hosted email system will have a negative impact on Positive Usage Intention for the self-hosted email system.

6.7.2 Moderating variables

This variable should be moderated by the gender, age and experience of participants, as prior researches indicate (Venkatesh et al., 2012).

People with a stronger Self-Efficacy, may also have a better knowledge about the costs linked to email self-hosting. Thus, Self-Efficacy should be a moderating variable for the Price Value construct.

People with different ethics differ in the way they evaluate pricing (Arnot et al., 2006). Thus, people with greater ethical concerns may be willing to pay a greater amount of money for their ethical considerations to be respected. The Ethical Motivation should be a moderating variable for the Price Value construct.

6.7.3 Measurement

As stated before, this survey item will only apply for self-hosted email systems. Moreover, as non users may not have knowledge of how much a self-hosted email system may cost, we included a price indicator based on quote estimates.

It will be measured through Likert scales with the following questions adapted from the UTAUT and UTAUT2 models:

PV1. The system is reasonably priced.
PV2. The system is good value for the money.
PV3. At the current price, the system provides a good value.

6.8 Fear and anxiety

6.8.1 Definition

Computer anxiety is defined as "an individual's apprehension, or even fear, when she/he is faced with the possibility of using computers (Simonson et al., 1987)." (Venkatesh, 2000)

As the Gmail system has been designed to be the most intuitive possible for its users, we will only measure this construct for self-hosted email systems.

6.8.1.1 Impact on Usage

Several studies show that this construct has a strong relationship with computer usage (Compeau and Higgins, 1995; Igbaria and Iivari, 1995). Thus, although this construct has been proven to be mediated by the Effort Expectancy variable (Igbaria and Iivari, 1995; Venkatesh, 2000), we believe it can be relevant to include it in our model, as it has been shown that it can have a significant impact on one's behavior(Compeau and Higgins, 1995).

H14. Fear and Anxiety will have an impact on Usage Intention.

a. Fear and Anxiety for the self-hosted email system will have a negative impact on Negative Usage Intention for the self-hosted email system.

6.8.1.2 Impact on Recommendations

As we believe the Hedonic Motivation construct will have an impact on Positive Recommendation Intention, it is likely that conversely Fear and anxiety should have a positive impact on Negative Recommendation Intention.

H15. Fear and Anxiety will have an impact on Recommendation Intention.

a. Fear and Anxiety for the self-hosted email system will have a positive impact on Negative Recommendation Intention for the self-hosted email system.

6.8.2 Moderating Variables

As younger people tend to be more familiar with IT, they may tend to have less computer anxiety when faced with computer usage.

Because women tend to learn helplessness, especially in men dominated fields, there are evidences that women may display higher levels of computer anxiety (Venkatesh et al., 2000).

Prior studies have shown that anxiety decreases with the experience of a system (Venkatesh, 2000) and with a user's perceived self-efficacy(Bandura, 1977).

Thus, Age, Gender, Experience and Self-Efficacy will have a moderating effect on the Fear and Anxiety construct.

6.8.3 Measurement

It will be measured through Likert scales with the following questions adapted from Venkatesh and Bala (Venkatesh and Bala, 2008) and the UTAUT study:

FA1. I feel anxious about using the system.

FA2. It scares me to think that I could cause the system to destroy a large amount of information by hitting the wrong key.

FA3. I hesitate to use the system for fear of making mistakes I cannot correct.

FA4. The system is intimidating to me.

6.9 Perceived Trustworthiness

The concept of Trustworthiness has been analyzed through several studies inside company environments, regarding the relationships between workers (Jarvenpaa et al., 1998) and with their hierarchy (Cho and Lee, 2011; Colquitt and Rodell, 2011). Many definitions have been proposed for that concept through the literature.

Trust has been defined as “a willingness to rely on an exchange partner in whom one has confidence” (Moorman et al., 1992) and Trustworthiness as “the expectations held by the consumer that the service provider is dependable and can be relied on to deliver on its promises” (Sirdeshmukh et al., 2002).

Several studies and analysis of the previous literature on that matter have lead this construct to be split in three main variables: ability, benevolence and integrity (Bhattacherjee, 2002; Caldwell and Clapham, 2003; Ingenhoff and Sommer, 2010; Mayer et al., 1995; Xie and Peng, 2009).

For reasons explained below, the Perceived Trustworthiness will only be measured for the Gmail system.

6.9.1.1 Impact on Usage

The importance of this construct on Usage Intention has been emphasized in the commentary of the survey, especially in regard to the revelations about the NSA’s Prism program.

> *« I have utterly lost faith in Google and its services since the PRISM scandal. »*
> *Anonymous, survey’s commentaries*

H16. Perceived Trustworthiness will have an impact on Usage Intention.
   a. Perceived Trustworthiness for the Gmail system will have a positive impact on Positive Usage Intention for the Gmail system.
   b. Perceived Trustworthiness for the Gmail system will have a negative impact on Negative Usage Intention for the Gmail system.

6.9.1.2 Impact on Recommendations

As the Perceived Trustworthiness of a system is very much linked to the concept of activism, which, as seen in the part regarding Ethical Motivation, can be an antecedent of Recommendation Intention, it is likely that the Trustworthiness one has for a system will have an impact on Recommendation Intention.

H17. Perceived Trustworthiness will have an impact on Recommendation Intention.
   c. Perceived Trustworthiness for the Gmail system will have a positive impact on Positive Recommendation Intention for the Gmail system.
   d. Perceived Trustworthiness for the Gmail system will have a negative impact on Negative Recommendation Intention for the Gmail system.

6.9.2 Ability

The Ability dimension is defined as “the trustor's perception of the trustee's competencies and knowledge salient to the expected behavior” (Bhattacherjee, 2002).

The measure of Ability for the Gmail system may not be relevant, as we expect people to be rating its ability to be good in every case.

Regarding self-hosted email systems, the Ability may be only determined by the ability of the user managing their own systems. Thus, it should be closely correlated with the Self-Efficacy variable, which will make the Ability variable redundant.

Thus, we will not be measuring the Ability dimension for either of the two systems.

6.9.3 Benevolence

Benevolence is defined as the consumer's "belief that the partner is interested in [their] welfare and will not take unexpected actions that will negatively affect [them]" (Gassenheimer et al., 2004; Kumar et al., 1995).

As the Benevolence of email systems managers has been stated to be relevant to choose an email system in the interviews we conducted, we believe this variable will be relevant in our study.

In a self-hosted email system, the system manager's welfare and the user's welfare are the same. Thus, as one cannot measure their own benevolence, we will only assess this variable in the case of a Gmail system. Here, the company managing the Gmail system is Google Inc.

The questions used may be adapted from previous studies by Pavlou and Dimoka (Pavlou and Dimoka, 2006).

TWB1. Google is likely to care for my welfare.
TWB2. If there was a problem, Google would take risks for me.
TWB3. Google is likely to make sacrifices for me if needed.
TWB4. Google is unlikely to act opportunistically, even given the chance.
TWB5. Google is likely to keep my best interests in mind.

6.9.4 Integrity

Behavioral Integrity is defined as "the perceiver's assessment of a referent's word–deed alignment" (Kannan-Narasimhan and Lawrence, 2012; Simoms, 2002), which means that users will believe that the trusted party will act according to what they agreed on.

As one cannot measure their own integrity, we will only assess this variable in the case of a Gmail system.

« Sunbird de Riseup […] est allé se battre devant un tribunal pour contester la légitimité d'une requète légale qui lui demandait des informations »

Subird from riseup […] went to fight in court to contest the legitimity of a legal request that was asking him for information
Lunar, OHM2013

Here, the trusted party will thus be the company managing the Gmail system, which is Google Inc.

The questions used may be adapted from (Pavlou and Dimoka, 2006).

TWI1. I believe the Gmail system matches the description made by Google.
TWI2. I believe I will be provided with the Gmail system according to the terms and conditions stated by Google.
TWI3. I can rely on Google.
TWI4. Google acts according to what it says.

Because of vocabulary issues, as our test surveys suggested and as most of our respondents do not have English as their mother tongue, we replaced "Google is likely to be reliable" by "I can rely on Google", and "Google is likely to be credible" by "Google acts according to what it says".

6.9.5 Identification

The concept of Identification is "the degree to which consumers may identify with a particular marketing firm" (Brown et al., 2005). Several similar concepts (see Brown and al. 2005 for a review) have been studied in the litterature, and particularly as antecedents of recommendations intentions. It also impact the usage of a company's services as, building from the Social Identity Theory, it has been seen that "individuals tend to choose activities congruent with salient aspects of their identities" (Ashforth and Mael, 1989).

This construct would be moderated by the Ethical Motivation. Thus, the more one has ethical influences, the more they would care about Google's sense of ethics, which is consitent with the identification concept.

In here, we will measure the way that Google's values are percieved, for one always identify with themselves.

ID1. Google would respect my personal privacy.
ID2. I would have control over how my personal information are used by Google.
ID3. Google would not be using my personal information for any purpose other than the one I would authorize.
ID4. Google would not share personal information about me without my permission.

6.9.6 Moderating variables

As studies have shown that women tend to be less willing to grant their trust compared to men (Riedl et al., 2010), the gender variable should be a moderator for the Trustworthiness construct.

According to previous studies, the perceived expertise of a user changes the way people may feel about trustworthiness (Barnett White, 2005). Indeed, people with a better Self-Efficacy may feel like they have more control over the actions the trustee, for they may have a more precise analysis of the outcomes of the service provided. Thus, Self-Efficacy may be a moderator of Perceived Trustworthiness.

People that are more driven by ethical motivations may be more severe in the way they perceive the Trustworthiness of a company. Also, our face to face surveys indicated that people with greater ethical motivations may be more attentive to the Trustworthiness of people managing their email system. Thus, Ethical Motivation should be a moderator of Perceived Trustworthiness.

As several studies suggest, age may have an impact on one's moral judgment (Gattiker and Kelley, 1999). Thus, age should also be a moderator for the Perceived Trustworthiness.

7 Dependant variables

The difference between one's intention to perform an action and one's estimation of the fact that they will indeed perform the action has been studied in the literature (Sheppard et al., 1988). For instance, the authors provide the examples of people expressing their intention to quit on smoking or to lose some weight, which can differ from their estimation of actually doing so.

7.1 Usage

7.1.1 Usage Intention

Usage Intention is defined as the behavioral intention to use or not either the Gmail system or a self-hosted email system as a way of communication.

As prior researches indicate, the impact of Usage Intention on Actual Use will be moderated by the experience of participants (Venkatesh et al., 2012, 2003).

Usage Intention will be measured through Likert scales with the following questions adapted from the UTAUT and UTAUT2 models. As we will not only be studying the acceptance of a system but also the resistance to it, the construct will be measured by both positive and negative statements:

Positive Intention

UI1. I intend to use or continue using the system in the future as my preferred email system.
UI2. I will try to use the system in my daily life as my preferred email system.
UI3. I plan to use or continue to use the system frequently as my preferred email system.

Adverse Intention

UI4. I intend to never use or stop using the system in the future.
UI5. I will try not to use the system in my daily life.
UI6. I plan to continue not to use or to stop using the system as much as I can.

H18. Usage Intention will have an impact on Actual Usage.
   a. Positive Usage Intention for the Gmail system will have a positive impact on Actual Usage for the Gmail system.
   b. Negative Usage Intention for the Gmail system will have a negative impact on Actual Usage for the Gmail system.
   c. Positive Usage Intention for the self-hosted email system will have a positive impact on Actual Usage for the self-hosted email system.

d. Negative Usage Intention for the self-hosted email system will have a negative impact on Actual Usage for the self-hosted email system.

7.1.2 Actual Use

Actual Use is defined as the actual use of the Gmail system or a self-hosted email system as a way of communication.

Actual Use will be measured through Likert scales with the following question adapted from the UTAUT and UTAUT2 models. It will only be measured for the systems used by the respondents:

As this construct is measured by the frequency of the system usage, it will only be measured in a positive way. Thus we will assume that respondents who declared not to be using the system will have a frequency of use of 0.

U1. On average, how much time do you spend each day using the system? (from "almost never" to "more than three hours per day")
U2. On average, how frequently do you use the system? (from “never” to “every day”)
U3. What proportion of your emails do you receive and send with the system? (from "almost none" to "all of them")

7.2 Recommendation

7.2.1 Recommendation Intention

Recommendation Intention is defined as the extent to which the system users advise other people (e.g., friends, family, colleagues) to become users of the same system (Verhoef et al., 2002).

As recommendations can be favorable or adverse, recommendation intention and actual recommendations will both be measured for positive and negative recommendations.

The questions could be adapted from the UTAUT and UTAUT 2:

Positive recommendation:

RI1. I intend to recommend using the system in the future.
RI2. I will always try to recommend using the system.
RI3. I plan to recommend using the system to many people.

Negative recommendation:

RI4. I intend to recommend not using the system in the future.
RI5. I will always try to recommend not using the system.
RI6. I plan to recommend not using the system to many people.

H19. Recommendation Intention will have an impact on Actual Recommendation.

a. Positive Recommendation Intention for the Gmail system will have a positive impact on Actual Positive Recommendation for the Gmail system.
b. Negative Recommendation Intention for the Gmail system will have a positive impact on Actual Negative Recommendation for the Gmail system.
c. Positive Recommendation Intention for the self-hosted email system will have a positive impact on Actual Positive Recommendation for the self-hosted email system.
d. Negative Recommendation Intention for the self-hosted email system will have a positive impact on Actual Negative Recommendation for the self-hosted email system.

7.2.2 Actual Recommendation

The questions will be Likert scales, adapted from previous studies (Verhoef et al., 2002; Zeithaml et al., 1996):

Positive recommendation:

AR1. I say positive things about the system to persons in my environment.
AR2. If somebody seeks for advice with regard to a good email system, I recommend the system.
AR3. I encourage relatives and friends to use the system.

