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Investigating consumers' reluctance to give up local hard drives after adopting the Cloud

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Abstract

Purpose – The next phase of hardware technology development is focused on alternative ways to manage and store consumers' personal content. However, even consumers who have adopted Cloud-based services have demonstrated a reluctance to move all of their personal content into the Cloud and continue to resist giving up local hard drives. This paper aims to investigate the characteristics of local hard drives and the Cloud that lead to simultaneous use.

Design/methodology/approach – This paper uses content analysis of online comments and ten depth interviews with simultaneous users of local hard drives and the Cloud.

Findings – Three factors influence the resistance to giving up local hard drives. Simultaneous users utilize local hard drives as a redundancy system and as a way to ensure the permanence of their digital content. They are unsure of the Cloud's ability to support their content creation, management and storage activities (task-technology fit).

Research limitations/implications – Study findings are based on qualitative methods and thus the results cannot be considered conclusive.

Practical implications – The authors speculate that it is unlikely that Cloud-only will fully replace hard drives until these factors are understood and addressed by information technology developers. Cloud service providers may not be aware of how little that users understand the Cloud. In contrast to their certainty and confidence in local hard drives, simultaneous users are confused as to what the Cloud is and how it functions. This uncertainty exacerbates their risk perception and need for control.

Originality/value – This is the first study exploring simultaneous use of local hard drives and the Cloud with a view to understanding this behaviour in terms of