Adverse recommendation:

AR4. I say negative things about the system to persons in my environment.
AR5. If somebody seeks for advice with regard to a good email system, I will not recommend the system.
AR6. I encourage relatives and friends not to use the system.

8 Moderating Variables

8.1 Age

As we have seen before, age is an important moderating variable regarding IT usage (Wahler and Tully, 1991).

We keep the age variable exactly the same way it was used in the UTAUT and UTAUT 2 models (Venkatesh et al., 2012, 2003), and it will be measured in the same way as a continuous variable.

> H20. Age will have a moderating effect on the impact of all independent variables on Behavioral Intention to use and to recommend a system, and on the impact of Facilitating Conditions and Habit on Actual Behavior of using and recommending a system.

8.2 Gender

8.2.1 Definition

As suggested in the limitations of the UTAUT model (Venkatesh et al., 2003) and in the previous studies from Venkatesh and Morris (Venkatesh and Morris, 2000), the results on the measurement of the gender variable should vary regarding how we define it. It can either be defined as the gender a person was assigned to at birth (male or female), which is the way it is usually done, or it can be defined as what Venkatesh and al. (Venkatesh et al., 2003) call the "psychological gender".

In the definition of gender as “biological sex” used by Venkatesh and Morris (Venkatesh and Morris, 2000), the authors do note that the researches they are basing their hypothesis on “may be dated”, which is consistent with the fact that almost 80% of all references used regarding gender differences in this article were published in or before 1990, and nearly 42% in or before 1980.

Although we would have liked to consider gender to be defined by two different constructs: the first one being the gender that users have been assigned to at birth and as which they were educated, the second being the gender in which they define themselves and live as, that has been thoroughly theorized by different social theory academics. (Bourcier, 2001; Butler, 1990), which may have included many different answers based on different scales of genders (Feinberg, 1999; Preciado, 2008), we haven’t done so. That is because measuring a declarative gender of identification may have bring to much bias in the study, while measuring the “psychological gender” as can be found in the BSRI (Bem, 1981, 1974), seemed to be very intrusive. Also, this way of measurement seems dated and the results that it has been giving until now do not seem relevant, as not much more than half of cisgendered men fit into the “masculine” category, while more than half of women

fit into the “androgyny” category, and more men belong to the “feminine” category than women (Venkatesh et al., 2004).

However the community studied is not particularly formed of people who are usually more conscious of the mechanisms of gender construction, and were a greater diversity of «psychological genders» can be found. Thus, we will keep the measurement of that variable as it was done in the UTAUT model.

8.2.2 Impact as a moderating variable

Gender will be a moderating variable, thus, the hypothesis regarding Gender are as follows:

H21. Gender will have a moderating effect on the impact of independent variables on Behavioral Intention.

As men tend to be educated to be more task oriented than women, Performance Expectancy, that focuses on tasks accomplishment, should be particularly salient for men(Venkatesh et al., 2003).

a. Gender will have a moderating effect on the impact of Performance Expectancy on Usage Intention.

Effort Expectancy seems to be more salient for women because of the gender roles they have been educated in(Venkatesh et al., 2003).

b. Gender will have a moderating effect on the impact of Effort Expectancy on Usage Intention.

As explained in the part relative to Facilitating Conditions, women may have less experience on how to find information, and more difficulties to ask people for help(Belotti, 2002; MarLard, 2013, 2012; Venkatesh and Morris, 2000; Wolf, 2012).

c. Gender will have a moderating effect on the impact of Facilitating Conditions on Usage Intention.
d. Gender will have a moderating effect on the impact of Facilitating Conditions on Actual Usage.

As women seem to be more attentive to details, they may also be more attentive to the Price Value of the products or services they purchase (Gilligan, 1982; Meyers-Levy and Maheswaran, 1991; Venkatesh et al., 2012).

e. Gender will have a moderating effect on the impact of Price Value on Usage Intention.

As explained in the part regarding the Habit construct, people of different genders may process cues in a different way (Gilligan, 1982; Meyers-Levy and Maheswaran, 1991; Venkatesh et al., 2012).

f. Gender will have a moderating effect on the impact of Habit on Usage Intention.
g. Gender will have a moderating effect on the impact of Habit on Actual Usage.
h. Gender will have a moderating effect on the impact of Habit on Recommendation Intention.
i. Gender will have a moderating effect on the impact of Habit on Actual Recommendation.

As women tend to learn helplessness, particularly in men dominated fields, they may display higher levels of computer anxiety (Venkatesh et al., 2000).

j. Gender will have a moderating effect on the impact of Fear and Anxiety on Usage Intention.
k. Gender will have a moderating effect on the impact of Fear and Anxiety on Recommendation Intention.

Because of the gender role they have been educated in, women seem to have less innovativeness, which is "the degree to which an individual is receptive to new ideas and makes innovation decisions independently" (Midgley and Dowling, 1978), and novelty seeking, which is "the tendency of an individual to seek out novel information or stimuli (Hirschman, 1980)" (Venkatesh et al., 2012). Thus, they may have a different approach of Hedonic Motivation.

l. Gender will have a moderating effect on the impact of Hedonic Motivation on Usage Intention.
m. Gender will have a moderating effect on the impact of Hedonic Motivation on Recommendation Intention.

Prior studies have shown that women seem to be more sensitive to the opinions of people around them (Venkatesh, 2000; Venkatesh et al., 2012).

n. Gender will have a moderating effect on the impact of Social Influence on Usage Intention.
o. Gender will have a moderating effect on the impact of Social Influence on Recommendation Intention.

Studies have shown that women tend to grant their trust less than men (Riedl et al., 2010).

p. Gender will have a moderating effect on the impact of Trustworthiness on Usage Intention.
q. Gender will have a moderating effect on the impact of Trustworthiness on Recommendation Intention.

8.3 Experience

As several studies have shown, the Experience of a user with a system is a moderating variable (Taylor and Todd, 1995a; Venkatesh et al., 2012, 2003). In our model, the Experience construct will only be a dummy variable: it would measure whether or not the respondents are using the system.

H22. Experience will have a moderating effect on the impact of independent variables on Behavioral Intention.

8.4 Self-efficacy

Several studies have gone through the notion of Perceived Self-Efficacy (Bandura, 1977; Marakas et al., 1998; Triandis, 1980, 1971) and its link to Effort Expectancy (Lewis et al., 2003; Venkatesh and Davis, 1996), Computer Anxiety (Fagan et al., 2003; Johnson and Marakas, 2000; Venkatesh, 2000), Hedonic Motivation (Agarwal and Prasad, 1998), Social Influence (Zhao and Xie, 2011). Researches have also been made regarding its formation through the AMRIT model (Martinko et al., 1996).

8.4.1 Definition

Based on the Social Cognitive Theory, Self-Efficacy is defined as "the conviction that one can successfully execute the behavior required to produce a desired outcome" (Bandura, 1977; Lewis et al., 2003).

Although actual user competence has been studied (Marcolin et al., 2000), it seems that the Perceived Self-Efficacy is a more accurate construct to measure the impact on behaviors. This concept may be closer to the Declarative Knowledge variable (Mun and Davis, 2003) defined as the "knowledge about facts and things" (Anderson, 1985).

Perceived Self-Efficacy can be regarded on two levels: general computer efficacy or specific IT system efficacy. (Marakas et al., 2007)

8.4.1.1 Perceived General Computer Self-Efficacy

Computer Self-Efficacy is defined as the "judgment of one's capability to use a computer" or as "an individual's perceptions of his or her ability to use computers in the accomplishment of a task […], rather than reflecting simple component skills" (Compeau and Higgins, 1995). This construct measure how well an individual can use a computer to accomplish a task, rather than how they may know how to use one particular feature or another. Thus, it concerns more the way people use computers in the context of their work.

8.4.1.2 Perceived Specific Email Self-Efficacy

The Perceived Specific Self-Efficacy is defined as "an individual's perception of efficacy in performing specific computer-related tasks within the domain of general computing" (Marakas et al., 1998). This construct considers the knowledge of an individual regarding a particular task.

8.4.1.3 What variable should be measured?

We could measure both the Computer Self-Efficacy and the Specific Self-Efficacy and compare the results. However, that may uselessly overload the survey, as we may assume that the Specific Self-Efficacy is correlated to the Computer Self-Efficacy. Moreover, the Specific Self-Efficacy may be more relevant, as a high Specific Self-Efficacy implies a high Computer Self-Efficacy and a high Computer Self-Efficacy with a low Specific Self-Efficacy may not be relevant to measure the impact of a system such as the self –hosted email system that requires very specific skills and knowledge.

Thus, we will only measure the Specific Self-Efficacy.

8.4.2 Impact as a moderating variable

Self-Efficacy will be a moderating variable, thus, the hypothesis regarding Self-Efficacy are as follows:

H23. Perceived Self-Efficacy will have a moderating effect on the impact of independent variables on Behavioral Intentions and Actual Behaviors.

Compeau and Higgins validated the hypothesis that people who believe they have great skills with computers are more likely to expect positive outcomes (Compeau et al., 1999; Compeau and Higgins, 1995). Thus, we believe that the Performance Expectancy construct will be moderated by the Self-Efficacy variable (Lewis et al., 2003).

a. Perceived Self-Efficacy will have a moderating effect on the impact of Performance Expectancy on Usage Intention.

Several studies argue that Self-Efficacy positively influence Effort Expectancy (Lewis et al., 2003). Moreover, several studies regarding email systems have shown not only that Self-Efficacy influences Effort Expectancy, but furthermore that it would have a greater impact for users that have not been using the system.

b. Perceived Self-Efficacy will have a moderating effect on the impact of Effort Expectancy on Usage Intention.

People with a stronger Self-Efficacy, may have better knowledge about where to find helpful information, or about how to formulate questions and explain their issues. Thus, Self-Efficacy should have a moderating impact on Facilitating Conditions both for its effects on Behavioral Intention and on the Actual Behavior.

c. Perceived Self-Efficacy will have a moderating effect on the impact of Facilitating Conditions on Usage Intention.
d. Perceived Self-Efficacy will have a moderating effect on the impact of Facilitating Conditions on Actual Usage.

People with a stronger Self-Efficacy, may have better knowledge about the costs linked to email self-hosting. Thus, Self-Efficacy should have a moderating impact on Price Value for its effects on Behavioral Intention.

e. Perceived Self-Efficacy will have a moderating effect on the impact of Price Value on Usage Intention.

People with a stronger Self-Efficacy may have experienced software or processes that would be similar to a self-hosted email system management, such as other kinds of servers management, command line interfaces, … Thus, they may have more ease in creating a new habit when using a self-hosted email system, for they may not perceive their environment to be changing as much as people without this kind of experience. On the contrary, people with less Self-Efficacy, may be more used to intuitive interfaces, such as those proposed in the Gmail system. Thus, we may argue that people with a stronger self-efficacy may have developed a stronger habit with self-hosted email systems, while those with a lower self-efficacy, may create a stronger habit with the Gmail system

f. Perceived Self-Efficacy will have a moderating effect on the impact of Habit on Usage Intention.
g. Perceived Self-Efficacy will have a moderating effect on the impact of Habit on Actual Usage.
h. Perceived Self-Efficacy will have a moderating effect on the impact of Habit on Recommendation Intention.
i. Perceived Self-Efficacy will have a moderating effect on the impact of Habit on Actual Recommendation.

The negative relationship between Self-Efficacy and Computer Anxiety has been suggested by many studies (Fagan et al., 2003; Thatcher and Perrewe, 2002), including the SCT (Bandura, 1982, 1977). Thus, Self-Efficacy should have a moderating impact on Fear and Anxiety for its effects on Behavioral Intention.

j. Perceived Self-Efficacy will have a moderating effect on the impact of Fear and Anxiety on Usage Intention.
k. Perceived Self-Efficacy will have a moderating effect on the impact of Fear and Anxiety on Recommendation Intention.

Previous studies show that Self-Efficacy has an impact on Positive Affect (Hedonic Motivation) (Compeau and Higgins, 1995). It has also been argued that people may need to

reach a certain level of competence before being able to enjoy an activity. (Lieberman, 1977; Webster and Martocchio, 1992)

l. Perceived Self-Efficacy will have a moderating effect on the impact of Hedonic Motivation on Usage Intention.
m. Perceived Self-Efficacy will have a moderating effect on the impact of Hedonic Motivation on Recommendation Intention.

Prior studies have shown the relationship between Self-Efficacy and Social Influence (Compeau and Higgins, 1995). The fact of belonging to a group may lead the user to gain Self-Efficacy through observation of others usages. Also, there encouragements are a form of "verbal persuasion" which is a major source for the formation of one's perception of their Self-Efficacy, for people rely on their peers judgments about their own capacities (Bandura, 1982).

n. Perceived Self-Efficacy will have a moderating effect on the impact of Social Influence on Usage Intention.
o. Perceived Self-Efficacy will have a moderating effect on the impact of Social Influence on Recommendation Intention.

People with a stronger Self-Efficacy, may have better knowledge regarding what to expect from service providers and may be judging more severely the way they grant their trust. Thus, Self-Efficacy should have a moderating impact on Trustworthiness for its effects on Behavioral Intention.

p. Perceived Self-Efficacy will have a moderating effect on the impact of Trustworthiness on Usage Intention.
q. Perceived Self-Efficacy will have a moderating effect on the impact of Trustworthiness on Recommendation Intention.

8.4.3 Measurement

Marakas and al. (Marakas et al., 2007, 1998) defined guidelines for survey questions as follows:

1. All questions must focus on the subject's perceived ability to perform a specific task without regard to outcome expectations or derived benefits.
2. All questions must elicit estimations of ability within a task-specific rather than a general context.
3. Specific questions must avoid ability assessments that include cross-domain or general-domain skills.
4. The level of analysis (LOA) of the requested estimation of perceived ability must agree with the level of analysis of the task and subsequent performance measure.
5. The ordering of questions must avoid inappropriate or unnecessary anchoring with regard to perceived rather than actual increasing levels of task difficulty or complexity. (Marakas et al., 1998)

Based on that framework, we defined the questions as follows:

PSE1. I know the difference between an email server and an email client.
PSE2. I know what IMAP and POP protocols are and I could explain it.
PSE3. I know what asymmetrical cryptography is and how it works.
PSE4. I know how to administrate a mail server.
PSE5. I know what the respective roles of MUA, MTA and MDA are in the process of sending emails.

8.5 Ethical Motivation

8.5.1 Definition

Multiple studies have been looking at ethics in the context of IST (Jarvenpaa et al., 1998; Mingers and Walsham, 2010; Moores and Chang, 2006; Tuttle et al., 1997), and especially regarding privacy (Smith et al., 2011, 1996; Stewart and Segars, 2002), and its importance on the Internet (Son and Kim, 2008). Conferences have also been given among hacker activist communities to warn against the dangers behind the centralization of information. (*Bayart RMLL*, 2007)

8.5.1.1 Privacy concerns

Privacy is defined as « personal information generated by consumer transactions » (Culnan and Williams, 2009). The Privacy construct will be divided into two different sub-constructs: privacy concerns and privacy loss.

Privacy concerns refers to the importance that one gives to their personal information, and the way they are stored, analyzed, used or shared (Culnan and Williams, 2009). Information privacy concerns have been defined as "the extent to which an individual is concerned about organizational practices related to the collection and use of his or her personal information (Smith et al., 1996)" (Son and Kim, 2008). While developing survey

instrument, Smith and al (Smith et al., 1996) reminded the increasing importance of privacy concerns with the rise of the information age.

There has been a lot of studies regarding privacy, and the ways companies manage personal information (Chan and Greenaway, 2005; Culnan and Williams, 2009; Smith et al., 1996) and on what is expected from them by their consumers (Goodpaster, 1987; Xu et al., 2008).

The ways people see their information privacy has also been documented (Smith et al., 2011) and so have the action they see as breaches of their privacy, such as data collection, errors, unauthorized use or improper access. (Smith et al., 1996; Stewart and Segars, 2002)

The questions will be adapted from Culnan (Culnan, 1993):

EM1. I am concerned about threats to my personal privacy.
EM2. Companies should not use my personal information for any purpose other than the one I authorized.
EM3. A company should not share personal information about me without my permission.

8.5.1.2 Privacy loss

Privacy loss refers to one's feeling that they have lost control over their personal information. "In the 1992 Harris-Equifax Survey, 76 percent of the public felt that individuals had lost all control over how personal information about them is circulated and used by companies" (Culnan, 1993).

Regarding Google, although compliance with the law has been proven to confer legitimacy to companies in some cases (DiMaggio and Powell, 1983; Meyer and Rowan, 1977), which means that people may consider legitimate that a company breaks personal privacy for legal requirements, it seems that the recent collaboration of the company with programs such as the NSA's PRISM (Greenwald and MacAskill, 2013), may have cause a decrease in the trust consumer may have in the firm.

EM4. I have lost all control over how my personal information is used by big companies.
EM5. People begin surrendering their privacy the day they open their first email account on a centralized platform.
EM6. People have lost all control over where their data is stored.

8.5.1.3 Decentralization

> *« Il n'y a aucune raison que le mail soit centralisé chez Google ou Hotmail. »*
>
> *There is no reason for email to be centralized at Google's or Hotmail's.*
> *B. Bayart, ecran.fr*

Different conferences and interviews in the hacker communities have emphasized the importance of decentralization as an ethical factor for using a decentralized email system. (*Bayart RMLL*, 2007).

However, there is only limited literature regarding this topic. Thus, and as there doesn't seem to be a model in the academic literature regarding how to measure this kind of ethical motivation, we will adapt the questions from Culnan (Culnan, 1993).

EM7. I am concerned about the centralization of information by big companies.
EM8. People should host their own data on servers they have access to.

8.5.2 Impact as a moderating variable

> *« On est critiques des processus de centralisation sur internet. »*
>
> *We are critical of the centralization process on internet.*
> *Lunar, OHM2013*

Ethical Motivation will be a moderating variable, thus, the hypothesis regarding Ethical Motivation are as follows:

H24. Ethical Motivation will have a moderating effect on the impact of independent variables on Behavioral Intention and Actual Behavior.

Studies have shown that ethical motivation can influence the way people think about price (Arnot al 06). People with higher ethical motivation may be willing to pay more for a product or service that is consistent with their beliefs.

a. Ethical Motivation will have a moderating effect on the impact of Price Value on Usage Intention.

As stated above people with a particular ethical sensibility may be likely to socialize with people that are alike them. Because of that the social groups they evolve in may be more influencing toward an ethical solution than other groups. This is especially the case among activists, which are people with a great ethical motivation. (Kozinets)

b. Ethical Motivation will have a moderating effect on the impact of Social Influence on Usage Intention.
c. Ethical Motivation will have a moderating effect on the impact of Social Influence on Recommendation Intention.

People with an important ethical motivation may evaluate Trustworthiness differently and be more demanding of a company before granting their trust.

d. Ethical Motivation will have a moderating effect on the impact of Trustworthiness on Usage Intention.
e. Ethical Motivation will have a moderating effect on the impact of Trustworthiness on Recommendation Intention.

Bechwati and Nasr (Bechwati and Nasr, 2011) have studied the triggers that incite users to make recommendations. Among those they identify Activism, which implies that people with a strong ethical motivation may be more disposed to recommend a particular system, when they are convinced by it.

f. Ethical Motivation will have a moderating effect on the impact of Positive Recommendation Intention on Actual Positive Recommendation.
g. Ethical Motivation will have a moderating effect on the impact of Negative Recommendation Intention on Actual Negative Recommendation.

9 Methodology

9.1 Face to face interviews

Eleven interviews have been conducted at the OHM2013 hacker festival. Although a lot (55 %) of interviewees were Frenchmen, 36 % were German and 9 % were Italian. All of them were of a masculine gender, and most were between 20 and 30 years old. As it was a hacker festival, most of them had important technology skills and were sometimes involved with hackerspaces or associations linked to Internet and information technologies such as the Chaos Computer Club Berlin (renowned hackerspace), La quadrature du net (French organization for the defense of Internet neutrality), Nos Oignons (French organization to support the Tor project), …

9.2 Survey

The survey has been distributed on several mailing lists (for La Quadrature du Net, Le Loop, …), on IRC chatrooms (#osilab, #laquadrature, …), and on social networks such as facebook and twitter. All respondents were using at least one of the two systems and were encouraged to pass on the survey to their friends who would be using those systems. This snowball method has been effective, especially through Twitter (18 retweets).

It has been conducted from November 6th to November 22nd. It involved 231 respondents. However, due to the length of the survey and the fact that it was only available in English, only 94 responses were fully completed.

Before being distributed, the survey was tested by several gmail and self-hosted email systems users. The feedback of the answers from this test group helped us rephrase some questions to make them more clear and understandable.

A short text at the beginning of the survey explained the topic of the research and specified the anonymity of the answers.

Open questions were also included in the survey to allow the respondents to make comments if they wanted to.

The questions asked in the survey can be found in Annex 1.

10 Results

10.1 Results modifications

For the answers regarding Habit and Actual use for the systems respondents were not using, the results (indicated as “missing”) were transformed to “0”.

All results where over 50% of answers were missing have been deleted. Among the 103 answers left, 75 had less than 10% of answers missing and 28 had between 10% and 50% of answers missing.

All missing answers were replaced using the Mean Replacement algorithm in SmartPLS.

10.2 Demographics

Among the 103 filled questionnaires used to test the results, the respondents were as follows:

- Age :
    - Minimum: 16 years old
    - Maximum: 69 years old
    - Average: 29,13 years old
    - Standard deviation: 9,19 years old
- Gender :
    - Females: 22 (21,3%)
    - Males: 76 (73,8 %)
- Systems used :
    - Gmail system: 85 (82,52%)
    - Self-hosted systems: 42 (40,78%)

We can observe that most respondents were males. Moreover, the proportion of males respondents rises up to 90,48% for 7,14% of female respondents when looking solely at self-hosted email systems users. That may be linked to the fact that, through the snowball method used to distribute the survey and through the mailing lists distributions, many people from hacker communities have been answering the survey. Now, the unequal repartition of males and females in hacker communities has been overviewed in the section regarding the Gender moderating variable.

Also, it appears that over 23,3% of respondents use both systems. Which means that over 57,14% of self-hosted email systems users are also using a Gmail system in parallel.

10.3 Details on the analysis

For a further analysis, we have been using the Partial Least Squares statistical method (PLS), through the SmartPLS software. SmartPLS is “a software application for

(graphical) path modeling with latent variables" (Addas, 2011). We started with assessing the reliability and validity of the measurement of each variable, and then tested the structural model.

All the indicators cited below can be found in the annexes tables. Tables in Annex 2 refer to self-hosted systems usage intention models. Tables in Annex 3 refer to Gmail usage intention models. Tables in Annex 4 refer to self-hosted systems recommendation intention models. Tables in Annex 5 refer to Gmail recommendation intention models.

10.4 Measurement model validation

We first examined the way our different constructs were measured to check whether our constructs could be considered relevant.

10.4.1 Construct reliability

Construct reliability is defined as "the extent to which measures of a construct separately correlate or move together. It is a statement of measurement accuracy and reflects whether respondents would answer the same questions the same way each time » (Addas, 2011). This reliability can be evaluated through composite reliability, indicator reliability and internal consistency.

10.4.1.1 Indicator reliability

The first analysis regards the loadings of each measurement. To be reliable, those loadings should have loadings over 0.55. The highest the loadings, the more accurate the measurement is.

Although most measurement were fine, we observed that the loadings regarding the Gmail system Effort Expectancy and Facilitating Conditions in the usage intention model were quite low. We thus had to remove the measurement that did not have high enough loadings. After those adjustments, the Facilitating Conditions construct in this model was measured with only one question for the model regarding the system usage, which is an issue.

10.4.1.2 Composite reliability

Composite reliability "measures the reliability of a set of measures for a construct" (Addas, 2011). It is measured separately for all dependant and independent variables for each system and for moderator variables. The measures are considered reliable when the composite reliability is greater than 0.7. In here, all constructs can be considered relevant.

10.4.1.3 Internal consistency reliability

The internal consistency reliability can be studied with the Cronbach α, which measures whether the questions related to a same construct are correlated. For the constructs to be considered having good internal consistency reliability, they must have a Cronbach α of

0.7 or above, however, we may consider constructs with a Cronbach α between 0.5 and 0.7 to have sufficient internal consistency reliability.

Although most constructs had a high enough Cronbach α, the one regarding the Gmail system effort expectancy relative to the system usage appears to be very low (0,3344). That may be due to the small number of items in the scale, as we did remove a measurement question that had low loadings, making this construct more poorly measured.

10.4.2 Construct Validity

Construct validity is defined as "the extent to which a scale measures a theoretical variable of interest" (Barki and Hartwick, 1994). This validity can be examined through convergent validity and discriminant validity.

10.4.2.1 Convergent validity

The convergent validity can be studied through the Average Variance Extracted values (AVEs), which "indicate the average variance in the measures that is explained by the construct" (Addas, 2011). We may consider the construct to have good convergent validity when those AVEs are above 0.7, and sufficient validity when they are over 0.5, which is the case for all our constructs.

10.4.2.2 Discriminant validity

To support discriminant validity, the AVEs previously calculated must be higher than the squared correlations of the constructs. In our model, all variables support discriminant validity, except for the actual positive recommendation for self-hosted email systems, which is due to the very high correlations between the actual positive recommendation and the positive recommendation intention.

The discriminant validity can also be assessed through the comparison between loadings and cross-loadings. The loadings should always be higher than the cross-loadings for every variable, which is the case here, except for the EE2 measurement in the model regarding Gmail usage, that has a higher cross-loadings with Performance Expectancy (0.64) that with itself (0.61).

Also, cross-loadings should not be closer than 0.2 away from the corresponding loadings, from which we may conclude a less relevant validity.

For both systems, correlations and cross-loadings show a very high positive correlation between Habit and Actual Usage for systems usage and a very high positive and negative correlation between dependent variables, and especially for the behavioral intentions. Other correlations may be considered acceptable for they are isolated, and other indicators are good.

10.5 Structural model test

10.5.1 Variance analysis

The variance analysis can be studied through the R^2, which indicates the proportion of the dependant variable's variance explained by the independent variables. This R^2 should be above 0,25. Here, it seems that the variance explained is globally good for all R^2 are above 0,4, except for the Negative Recommendation Intention for self-hosted email systems that has a R^2 of 0,22 when moderators are not included. Such a low R^2 indicates that some construct have been left out when building the model. However, this indicator increases to 0,46 with the moderators impact included.

10.5.2 Path coefficient

The statistical significances for the path coefficients were measured through the Bootstrapping calculation method. The t-value gives the level of confidence for the path coefficients. The levels of confidence are as follows:

Table 10-1 Equivalence table for the level of confidence of path coefficients.

Level of confidence	t-value
75%	1.15
80%	1.28
85%	1.44
90%	1.645
95%	1.96
98%	2.33
99%	2.58

The path coefficients and levels of confidence are detailed in the Annexes.

11 Discussion

11.1 Hypothesis validation

Table 11-1 Discussion of hypothesis

Hypothesis		Results	Details
H1	Performance Expectancy will have an impact on Usage Intention.	Partially supported	This hypothesis is only supported for the Gmail system. Self-hosted emails systems users, may feel that their system is less efficient, but that they may take other advantages out of it, such as fun or ethical congruence.
H2	Effort Expectancy will have an impact on Usage Intention.	Partially supported	Although it does have the expected impact on the Gmail system usage intention, it has the opposite impact on the self-hosted system usage intention.
H3	Social Influence will have an impact on Usage Intention.	Not supported	
H4	Social Influence will have an impact on Recommendation Intention.	Supported	Social Influence seem to have a greater impact on positive recommendation intentions.
H5	Facilitating Conditions will have an impact on Usage Intention.	Partially supported	Facilitating Conditions seem to have the expected impact on positive usage intention for the self-hosted email system, but it has the opposite impact on the Gmail system. This may be due to the fact that users, even if they do not know how to find help with the system usage, do not feel a need for any help.
H6	Facilitating Conditions will have an impact on Actual Use.	Not supported	
H7	Hedonic Motivation will have an impact on Positive Usage Intention.	Supported	Hedonic Motivation seems to be one of the main antecedents to self-hosted systems positive usage intention.
H8	Hedonic Motivation will have an impact on Positive Recommendation Intention.	Supported	Although it is supported for both systems when moderating variables are taken into account, Hedonic Motivation seems to have a more important impact regarding self-hosted email systems.
H9	Habit will have an impact on Usage Intention.	Partially supported	Habit has an impact on the Gmail system usage intention, but not for the self-hosted-system usage intention.
H10	Habit will have an impact	Supported	

	on Actual Use.		
H11	Habit will have an impact on Recommendation Intention.	Partially supported	Habit has a strong impact on recommendation intentions for the Gmail system, but a much weaker impact on self-hosted email systems recommendation intention. This may be due to the fact that self-hosted systems users may not evaluate only their own perception and use of the system, but also the level of capacities of the person they are talking to.
H12	Habit will have an impact on Actual Recommendation.	Partially supported	Habit has a strong impact on actual recommendations for both systems when it is not moderated by other variables. It does however have a strong negative impact on actual adverse recommendations for the Gmail system.
H13	Price Value will have an impact on Usage Intention.	Supported	
H14	Fear and Anxiety will have an impact on Usage Intention.	Partially supported	Fear and anxiety have a positive impact on the intention not to use the self-hosted email system, but is also strongly moderated by other constructs.
H15	Fear and Anxiety will have an impact on Recommendation Intention.	Supported	
H16	Perceived Trustworthiness will have an impact on Usage Intention.	Partially supported	Although Benevolence has a strong negative impact on positive usage intention, it does not seem to affect negative usage intention. On the contrary, Integrity has a much stronger effect on negative usage intention, and not on positive usage intention. This could indicate that users may perceive a breach of trust when the company lacks integrity, but not when it lacks benevolence, for they were not expecting it in the first place. Identification has a strong impact on both positive and negative usage intention.
H17	Perceived Trustworthiness will have an impact on Recommendation Intention.	Partially supported	Although benevolence doesn't seem to be an antecedent of a recommendation intention, the integrity of a company and the identification of a user with the company's values seem to have an impact on the recommendation intention.
H18	Usage Intention will have an impact on Actual Usage.	Partially supported	This hypothesis is only supported for the Gmail system.
H19	Recommendation Intention will have an impact on	Supported	

	Actual Recommendation.		
H20	Age will have a moderating effect on the impact of independent variables.	Partially supported	Age does have an important impact on Hedonic Motivation and Social Influence and Habit for the Gmail systems, but has some odd results regarding self-hosted email systems.
H21	Gender will have a moderating effect on the impact of independent variables.	Partially supported	Women seem to be having less fun than men when using both systems and to rely more on habits with the Gmail system. They also seem to be more sensitive to the Effort Expectancy and the Facilitating Conditions. Because of some issues regarding the number of female respondents, it is difficult to evaluate the moderating effect of Gender on self-hosted systems related constructs.
H22	Experience will have a moderating effect on the impact of independent variables.		As experience was treated as a dummy variable, it can be considered as if it was measured through the Actual Use of a system. (0 would be no experience, anything else would be having experience.)
H23	Perceived Self-Efficacy will have a moderating effect on the impact of independent variables.	Partially supported	Regarding self-hosted systems, it seems that people with a greater self-efficacy care less about Performance Expectancy and Effort Expectancy. However, they seem to be particularly sensitive to the presence of Facilitating Conditions, which may be linked to the fact that, having experiences in IST, they know where to look for tose. Also, they seem to be developing stronger habits. On the contrary, regarding the Gmail system, they seem to be much more sensitive to the Performance Expectancy, which is consistent with the interviews that were conduted before, where some hackers said they were using Gmail because of the efficiency of its spam filters and search functions. Moreover, they seem not to be sensitive to Facilitating Conditions, as they may not need it, and they are not looking for any hedonic motivation when using the Gmail sytem. Also, it seems that their social environments is not favorable to the use of the Gmail system. Finally they seem to be concerned by the trustworthiness of a company, but not to be basing their email system choice

			on it..
H24	Ethical Motivation will have a moderating effect on the impact of independent variables.	Partially supported	People with higher Ethical Motivation, seem to be more acting accordingly to their social influence.

11.2 Implications

Regarding the self-hosted email systems usage, it seems that the main incentive for users are the Ethical Motivation and the Hedonic Motivation, while the main obstacle seems to be the lack of Facilitating Conditions. These could be interesting findings to help self-hosted systems promoters work either on building more accessible tools, both regarding design and ease to find them, or on developing their ethical claims by talking to more people and organizing actions to gain visibility.

People who actually recommend those systems, they seem to be young people, in environments that feel they should use the system and they have an important ethical motivation. It could be interesting to use the strength of this youth and ethical concern to make them bring the information regarding these systems outside of their usual environment that is already convinced.

Regarding the Gmail system usage, it seems that people mainly use it because of habits they have developed and Ethical Motivation seems to be the major obstacle. Also, people who recommend the system usually are in an environment favorable to Gmail and have low ethical concerns. These findings may be linked with the recent PRISM scandal that emerged at the beginning of this research, which seems to have raised a wave of ethical concerns.

12 Limitations and suggestions for future researches

12.1 Methodology

12.1.1 Survey length and sample size

The first important limitation regarding the population studied is the size of the sample on which was conducted the research. Because the survey was quite long and because it was conducted in English, a lot of respondents did not complete the survey entirely. Among the 230 survey answers, only 45% were over 50% complete and 33% were over 90% complete.

12.1.2 Demographics

The first important limitation to this study might be the heterogeneity of the sample: it may be difficult to know whether or not the sample studied may be representative of the population demographics, for there are no statistics about it.

This fuzziness can be illustrated with the age repartition of the sample studied. With an average of 28 years old for Gmail users and 30 years old for self-hosted email systems users, the demographics of self-hosted email systems respondents seem similar to those of Gmail systems respondents. However, this still seem to be a rather young population. It may be caused by some bias in the way the respondents were contacted for answering the survey, as it may be due to the fact that email users, as most IT users tend to be younger than the general population.

Furthermore, as it has been anticipated regarding the gender demographics of the population studied, it seems that women only represent a small minority, as only 7,14% of respondents declaring to be self-hosted email systems users stated their gender to be female. Although several articles have been written regarding the place of women in the geek and hacker community, it could be interesting to conduct some quantitative studies to compare the percentages of men and women in IST usage, and specifically regarding IST that can be considered as requiring more computer self-efficiency. This could also lead to researches regarding the antecedents of such a situation, that could lead to put together some actions to improve the gender diversity in the community.

Finally, most respondents are French. The number of non-French respondents could not allow us to conduct any statistical tests to analyze whether French people may have different answers than others. However, it could be interesting in further studies to develop on the differences between the communities from one country to another. This would make sense, as the communities in different countries have different histories. For instance, although German hackers have gathered through hackerspaces like the Chaos Computer Club for decades, French hackers have been reluctant to engage in such experiments for a long time because of revelations that French intelligence had infiltrated the first French

hackerspaces. This may have shaped the environments that constitute peoples' social influences.

12.1.3 Time of measurement

The time of measurement is also an important limitation: according to the way the results have been determined and the time length of the study, we have not been able to evaluate the different variables at several times during the set up of the information system. In the UTAUT models for instance, the measurements were taken both before the usage of a system, at the beginning of it and after several months of usage. Thus, our data only focus on feedback from users' previous experiences, which may lead to some bias in the study.

12.1.4 Technologies studied

Although we only compared centralized platforms through Gmail and self-hosted systems, it could be interesting to extend this comparison to other kinds of email management systems. Thus, it could be interesting to have a deeper look at associative email platforms, such as Mailoo, No-log or Riseup, or other kinds of community based email management systems that are being increasingly used by activists, and especially by those who don't have or don't feel like they possess the necessary skills and resources to manage their own email server.

12.2 Models tested

12.2.1 Cross-interactions of moderating variables

While running tests on the models proposed, the moderating variables have always been tested separately, thus not taking into account the possibility of cross-interactions between them. Such interactions could be tested in future researches.

Age and gender should have a combined effect as moderating variables, for the social expectations for each gender are evolving and thus may not be perceived in the same way by people of different ages.

Age and gender should also have a combined effect on Perceived Self-Efficacy for women and older people tend not to feel as self efficient regarding IST than men or younger people.

Also, regarding the Ethical Motivation construct, it is likely that it should be combined with the age of participants for younger people may be expressing their ethical motivations in different ways than older people, for instance through activism or participation in associations.

Finally, it could be very interesting to see the interactions between Perceived Self-Efficacy and Ethical Motivation (Dunbar-Hester, 2008). First, because there is a difference between general ethics and specific hacker ethics. This is linked to the fact that because they have more knowledge, and thus more power, hackers may feel that they have a greater

responsibility (Cross, 2006). Secondly because having ethical concerns may drive someone to develop new skills and thus to improve their Perceived Self-Efficacy in order to be able to act accordingly to their values.

12.2.2 Cross-interactions between systems

Although we could assume that people usually have one main email account and they do not use several email providers, the statistics of our sample show that over 57,14% of self-hosted email systems users also use a Gmail account. It could thus be interesting to run some tests to understand whether high antecedents for a particular system do have a negative impact on the intention to use or to recommend the other system.

12.2.3 Action of use on recommendation

The intent of continuing to buy the products or use the services of a company has been proven to have a positive impact on the likelihood to recommend (Morgan and Rego, 2006), while the dissatisfaction of consumers has a positive impact on negative recommendation (Richins, 1983). Thus, the intention to use or continue to use a system should have a positive impact on the Recommendation Intention.

12.3 Limitations on the variables definitions

12.3.1 Price

In the models presented regarding behavioral intentions to use a system, the Price Value construct has only been tested as having an effect on the Usage Intention, as it had been in the UTAUT2 model. However, it seems that it could have an important impact on the Actual use of the systems. It could then be considered as a particular Facilitating Condition that would be necessary to go from the Intention to use a system to actually using it. Although it has not been tested here, it could be interesting to conduct some furthers researches on the price users would be ready to pay for an email system.

12.3.2 Gender

The measurement of the Gender construct has been an issue in this research.

First of all, we were not able to accurately measure its effects in models related to self-hosted systems, for there were not many people defining themselves as female. It would thus be interesting to have a sample of greater diversity.

Also, although we did emphasize the difference between the biological gender, the psychological gender and the declarative gender, we have not been able to find an accurate way of measuring those. We believe it could be interesting to conduct researches on how to measure those different concepts and to define which of those seems to be the most relevant when it comes to IST related behaviors.

13 Conclusion

As our world entered the information age, people have been increasingly using emails. In regard to the recent revelations about the surveillance programs lead by the American NSA or the French DGSE, and as companies as Google, specialized in collecting informations about their users, take a bigger and bigger place in our online activities, there seems to be a rise in the ethical concerns around the world. As hackers have been anticipating this surveillance, thanks to their particular insights in technological possibilities, they are among the main detractors of centralized plateforms and data collection.

Although ways exist to avoid entering a relationship with those companies, they seem to be mainly accessible by people with important skills and particular ethical convictions. As our study showed, the solution of using self-hosted email systems is mainly used by people who experience a strong sense of ethical concerns regarding those issues and who enjoy using information technologies.

Thus, and however those hackers have been actively promoting alternative ways of hosting and managing emails, self-hosted systems remain used by only a very small proportion of the population, while centralized plateforms such as those provided by Google, Yahoo or Microsoft stay at the head of the market.

Although this tendency doesn't seem to be about to be reversed, alternative email systems could be taking a more and more important place, through the rise of associative platforms or with the development of technologies aiming at lowering the level of skills necessary to manage an email server. For instance, some projects such as YUNOhost or Synology are developping open sourced based systems with user friendly interface, while the necessary hardware becomes more and more accessible with the apparition of small computers with a very reduced power consumptions such as the Raspberry Pi that costs between 30€ and 40€.

Thus, in the light of the current evolutions in our environment, both in terms of the rise of ethical concerns and the development of new technologies, it seems that there is an important opportunity for hacktivists to promote the use of alternative systems, for emails and for all kinds of personnal data, such as blogs, websites, videos, …

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15 Annexes

Annex 1. Survey questions

Table I-1 List of the questions asked in the online survey.

Construct	Measurement	Question
Performance Expectancy	PE1.	I find the system useful in my daily life.
	PE2.	Using the system enables me to accomplish things quickly.
	PE3.	Using the system is good for my productivity.
Effort Expectancy	EE1.	My interaction with the system is clear and understandable.
	EE2.	It is easy for me to become skillful at using the system.
	EE3.	Learning to use the system is easy for me.
Social Influence	SI1.	People who are important to me think that I should use / continue to use the system.
	SI2.	People who influence my behavior think that I should use / continue to use the system.
	SI3.	People whose opinions I value prefer that I use / continue to use the system.
Facilitating Conditions	FC1.	I have the resources necessary to use the system.
	FC2.	The system is compatible with other systems I use. (Calendar, mobile devices, encryption softwares, …)
	FC3.	If I had difficulties using the system, I could get help from others.
Hedonic Motivation	HM1.	Using the system is fun.
	HM2.	Using the system is enjoyable.
	HM3.	Using the system is very entertaining.
Habit	HT1.	The use of the system has become a habit for me.
	HT2.	I am addicted to the use of the system.
	HT3.	I must use the system.
Price Value	PV1.	The system is reasonably priced.
	PV2.	The system is good value for the money.
	PV3.	At the current price, the system provides a good value.
Fear and Anxiety	FA1.	I feel anxious about using the system.
	FA2.	It scares me to think that I could cause the system to destroy a large amount of information by hitting the wrong key.
	FA3.	I hesitate to use the system for fear of making mistakes I cannot correct.
	FA4.	The system is intimidating to me.
Trustworthiness –	TWB1.	Google is likely to care for my welfare.

Benevolence	TWB2.	If there was a problem, Google would take risks for me.
	TWB3.	Google is likely to make sacrifices for me if needed.
	TWB4.	Google is unlikely to act opportunistically, even given the chance.
	TWB5.	Google is likely to keep my best interests in mind.
Trustworthiness – Integrity	TWI1.	I believe the Gmail system matches the description made by Google.
	TWI2.	I believe I will be provided with the Gmail system according to the terms and conditions stated by Google.
	TWI3.	I can rely on Google.
	TWI4.	Google acts according to what it says.
Identification	ID1.	Google would respect my personal privacy.
	ID2.	I would have control over how my personal information are used by Google.
	ID3.	Google would not be using my personal information for any purpose other than the one I would authorize.
	ID4.	Google would not share personal information about me without my permission.
Positive Usage Intention	UI1.	I intend to use or continue using the system in the future as my preferred email system.
	UI2.	I will try to use the system in my daily life as my preferred email system.
	UI3.	I plan to use or continue to use the system frequently as my preferred email system.
Negative Usage Intention	UI4.	I intend to never use or stop using the system in the future.
	UI5.	I will try not to use the system in my daily life.
	UI6.	I plan to continue not to use or to stop using the system as much as I can.
Actual Use	U1.	On average, how much time do you spend each day using the system? (from "almost never" to "more than three hours per day")
	U2.	On average, how frequently do you use the system? (from “never” to “every day”)
	U3.	What proportion of your emails do you receive and send with the system? (from "almost none" to "all of them")
Favorable Recommendation Intention	RI1.	I intend to recommend using the system in the future.
	RI2.	I will always try to recommend using the system.
	RI3.	I plan to recommend using the system to many people.
Adverse Recommendation Intention	RI4.	I intend to recommend not using the system in the future.
	RI5.	I will always try to recommend not using the system.
	RI6.	I plan to recommend not using the system to many people.

Actual Favorable Recommendations	AR1.	I say positive things about the system to persons in my environment.
	AR2.	If somebody seeks for advice with regard to a good email system, I recommend the system.
	AR3.	I encourage relatives and friends to use the system.
Actual Adverse Recommendations	AR4.	I say negative things about the system to persons in my environment.
	AR5.	If somebody seeks for advice with regard to a good email system, I will not recommend the system.
	AR6.	I encourage relatives and friends not to use the system.
Age	AGE.	How old are you?
Gender	GDR.	What is your gender?
Perceived Self-Efficacy	PSE1.	I know the difference between an email server and an email client.
	PSE2.	I know what IMAP and POP protocols are and I could explain it.
	PSE3.	I know what asymmetrical cryptography is and how it works.
	PSE4.	I know how to administrate a mail server.
	PSE5.	I know what the respective roles of MUA, MTA and MDA are in the process of sending emails.
Ethical Motivation – Privacy Concerns	EM1.	I am concerned about threats to my personal privacy.
	EM2.	Companies should not use my personal information for any purpose other than the one I authorized.
	EM3.	A company should not share personal information about me without my permission.
Ethical Motivation – Privacy Loss	EM4.	I have lost all control over how my personal information is used by big companies.
	EM5.	People begin surrendering their privacy the day they open their first email account on a centralized platform.
	EM6.	People have lost all control over where their data is stored.
Ethical Motivation – Decentralization Concerns	EM7.	I am concerned about the centralization of information by big companies.
	EM8.	People should host their own data on servers they have access to.

Annex 2. Self-hosted email systems use

Table II-1 Loadings and cross-loadings of independent variables for self-hosted email systems usage.

	EE-h	FA-h	FC-h	HM-h	HT-h	PE-h	PV-h	SI-h
EE1-s	**0.8611**	-0.4988	0.5752	0.4953	0.4117	0.4969	0.3825	0.3836
EE2-s	**0.9053**	-0.5077	0.6158	0.4657	0.2299	0.3099	0.3947	0.3515
EE3-s	**0.8489**	-0.6138	0.4998	0.4278	0.2831	0.2814	0.2804	0.3536
FA1-s	-0.5241	**0.8532**	-0.4405	-0.3242	-0.3270	-0.2776	-0.2616	-0.2543
FA2-s	-0.4960	**0.7830**	-0.3024	-0.1447	-0.2055	-0.1694	-0.2017	-0.0335
FA3-s	-0.4608	**0.8264**	-0.2774	-0.2091	-0.2713	-0.1044	-0.1723	-0.1368
FA4-s	-0.5525	**0.8121**	-0.5105	-0.2846	-0.4306	-0.2256	-0.2740	-0.2485
FC1-s	0.6301	-0.5507	**0.8878**	0.4529	0.4208	0.3477	0.5072	0.3823
FC2-s	0.3029	-0.0663	**0.6150**	0.3845	0.2663	0.3715	0.2465	0.2089
FC3-s	0.3727	-0.2688	**0.5840**	0.3563	0.2627	0.3127	0.2520	0.3418
HM1-s	0.4515	-0.2686	0.4830	**0.8839**	0.3805	0.4215	0.4303	0.3679
HM2-s	0.4991	-0.3133	0.4828	**0.9131**	0.4426	0.5885	0.4065	0.5512
HM3-s	0.4600	-0.2157	0.5164	**0.8671**	0.2863	0.5548	0.4182	0.4212
HT1-s	0.3693	-0.3971	0.4628	0.4165	**0.9813**	0.5768	0.3299	0.5337
HT2-s	0.3355	-0.3397	0.4449	0.4496	**0.9725**	0.5628	0.3071	0.5159
HT3-s	0.3216	-0.3633	0.4271	0.3618	**0.9474**	0.5056	0.3163	0.4849
PE1-s	0.3959	-0.2074	0.4021	0.5763	0.5497	**0.8820**	0.4736	0.5961
PE2-s	0.3808	-0.2228	0.4637	0.5083	0.4887	**0.8616**	0.3806	0.4693
PE3-s	0.2998	-0.2189	0.3511	0.4443	0.4269	**0.8859**	0.3493	0.4286
PV1-s	0.3779	-0.1960	0.4893	0.3889	0.3334	0.3406	**0.7910**	0.4446
PV2-s	0.1851	-0.2283	0.2313	0.3762	0.1938	0.4609	**0.7542**	0.2683
PV3-s	0.3985	-0.2392	0.4876	0.3391	0.2485	0.3022	**0.8190**	0.2926
SI1-s	0.3599	-0.2255	0.4014	0.4447	0.5407	0.5510	0.3452	**0.9029**
SI2-s	0.4242	-0.1666	0.3979	0.4955	0.4610	0.5282	0.4048	**0.9272**
SI3-s	0.3694	-0.2155	0.4037	0.4837	0.4742	0.5443	0.4308	**0.9457**

Table II-2 Loadings and cross-loadings of the Actual Use and Habit constructs for self-hosted email systems usage, with moderating variables.

	AUh	HT-h
AU1-s	**0.9812**	0.9093
AU2-s	**0.9593**	0.8521
AU3-s	**0.9697**	0.8949
HT1-s	0.9230	**0.9813**
HT2-s	0.8761	**0.9725**
HT3-s	0.8485	**0.9474**

Table II-3 Loadings and cross-loadings of dependent variables for self-hosted email systems usage.

	AUh	UIh++	UIh--
AU1-s	**0.9812**	0.5107	-0.4308
AU2-s	**0.9593**	0.4975	-0.3946
AU3-s	**0.9697**	0.5189	-0.4038
UI1-s	0.5162	**0.9596**	-0.7110
UI2-s	0.4980	**0.9417**	-0.7192
UI3-s	0.4904	**0.9663**	-0.7291
UI4-s	-0.3087	-0.6855	**0.8886**
UI5-s	-0.4658	-0.7453	**0.8774**
UI6-s	-0.3156	-0.5119	**0.8394**

Table II-4 Loadings and cross-loadings of moderating variables for self-hosted email systems usage.

	AGE	GDR	CSE	DC	PC	PL	EM
AGE	**1.0000**	-0.1341	0.1562	0.0961	0.0268	0.1633	0.1136
GDR	-0.1341	**1.0000**	-0.5717	-0.3246	-0.2505	-0.1135	-0.2919
SE1	0.0947	-0.6435	**0.8403**	0.4734	0.3678	0.2418	0.4519
SE2	0.1818	-0.5067	**0.9459**	0.5780	0.3355	0.2400	0.4871
SE3	0.1216	-0.5044	**0.9178**	0.5453	0.3424	0.3192	0.5041
SE4	0.1997	-0.4722	**0.8068**	0.3398	0.2463	0.1014	0.2958
SE5	0.0905	-0.3501	**0.8029**	0.3447	0.1483	0.1174	0.2641
DC1	0.1463	-0.3547	0.6008	**0.8685**	0.6902	0.3381	0.7939
DC2	0.0018	-0.1735	0.2771	**0.8036**	0.3935	0.3476	0.6612
PC1	0.0621	-0.3243	0.5429	0.7878	**0.8064**	0.2980	0.7987
PC2	-0.0560	-0.1369	0.1188	0.2814	**0.7851**	0.3165	0.5503
PC3	0.0376	-0.0255	-0.0620	0.2717	**0.6328**	0.3369	0.4877
PL1	0.0998	0.0610	0.1133	0.2071	0.2180	**0.7225**	0.4365
PL2	0.2913	-0.1427	0.1755	0.3978	0.3901	**0.7871**	0.6265
PL3	-0.0307	-0.1433	0.2723	0.3165	0.3349	**0.8171**	0.5726

Table II-5 R square of dependent variables for self-hosted email systems usage.

	R^2 without moderators	R^2 with moderators
AUh	0.8409	0.8409
UIh++	0.5554	0.7112
UIh--	0.4101	0.6684

Table II-6 Descriptive statistics of moderating, independent and dependant variables for self-hosted email systems usage.

	AVE	Composite Reliability	Cronbachs Alpha	Communality	Correlations²
AUh	0.9411	0.9796	0.9687	0.9411	0.8339
AGE	1.0000	1.0000	1.0000	1.0000	0.0286
GDR	1.0000	1.0000	1.0000	1.0000	0.3268
CSE	0.7478	0.9365	0.9151	0.7478	0.3268
DC	0.7000	0.8233	0.5744	0.7000	0.4381
PC	0.5557	0.7878	0.6106	0.5557	0.4381
PL	0.6030	0.8197	0.6750	0.6030	0.1733
EE-h	0.7605	0.9050	0.8421	0.7605	0.4181
FA-h	0.6709	0.8907	0.8387	0.6709	0.3837
FC-h	0.5025	0.7447	0.5228	0.5025	0.4181
HM-h	0.7890	0.9181	0.8679	0.7890	0.4168
HT-h	0.9354	0.9775	0.9654	0.9354	0.8339
PE-h	0.7684	0.9087	0.8536	0.7684	0.3516
PV-h	0.6218	0.8313	0.6952	0.6218	0.2715
SI-h	0.8564	0.9471	0.9161	0.8564	0.3411
UIh++	0.9138	0.9695	0.9528	0.9138	0.5670
UIh--	0.7547	0.9022	0.8378	0.7547	0.5670

Table II-7 Structural model results for the effect on Actual Use for self-hosted email systems, with moderating variables.

Dependant Variable: Actual Use	Direct effect (AU++)
Facilitating Conditions (FC)	-0.0507
Habit (HT)	0.8616
Usage Intention (UI++)	0.0642
Usage Intention (UI--)	-0.0442

Table II-8 Structural model results for the effect on Actual Use for self-hosted email systems, without moderating variables.

Dependant Variable: Actual Use	Direct effect (AU++)	t-value (AU++)
Facilitating Conditions (FC)	-0.0069	0.1725
Habit (HT)	0.8845	21.3622
Usage Intention (UI++)	0.0630	0.8742
Usage Intention (UI--)	-0.0457	0.9403

Table II-9 Structural model results for the effect on Usage Intention for self-hosted email systems, with moderating variables.

Dependant Variable: Usage Intention	Direct effect (UI++)	Direct effect (UI−−)
Performance Expectancy (PE)	0.0758	-0.0543
Effort Expectancy (EE)	0.2410	-0.4424
Facilitating Conditions (FC)	-0.4586	0.0601
Hedonic Motivation (HM)	0.3687	
Fearand Anxiety (FA)		0.0724
Price Value (PV)	0.3093	-0.3475
Habit (HT)	-0.0102	0.2288
Social Influence (SI)	-0.0267	0.2678
Age (AGE)	-0.1130	-0.0005
Gender (GDR)	0.0744	-0.0834
Perceived Self-Efficacy (PSE)	0.1135	-0.0926
Ethical Motivation (EM)	0.2634	-0.3571
PE x AGE	0.3386	-0.2522
EE x AGE	-0.1196	0.2425
FC x AGE	0.6264	-0.1353
HM x AGE	-0.8277	
FA x AGE		0.1334
PV x AGE	-0.2534	0.3297
HT x AGE	-0.0431	-0.1976
SI x AGE	0.1850	-0.4868
PE x GDR	-7.2680	6.3491
EE x GDR	-14.5420	14.7938
FC x GDR	22.9524	-25.5532
HM x GDR	2.5571	
FA x GDR		-0.1897
PV x GDR	-10.0210	8.3942
HT x GDR	1.4549	-0.9692
SI x GDR	5.5189	-3.1504
PE x PSE	-0.7620	-0.5141
EE x PSE	-0.7615	1.4511
FC x PSE	0.8724	-1.8007
HM x PSE	-0.1096	
FA x PSE		-1.3048
PV x PSE	-0.2416	0.1691
HT x PSE	5.2483	-2.5978
SI x PSE	-2.7455	0.3985
PE x EM	1.0475	0.6743
EE x EM	0.5432	-1.4843
FC x EM	-0.6192	0.8284
HM x EM	0.2696	

FA x EM		1.4833
PV x EM	0.1109	0.0907
HT x EM	-5.0400	2.5868
SI x EM	2.3978	0.4873

Table II-10 Structural model results for the effect on Usage Intention for self-hosted email systems,without moderating variables.

Dependant Variable: Usage Intention	Direct effect (UI++)	t-value (UI++)	Direct effect (UI--)	t-value (UI--)
Performance Expectancy (PE)	0.1235	0.9774	-0.0625	0.5085
Effort Expectancy (EE)	0.0081	0.0780	-0.0717	0.4680
Facilitating Conditions (FC)	0.0682	0.6034	-0.0173	1.2086
Hedonic Motivation (HM)	0.3182	2.4954		
Habit (HT)	0.1224	1.5767	-0.0996	0.9641
Price Value (PV)	0.1696	1.6283	-0.2485	2.2240
Fear and Anxiety (FA)			0.2325	2.3369
Social Influence (SI)	0.1572	1.3704	0.0250	0.2239

Table II-11 Correlations and Average Variance Extracted (AVEs) of moderating, independent and dependent variables for self-hosted email systems usage.

	AGE	AUh	CSE	DC	EE-h	FA-h	FC-h	GDR	HM-h	HT-h	PC	PE-h	PL	PV-h	SI-h	UIh++	UIh--
AGE	**1.0000**																
AUh	0.1691	**0.9411**															
CSE	0.1562	0.5468	**0.7478**														
DC	0.0961	0.3891	0.5408	**0.7000**													
EE-h	0.0543	0.3350	0.5043	0.3638	**0.7605**												
FA-h	-0.1589	-0.3884	-0.4731	-0.2238	-0.6194	**0.6709**											
FC-h	-0.0002	0.4390	0.4851	0.4706	0.6466	-0.4727	**0.5025**										
GDR	-0.1341	-0.2913	-0.5717	-0.3246	-0.5249	0.4785	-0.3799	**1.0000**									
HM-h	0.0034	0.3488	0.3799	0.4024	0.5313	-0.3043	0.5532	-0.3127	**0.7890**								
HT-h	0.1166	0.9132	0.5072	0.3852	0.3543	-0.3793	0.4604	-0.3187	0.4242	**0.9354**							
PC	0.0268	0.1450	0.3385	0.6619	0.2397	-0.1307	0.2446	-0.2505	0.2458	0.1472	**0.5557**						
PE-h	0.0111	0.5553	0.3458	0.4445	0.4169	-0.2455	0.4649	-0.1956	0.5930	0.5680	0.2309	**0.7684**					
PL	0.1633	0.1136	0.2471	0.4081	-0.0210	-0.0242	0.0252	-0.1135	0.0544	0.1152	0.4163	0.1615	**0.6030**				
PV-h	-0.0243	0.3072	0.3969	0.4376	0.4045	-0.2804	0.5087	-0.2327	0.4683	0.3285	0.2132	0.4694	0.2423	**0.6218**			
SI-h	-0.0122	0.4995	0.4534	0.4983	0.4165	-0.2176	0.4330	-0.2977	0.5138	0.5294	0.3440	0.5840	0.1688	0.4268	**0.8564**		
UIh++	0.1315	0.5248	0.5099	0.6492	0.4050	-0.3106	0.5178	-0.3085	0.6456	0.5008	0.3899	0.5882	0.3012	0.5211	0.5627	**0.9138**	
UIh--	-0.0021	-0.4226	-0.5029	-0.5279	-0.4710	0.4780	-0.5130	0.3273	-0.5482	-0.3893	-0.2973	-0.3762	-0.1656	-0.4666	-0.3137	-0.7530	**0.7547**

Annex 3. Gmail system use

Table III-1 Loadings and cross-loadings of independent variables for Gmail system usage.

	EE-g	FC-g	HM-g	HT-g	PE-g	SI-g	TW-BN	TW-ID	TW-IT
EE1-g	**0.8981**	0.4051	0.2368	0.3254	0.3839	-0.0056	0.3601	0.3786	0.5313
EE2-g	**0.6111**	0.3101	0.5105	0.3831	0.6380	0.0642	0.0729	0.1973	0.3192
FC2-g	0.4665	**1.0000**	0.3778	0.2785	0.4461	0.0812	0.2117	0.2914	0.387
HM1-g	0.3285	0.3551	**0.9167**	0.4072	0.5986	0.2059	0.2126	0.0885	0.305
HM2-g	0.514	0.3969	**0.9032**	0.4234	0.6944	0.1802	0.2804	0.2092	0.3897
HM3-g	0.2963	0.2807	**0.9057**	0.3575	0.5038	0.2948	0.3369	0.1318	0.2778
HT1-g	0.4218	0.2626	0.4539	**0.9174**	0.54	0.3378	0.2879	0.2883	0.4426
HT2-g	0.4515	0.263	0.4652	**0.9013**	0.5475	0.3726	0.267	0.2556	0.401
HT3-g	0.2295	0.1888	0.1711	**0.7648**	0.2254	0.4594	0.197	0.1659	0.285
PE1-g	0.5273	0.4013	0.5761	0.5149	**0.9156**	0.2915	0.2963	0.278	0.4525
PE2-g	0.5346	0.4646	0.592	0.4214	**0.9061**	0.1065	0.2459	0.234	0.3657
PE3-g	0.578	0.36	0.6446	0.4829	**0.9183**	0.217	0.249	0.264	0.3632
SI1-g	-0.0083	-0.0093	0.1739	0.3792	0.1683	**0.8575**	0.1518	0.1759	0.1673
SI2-g	0.0443	0.1078	0.2057	0.3984	0.2104	**0.9407**	0.1959	0.2397	0.2018
SI3-g	0.0244	0.1038	0.2956	0.4352	0.2522	**0.9490**	0.1772	0.2014	0.1965
BN1-g	0.3751	0.1265	0.3673	0.2943	0.3971	0.1604	**0.7563**	0.5652	0.5784
BN2-g	0.2456	0.1303	0.2321	0.2474	0.2023	0.1719	**0.8393**	0.4713	0.4288
BN3-g	0.1787	0.1096	0.1429	0.2035	0.1205	0.1967	**0.7804**	0.5119	0.427
BN4-g	0.1214	0.1268	0.1336	0.0721	0.0574	0.0649	**0.6188**	0.3626	0.3947
BN5-g	0.2682	0.2896	0.2622	0.2507	0.2588	0.13	**0.8433**	0.5233	0.5358
ID1-g	0.3531	0.2507	0.1779	0.2673	0.2606	0.1777	0.6505	**0.9010**	0.6652
ID2-g	0.325	0.2456	0.1654	0.2005	0.2253	0.2315	0.5427	**0.8353**	0.554
ID3-g	0.3163	0.2886	0.0941	0.258	0.2545	0.2251	0.4807	**0.8445**	0.5725
ID4-g	0.3597	0.2017	0.1073	0.2173	0.2293	0.13	0.4889	**0.8344**	0.5691
IT1-g	0.5534	0.3253	0.3312	0.3662	0.3496	0.0786	0.3463	0.4917	**0.7661**
IT2-g	0.4983	0.2951	0.282	0.3002	0.4378	0.1847	0.4322	0.5349	**0.8315**
IT3-g	0.4188	0.3133	0.2826	0.4341	0.3301	0.2276	0.5657	0.598	**0.8207**
IT4-g	0.4017	0.3194	0.2675	0.3078	0.3005	0.1511	0.6278	0.6045	**0.8083**

Table III-2 Loadings and cross-loadings of dependent variables for Gmail system usage.

	AUg	UIg++	UIg--
AU1-g	**0.9570**	0.5821	-0.4799
AU2-g	**0.9013**	0.3274	-0.2573
AU3-g	**0.9555**	0.5663	-0.4513
UI1-g	0.4909	**0.9734**	-0.8234
UI2-g	0.5289	**0.9671**	-0.8257
UI3-g	0.5271	**0.9742**	-0.8026
UI4-g	-0.3805	-0.7197	**0.9054**
UI5-g	-0.3258	-0.7784	**0.8712**
UI6-g	-0.4541	-0.7956	**0.9504**

Table III-3 Loadings and cross-loadings of moderating variables for Gmail system usage.

	AGE	GDR	CSE	DC	PC	PL	EM
AGE	**1.0000**	-0.1341	0.1577	0.0953	0.0277	0.1633	0.1189
GDR	-0.1341	**1.0000**	-0.5727	-0.3237	-0.2511	-0.1123	-0.2872
SE1	0.0947	-0.6435	**0.8408**	0.4721	0.3686	0.2411	0.4485
SE2	0.1818	-0.5067	**0.9459**	0.5762	0.3376	0.2398	0.4878
SE3	0.1216	-0.5044	**0.9200**	0.5437	0.3438	0.3187	0.5052
SE4	0.1997	-0.4722	**0.8099**	0.3385	0.2478	0.1014	0.2937
SE5	0.0905	-0.3501	**0.7971**	0.3438	0.1497	0.1164	0.2646
DC1	0.1463	-0.3547	0.6022	**0.8655**	0.6930	0.3376	0.7875
DC2	0.0018	-0.1735	0.277	**0.8072**	0.3952	0.347	0.6683
PC1	0.0621	-0.3243	0.545	0.7858	**0.8089**	0.2973	0.7869
PC2	-0.056	-0.1369	0.12	0.2807	**0.7805**	0.3163	0.5261
PC3	0.0376	-0.0255	-0.0618	0.2717	**0.6337**	0.3362	0.4809
PL1	0.0998	0.061	0.1159	0.2072	0.2173	**0.7263**	0.4564
PL2	0.2913	-0.1427	0.1756	0.3979	0.392	**0.7854**	0.6403
PL3	-0.0307	-0.1433	0.2723	0.3169	0.3336	**0.8160**	0.584

Table III-4 R square of dependent variables for Gmail system usage.

	R^2 without moderators	R^2 without moderators
AUg	0.6783	0.6937
UIg++	0.5243	0.8169
UIg--	0.4948	0.7017

Table III-5 Descriptive statistics of moderating, independent and dependant variables for Gmail system usage.

	AVEs	Composite Reliability	Cronbachs Alpha	Communality	Correlations²
AGE	1.0000	1.0000	1.0000	1.0000	0.0301
GDR	1.0000	1.0000	1.0000	1.0000	0.3280
CSE	0.7478	0.9365	0.9151	0.7478	0.3280
DC	0.7003	0.8236	0.5744	0.7003	0.4941
PC	0.5551	0.7874	0.6106	0.5551	0.4400
PL	0.6034	0.8199	0.6750	0.6034	0.5355
EE	0.5900	0.7353	0.3344	0.5900	0.3558
FC	1.0000	1.0000	1.0000	1.0000	0.2176
HM	0.8255	0.9342	0.8947	0.8255	0.4339
HT	0.7463	0.8976	0.8277	0.7463	0.6657
PE	0.8342	0.9379	0.9019	0.8342	0.4339
SI	0.8403	0.9403	0.9053	0.8403	0.1955
TW-BN	0.5959	0.8794	0.8310	0.5959	0.4070
TW-ID	0.7297	0.9152	0.8769	0.7297	0.4819
TW-IT	0.6513	0.8818	0.8229	0.6513	0.4819
AUg	0.8804	0.9566	0.9318	0.8804	0.6657
UIg++	0.9439	0.9806	0.9703	0.9439	0.7074
UIg--	0.8274	0.9349	0.8951	0.8274	0.7074

Table III-6 Structural model results for the effect on Actual Use for the Gmail system, with moderating variables.

Dependant Variable: Actual Use	Direct effect (AU++)
Facilitating Conditions (FC)	0.0182
Habit (HT)	0.8587
Usage Intention (UI++)	0.2458
Usage Intention (UI--)	0.1856

Table III-7 Structural model results for the effect on Actual Use for the Gmail system, without moderating variables.

Dependant Variable: Actual Use	Direct effect (AU++)	t-value (AU++)
Facilitating Conditions (FC)	0.0286	0.4450
Habit (HT)	0.8098	16.6847
Usage Intention (UI++)	0.1937	1.5242
Usage Intention (UI--)	0.1824	1.4690

Table III-8 Structural model results for the effect on Usage Intention for the Gmail system, with moderating variables.

Dependant Variable: Usage Intention	Direct effect (UI++)	Direct effect (UI−−)
Performance Expectancy (PE)	0.1618	-0.4332
Effort Expectancy (EE)	-0.1857	0.0583
Facilitating Conditions (FC)	0.2375	-0.4260
Hedonic Motivation (HM)	0.2998	
Habit (HT)	0.5915	-0.5227
Social Influence (SI)	-0.0606	-0.0138
Trustworthiness – Benevolence (TW-BN)	-0.2997	-0.0283
Trustworthiness – Integrity (TW-IT)	-0.0713	0.5297
Trustworthiness – Identification (TW-ID)	0.1250	-0.2205
Age (AGE)	0.1604	-0.2825
Gender (GDR)	-0.2587	0.0551
Perceived Self-Efficacy (PSE)	0.2304	-0.0389
Ethical Motivation (EM)	-0.4049	0.2764
PE x AGE	0.7745	2.3768
EE x AGE	0.2192	0.8634
FC x AGE	-2.7693	4.1725
HM x AGE	-4.1579	
HT x AGE	-0.0711	0.0619
SI x AGE	-0.3901	0.4587
BN x AGE	0.6725	-0.1541
ID x AGE	1.3537	-0.1569
IT x AGE	3.4120	-6.1091
PE x GDR	1.1449	3.4756
EE x GDR	7.4057	-1.7707
FC x GDR	7.1637	-6.8239
HM x GDR	-0.9983	
HT x GDR	-1.6073	6.0765
SI x GDR	2.0720	-0.8158
BN x GDR	10.4947	-1.5012
IDx GDR	0.2852	-1.0245
IT x GDR	-16.5452	1.2641
PE x PSE	125.8757	-68.5631
EE x PSE	1.4298	27.2893
FC x PSE	-66.8679	35.9679
HM x PSE	-47.6942	
HT x PSE	-3.5028	-3.0622
SI x PSE	-11.8655	-1.9436

BN x PSE	-16.3128	20.5667
ID x PSE	-2.6667	1.2742
IT x PSE	0.8098	3.1885
PE x EM	-123.5423	66.5728
EE x EM	-5.1721	-22.7098
FC x EM	67.0331	-35.8132
HM x EM	47.8551	
HT x EM	3.8455	2.5903
SI x EM	12.1572	2.3999
BN x EM	14.8897	-20.4781
ID x EM	3.0502	-1.6625
IT x EM	-1.0612	-2.8715

Table III-9 Structural model results for the effect on Usage Intention for the Gmail system,without moderating variables.

Dependant Variable: Usage Intention	Direct effect (UI++)	t-value (UI++)	Direct effect (UI--)	t-value (UI--)
Performance Expectancy (PE)	0,0073	0.0677	-0,0197	0.1734
Effort Expectancy (EE)	-0,1218	1.0943	0,1602	1.2576
Facilitating Conditions (FC)	0,1040	1.1855	-0,1603	1.6995
Hedonic Motivation (HM)	-0,0186	0.1758		
Habit (HT)	0,4442	4.8523	-0,3562	3.5117
Social Influence (SI)	0,1131	1.0648	-0,0918	0.8714
Trustworthiness - Benevolence (TW-BN)	0,2224	1.8836	-0,1722	1.5661
Trustworthiness - Integrity (TW-IT)	0,1092	0.8876	-0,1919	1.6190
Trustworthiness - Identification (TW-ID)	0,1110	1.0710	-0,1283	1.1501

Table III-10 Correlations and Average Variance Extracted (AVEs) of moderating, independent and dependent variables for Gmail system usage.

	AGE	AUg	CSE	DC	EE-g	FC-g	GDR	HM-g	HT-g	PC	PE-g	PL	SI-g	TW-BN	TW-ID	TW-IT	UIg++	UIg--
AGE	**1.0000**																	
AUg	-0.0351	**0.8804**																
CSE	0.1577	-0.2288	**0.7478**															
DC	0.0953	-0.3389	0.5400	**0.7003**														
EE-g	-0.1581	0.3774	0.0508	-0.0835	**0.5900**													
FC-g	-0.1735	0.2513	-0.0800	-0.1618	0.4665	**1.0000**												
GDR	-0.1341	0.1520	-0.5727	-0.3237	-0.0905	0.0508	**1.0000**											
HM-g	-0.0347	0.3810	-0.0222	-0.0907	0.4205	0.3778	-0.0472	**0.8255**										
HT-g	-0.1241	0.8159	-0.3874	-0.4253	0.4349	0.2785	0.2598	0.4351	**0.7463**									
PC	0.0277	-0.1772	0.3419	0.6633	0.0437	-0.0093	-0.2511	0.0431	-0.1614	**0.5551**								
PE-g	-0.1041	0.4866	-0.0021	-0.1673	0.5965	0.4461	-0.0829	0.6587	0.5223	0.0791	**0.8342**							
PL	0.1633	-0.1302	0.2475	0.4076	-0.2131	-0.0858	-0.1123	-0.0521	-0.1403	0.4158	-0.1443	**0.6034**						
SI-g	-0.0637	0.2494	-0.3550	-0.4137	0.0243	0.0812	0.3431	0.2519	0.4422	-0.2824	0.2337	-0.0766	**0.8403**					
TW-BN	-0.1331	0.3350	-0.2557	-0.3050	0.3237	0.2117	0.1522	0.3093	0.2935	-0.1719	0.2920	-0.2906	0.1918	**0.5959**				
TW-ID	-0.0446	0.2370	-0.2446	-0.3621	0.3945	0.2914	0.1440	0.1610	0.2791	-0.2487	0.2852	-0.3229	0.2254	0.6380	**0.7297**			
TW-IT	-0.1619	0.3971	-0.2363	-0.4570	0.5726	0.3870	0.2221	0.3578	0.4417	-0.3156	0.4371	-0.3309	0.2067	0.6193	0.6942	**0.6513**		
UIg++	-0.1300	0.5309	-0.4749	-0.7029	0.2978	0.2978	0.1882	0.3215	0.6102	-0.3646	0.3716	-0.3577	0.4020	0.4919	0.4596	0.5107	**0.9439**	
UIg--	0.0761	-0.4279	0.4279	0.6541	-0.2993	-0.3493	-0.2227	-0.3715	-0.5526	0.3704	-0.3740	0.3729	-0.3646	-0.4828	-0.4805	-0.5425	-0.8411	**0.8274**

Annex 4. Self-hosted email systems recommendation

Table IV-1 Loadings and cross-loadings of independent variables for self-hosted email systems recommendation.

	FA-h	HM-h	HT-h	SI-h
FA1-s	**0.8680**	-0.3211	-0.3267	-0.2544
FA2-s	**0.7903**	-0.1455	-0.2051	-0.0336
FA3-s	**0.8164**	-0.2109	-0.2710	-0.1370
FA4-s	**0.7915**	-0.2823	-0.4301	-0.2485
HM1-s	-0.2674	**0.8904**	0.3808	0.3680
HM2-s	-0.3139	**0.9064**	0.4427	0.5511
HM3-s	-0.2150	**0.8692**	0.2866	0.4210
HT1-s	-0.3905	0.4146	**0.9809**	0.5337
HT2-s	-0.3346	0.4486	**0.9729**	0.5159
HT3-s	-0.3556	0.3601	**0.9474**	0.4848
SI1-s	-0.2245	0.4416	0.5406	**0.9029**
SI2-s	-0.1631	0.4913	0.4611	**0.9268**
SI3-s	-0.2133	0.4804	0.4741	**0.9461**

Table IV-2 Loadings and cross-loadings of dependent variables for self-hosted email systems recommendation.

	ARh++	ARh--	RIh++	RIh--
AR1-s	**0.9109**	-0.4484	0.8569	-0.4754
AR2-s	**0.9118**	-0.3986	0.8244	-0.4245
AR3-s	**0.8867**	-0.4676	0.8557	-0.3615
AR4-s	-0.3951	**0.8224**	-0.4168	0.5653
AR5-s	-0.5169	**0.6885**	-0.5357	0.4241
AR6-s	-0.1021	**0.6439**	-0.0911	0.4178
RI1-s	0.9130	-0.4553	**0.9435**	-0.4533
RI2-s	0.8693	-0.4748	**0.9322**	-0.4047
RI3-s	0.8651	-0.4901	**0.9519**	-0.3992
RI4-s	-0.5719	0.6966	-0.5438	**0.8667**
RI5-s	-0.2416	0.4385	-0.2357	**0.7821**
RI6-s	-0.2924	0.4565	-0.2785	**0.8277**

Table IV-3 Loadings and cross-loadings of moderating variables for self-hosted email systems recommendation.

	AGE	CSE	DC	GDR	PC	PL
AGE	**1.0000**	0.1568	0.0947	-0.1341	0.0282	0.1646
DC1	0.1463	0.6001	**0.8633**	-0.3547	0.6993	0.3397
DC2	0.0018	0.2764	**0.8098**	-0.1735	0.3974	0.3492
GDR	-0.1341	-0.5720	-0.3231	**1.0000**	-0.2542	-0.1162
PC1	0.0621	0.5429	0.7844	-0.3243	**0.8172**	0.2997
PC2	-0.0560	0.1185	0.2802	-0.1369	**0.7774**	0.3159
PC3	0.0376	-0.0625	0.2717	-0.0255	**0.6233**	0.3395
PL1	0.0998	0.1129	0.2072	0.0610	0.2165	**0.7129**
PL2	0.2913	0.1745	0.3979	-0.1427	0.3902	**0.7933**
PL3	-0.0307	0.2714	0.3172	-0.1433	0.3332	**0.8174**
SE1	0.0947	**0.8397**	0.4710	-0.6435	0.3732	0.2429
SE2	0.1818	**0.9454**	0.5750	-0.5067	0.3440	0.2404
SE3	0.1216	**0.9165**	0.5426	-0.5044	0.3500	0.3200
SE4	0.1997	**0.8096**	0.3375	-0.4722	0.2544	0.1013
SE5	0.0905	**0.8035**	0.3432	-0.3501	0.1551	0.1194

Table IV-4 R square of dependent variables for self-hosted email systems recommendation.

	R^2 without moderators	R^2 with moderators
ARh++	0,8848	0,8940
ARh--	0,4629	0,4687
RIh++	0,5574	0,6601
RIh--	0,2166	0,4643

Table IV-5 Descriptive statistics of moderating, independent and dependant variables for self-hosted email systems recommendation.

	AVE	Composite Reliability	Cronbachs Alpha	Communality	Correlations²
AGE	1.0000	1.0000	1.0000	1.0000	0.0271
ARh++	0.8158	0.9300	0.8870	0.8158	0.8774
ARh--	0.5217	0.7639	0.5430	0.5217	0.4313
CSE	0.7480	0.9366	0.9151	0.7480	0.3272
DC	0.7005	0.8237	0.5744	0.7005	0.4548
FA-h	0.6677	0.8892	0.8387	0.6677	0.2197
GDR	1.0000	1.0000	1.0000	1.0000	0.3272
HM-h	0.7900	0.9186	0.8679	0.7900	0.3813
HT-h	0.9354	0.9775	0.9654	0.9354	0.2927
PC	0.5536	0.7860	0.6106	0.5536	0.4454
PL	0.6019	0.8189	0.6750	0.6019	0.1737
RIh++	0.8884	0.9598	0.9372	0.8884	0.8774
RIh--	0.6826	0.8656	0.7687	0.6826	0.4313
SI-h	0.8564	0.9471	0.9161	0.8564	0.4404

Table IV-6 Structural model results for the effect on Actual Recommendation for self-hosted email systems, with moderating variables.

Dependant Variable: Actual Recommendation	Direct effect (AR++)	Direct effect (AR--)
Habit (HT)	0.0787	0.0017
Recommendation Intention (RI++)	0.8221	
Recommendation Intention (RI--)		0.5727
Ethical Motivation (EM)	0.3119	-0.2951
RI++ x EM	-0.0042	
RI-- x EM		0.0066

Table IV-7 Structural model results for the effect on Actual Recommendation for self-hosted email systems, without moderating variables.

Dependant Variable: Actual Recommendation	Direct effect (AR++)	t-value (AR++)	Direct effect (AR--)	t-value (AR--)
Habit (HT)	0.2141	2.8049	-0.1689	1.829
Recommendation Intention (RI++)	0.8876	38.4422		
Recommendation Intention (RI--)			0.6292	8.2967

Table IV-8 Structural model results for the effect on Recommendation Intention for self-hosted email systems, with moderating variables.

Dependant Variable: Recommendation Intention	Direct effect (RI++)	Direct effect (RI−−)
Hedonic Motivation (HM)	0.3422	
Fearand Anxiety (FA)		0.1235
Habit (HT)	-0.0215	0.1954
Social Influence (SI)	0.3396	-0.0928
Age (AGE)	-0.0128	0.2035
Gender (GDR)	-0.0233	0.0009
Perceived Self-Efficacy (PSE)	0.0483	-0.2060
Ethical Motivation (EM)	0.2367	-0.2537
HM x AGE	-0.0658	
FA x AGE		0.0999
HT x AGE	0.1557	-0.2803
SI x AGE	-0.1065	-0.2492
HM x GDR	-0.2670	
FA x GDR		-0.0081
HT x GDR	0.0280	-0.0658
SI x GDR	0.2879	-0.1335
HM x PSE	-0.8293	
FA x PSE		0.6082
HT x PSE	-2.8061	-3.9726
SI x PSE	0.1300	-1.2847
HM x EM	0.8012	
FA x EM		-0.3911
HT x EM	2.8469	4.1044
SI x EM	0.0242	1.0520

Table IV-9 Structural model results for the effect on Recommendation Intention for self-hosted email systems,without moderating variables

Dependant Variable: Recommendation Intention	Direct effect (RI++)	t-value (RI++)	Direct effect (RI--)	t-value (RI--)
Hedonic Motivation (HM)	0.3505	4.1305		
Fearand Anxiety (FA)			0.2441	2.1434
Habit (HT)	0.1301	1.5841	-0.0646	0.6074
Social Influence (SI)	0.4159	4.959	-0.2989	2.7142

Table IV-10 Correlations and Average Variance Extracted (AVEs) of moderating, independent and dependent variables for self-hosted email systems recommendation.

	AGE	ARh++	ARh--	CSE	DC	FA-h	GDR	HM-h	HT-h	PC	PL	RIh++	RIh--	SI-h
AGE	**1.0000**													
ARh++	0.0959	**0.8158**												
ARh--	0.0236	-0.4857	**0.5217**											
CSE	0.1568	0.5045	-0.3824	**0.7480**										
DC	0.0947	0.6744	-0.4023	0.5371	**0.7005**									
FA-h	-0.1577	-0.2977	0.4514	-0.462	-0.2244	**0.6677**								
GDR	-0.1341	-0.2928	0.2659	-0.572	-0.3231	0.4687	**1.0000**							
HM-h	0.0024	0.5832	-0.3671	0.3795	0.3991	-0.3028	-0.3134	**0.7900**						
HT-h	0.1168	0.541	-0.3284	0.5077	0.3853	-0.3722	-0.3189	0.4228	**0.9354**					
PC	0.0282	0.3835	-0.2195	0.3466	0.6674	-0.1301	-0.2542	0.2474	0.1541	**0.5536**				
PL	0.1646	0.3533	-0.2378	0.247	0.4103	-0.0244	-0.1162	0.052	0.1167	0.4168	**0.6019**			
RIh++	0.0442	0.9367	-0.502	0.4843	0.606	-0.2676	-0.3405	0.6175	0.4983	0.3718	0.3266	**0.8884**		
RIh--	0.0952	-0.4657	0.6567	-0.4692	-0.4505	0.3248	0.2886	-0.4172	-0.3034	-0.243	-0.0482	-0.4451	**0.6826**	
SI-h	-0.0121	0.6577	-0.2389	0.453	0.4987	-0.2152	-0.2975	0.5099	0.5293	0.349	0.1702	0.6636	-0.3765	**0.8564**

Annex 5. Gmail system recommendation

Table V-1 Loadings and cross-loadings of independent variables for Gmail system recommendation.

	HM-g	HT-g	SI-g	TW-BN	TW-ID	TW-IT
HM1-g	**0.9225**	0.3970	0.2047	0.2131	0.0875	0.3028
HM2-g	**0.8900**	0.4113	0.1796	0.2835	0.2076	0.3899
HM3-g	**0.9128**	0.3505	0.2921	0.3369	0.1301	0.2752
HT1-g	0.4506	**0.9071**	0.3372	0.2879	0.2877	0.4380
HT2-g	0.4627	**0.8890**	0.3724	0.2663	0.2551	0.3942
HT3-g	0.1720	**0.7907**	0.4592	0.1979	0.1665	0.2797
SI1-g	0.1739	0.3847	**0.8617**	0.1512	0.1777	0.1678
SI2-g	0.2081	0.4064	**0.9409**	0.1966	0.2409	0.2012
SI3-g	0.2998	0.4416	**0.9458**	0.1766	0.2016	0.1952
BN1-g	0.3637	0.2879	0.1600	**0.7651**	0.5653	0.5763
BN2-g	0.2334	0.2445	0.1718	**0.8253**	0.4667	0.4252
BN3-g	0.1404	0.2061	0.1983	**0.7815**	0.5078	0.4254
BN4-g	0.1308	0.0778	0.0636	**0.6218**	0.3602	0.3904
BN5-g	0.2641	0.2483	0.1300	**0.8440**	0.5214	0.5398
ID1-g	0.1733	0.2630	0.1776	0.6507	**0.8936**	0.6645
ID2-g	0.1609	0.1988	0.2301	0.5472	**0.8347**	0.5516
ID3-g	0.0908	0.2563	0.2265	0.4841	**0.8513**	0.5718
ID4-g	0.1025	0.2142	0.1306	0.4923	**0.8360**	0.5668
IT1-g	0.3259	0.3601	0.0788	0.3496	0.4926	**0.7595**
IT2-g	0.2755	0.2956	0.1854	0.4364	0.5343	**0.8475**
IT3-g	0.2808	0.4327	0.2272	0.5678	0.5962	**0.8034**
IT4-g	0.2648	0.3073	0.1505	0.6318	0.6015	**0.8178**

Table V-2 Loadings and cross-loadings of dependent variables for Gmail system recommendation

	ARg++	ARg--	RIg++	RIg--
AR1-g	**0.9238**	-0.7608	0.8266	-0.7821
AR2-g	**0.9453**	-0.7999	0.8307	-0.8259
AR3-g	**0.9373**	-0.6572	0.9019	-0.7036
AR4-g	-0.7088	**0.9029**	-0.6569	0.7958
AR5-g	-0.7214	**0.9444**	-0.6579	0.7962
AR6-g	-0.7379	**0.9044**	-0.6977	0.8363
RI1-g	0.8855	-0.7712	**0.9256**	-0.7727
RI2-g	0.8341	-0.6558	**0.9388**	-0.7048
RI3-g	0.8007	-0.5861	**0.8990**	-0.6042
RI4-g	-0.7616	0.8458	-0.7236	**0.9630**
RI5-g	-0.8566	0.8524	-0.7871	**0.9424**
RI6-g	-0.7321	0.8287	-0.6519	**0.9580**

Table V-3 Loadings and cross-loadings of moderating variables for Gmail system recommendation.

	AGE	GDR	CSE	DC	PC	PL
AGE	**1.0000**	-0.1341	0.1602	0.0958	0.0294	0.1647
GDR	-0.1341	**1.0000**	-0.5752	-0.3243	-0.2569	-0.1139
SE1	0.0947	-0.6435	**0.8423**	0.4729	0.3771	0.2414
SE2	0.1818	-0.5067	**0.9455**	0.5773	0.3503	0.2399
SE3	0.1216	-0.5044	**0.9180**	0.5447	0.3555	0.3190
SE4	0.1997	-0.4722	**0.8171**	0.3393	0.2603	0.1012
SE5	0.0905	-0.3501	**0.7915**	0.3444	0.1601	0.1175
DC1	0.1463	-0.3547	0.6021	**0.8674**	0.7061	0.3387
DC2	0.0018	-0.1735	0.2755	**0.8049**	0.4004	0.3480
PC1	0.0621	-0.3243	0.5470	0.7871	**0.8252**	0.2985
PC2	-0.0560	-0.1369	0.1209	0.2811	**0.7709**	0.3156
PC3	0.0376	-0.0255	-0.0618	0.2717	**0.6165**	0.3382
PL1	0.0998	0.0610	0.1172	0.2072	0.2154	**0.7207**
PL2	0.2913	-0.1427	0.1733	0.3978	0.3905	**0.7902**
PL3	-0.0307	-0.1433	0.2703	0.3167	0.3317	**0.8151**

Table V-4 R square of dependent variables for Gmail system recommendation.

	R^2 without moderators	R^2 without moderators
ARg++	0,8390	0,8580
ARg--	0,7899	0,7935
RIg++	0,4724	0,7045
RIg--	0,5103	0,6972

Table V-6 Descriptive statistics of moderating, independent and dependant variables for Gmail system recommendation.

	AVEs	Composite Reliability	Cronbachs Alpha	Communality	Correlations²
AGE	1.0000	1.0000	1.0000	1.0000	0.0271
ARg++	0.8752	0.9546	0.9287	0.8752	0.8338
ARg--	0.8417	0.9410	0.9057	0.8417	0.7793
CSE	0.7481	0.9366	0.9151	0.7481	0.3309
DC	0.7001	0.8234	0.5744	0.7001	0.5181
GDR	1.0000	1.0000	1.0000	1.0000	0.3309
HM-g	0.8254	0.9341	0.8947	0.8254	0.1784
HT-g	0.7461	0.8978	0.8277	0.7461	0.3392
PC	0.5518	0.7845	0.6106	0.5518	0.4563
PL	0.6027	0.8194	0.6750	0.6027	0.1720
RIg++	0.8488	0.9439	0.9109	0.8488	0.8338
RIg--	0.9111	0.9685	0.9512	0.9111	0.7793
SI-g	0.8408	0.9405	0.9053	0.8408	0.2876
TW-BN	0.5953	0.8792	0.8310	0.5953	0.4073
TW-ID	0.7297	0.9152	0.8769	0.7297	0.4775
TW-IT	0.6523	0.8823	0.8229	0.6523	0.4775

Table V-7 Structural model results for the effect on Actual Recommendation for the Gmail system, with moderating variables.

Dependant Variable: Actual Recommendation	Direct effect (AR++)	Direct effect (AR--)
Habit (HT)	-0.0221	-0.3406
Recommendation Intention (RI++)	0.7640	
Recommendation Intention (RI--)		0.7686
Ethical Motivation (EM)	-0.4523	0.3316
RI++ x EM	0.0049	
RI-- x EM		-0.0006

Table V-82 Structural model results for the effect on Actual Recommendation for the Gmail system, without moderating variables.

Dependant Variable: Actual Recommendation	Direct effect (AR++)	t-value (AR++)	Direct effect (AR--)	t-value (AR--)
Habit (HT)	0.3563	4.1869	-0.3213	3.5093
Recommendation Intention (RI++)	0.8651	23.4044		
Recommendation Intention (RI--)			0.8215	17.3621

Table V-9 Structural model results for the effect on Recommendation Intention for the Gmail system, with moderating variables.

Dependant Variable: Recommendation Intention	Direct effect (RI++)	Direct effect (RI−−)
Hedonic Motivation (HM)	0.2082	
Habit (HT)	-0.1392	-0.2901
Social Influence (SI)	0.2181	0.0283
Trustworthiness – Benevolence (TW-BN)	-0.2157	0.0433
Trustworthiness – Integrity (TW-IT)	0.2368	-0.2150
Trustworthiness – Identification (TW-ID)	0.1027	-0.3278
Age (AGE)	-0.0947	0.0047
Gender (GDR)	-0.0272	-0.0004
Perceived Self-Efficacy (PSE)	-0.1026	-0.0270
Ethical Motivation (EM)	-0.3671	0.3235
HM x AGE	1.4184	
HT x AGE	0.1896	0.0152
SI x AGE	-0.5068	-0.5915
BN x AGE	0.2955	-0.0124
ID x AGE	1.1860	0.9158
IT x AGE	-1.7849	-0.3122
HM x GDR	-9.9158	
HT x GDR	10.5456	-0.1197
SI x GDR	-1.1591	0.0272
BN x GDR	2.5101	0.3196
IDx GDR	-3.2640	-0.1039
IT x GDR	0.9669	-0.0906
HM x PSE	10.7288	
HT x PSE	1.9944	-1.3419
SI x PSE	-17.2229	58.4915
BN x PSE	37.9481	-0.5672
ID x PSE	-4.1241	-0.1772
IT x PSE	-6.5569	-5.9576
HM x EM	-11.5357	
HT x EM	-1.8386	1.2671
SI x EM	18.0272	-58.4193
BN x EM	-39.0885	-0.1561
ID x EM	4.2383	-0.0710
IT x EM	5.9122	6.2153

Table V-10 Structural model results for the effect on Recommendation Intention for the Gmail system, without moderating variables.

Dependant Variable: Recommendation Intention	Direct effect (RI++)	t-value (RI++)	Direct effect (RI--)	t-value (RI--)
Hedonic Motivation (HM)	0.0392	0.4333		
Habit (HT)	0.3150	3.8998	-0.2474	2.5224
Social Influence (SI)	0.3366	3.2624	-0.1522	1.4879
Trustworthiness - Benevolence (TW-BN)	0.0081	0.0666	0.0404	0.4175
Trustworthiness - Integrity (TW-IT)	0.1895	1.6098	-0.3818	4.0626
Trustworthiness - Identification (TW-ID)	0.0346	0.316	-0.1910	2.1575

Table V-11 Correlations and Average Variance Extracted (AVEs) of moderating, independent and dependent variables for the Gmail system recommendation.

	AGE	ARg++	ARg--	CSE	DC	GDR	HM-g	HT-g	PC	PL	RIg++	RIg--	SI-g	TW-BN	TW-ID	TW-IT
AGE	**1.0000**															
ARg++	-0.0975	**0.8752**														
ARg--	0.1284	-0.7881	**0.8417**													
CSE	0.1602	-0.4524	0.463	**0.7481**												
DC	0.0958	-0.7198	0.6463	0.5401	**0.7001**											
GDR	-0.1341	0.2311	-0.2561	-0.5752	-0.3243	**1.0000**										
HM-g	-0.0342	0.388	-0.2081	-0.0264	-0.0915	-0.0411	**0.8254**									
HT-g	-0.1289	0.5824	-0.5463	-0.3974	-0.4304	0.2713	0.4224	**0.7461**								
PC	0.0294	-0.402	0.4144	0.3564	0.6755	-0.2569	0.0386	-0.1737	**0.5518**							
PL	0.1647	-0.3699	0.3729	0.2462	0.4088	-0.1139	-0.0473	-0.1424	0.4147	**0.6027**						
RIg++	-0.1233	0.9131	-0.7317	-0.5096	-0.7053	0.2855	0.332	0.5762	-0.3986	-0.2218	**0.8488**					
RIg--	0.1388	-0.8219	0.8828	0.4606	0.6934	-0.289	-0.2035	-0.5213	0.4268	0.3517	-0.7563	**0.9111**				
SI-g	-0.0639	0.5133	-0.3358	-0.356	-0.4125	0.3429	0.2529	0.4491	-0.2882	-0.0772	0.5363	-0.3774	**0.8408**			
TW-BN	-0.1363	0.4124	-0.4659	-0.2533	-0.3069	0.1541	0.3094	0.2916	-0.1776	-0.2892	0.3165	-0.4204	0.1917	**0.5953**		
TW-ID	-0.0439	0.4272	-0.5676	-0.2424	-0.3617	0.1399	0.1545	0.2756	-0.2536	-0.3218	0.3397	-0.5317	0.2266	0.6382	**0.7297**	
TW-IT	-0.1634	0.5505	-0.6401	-0.2322	-0.4546	0.219	0.3511	0.4316	-0.3158	-0.332	0.4372	-0.6267	0.206	0.6222	0.691	**0.6523**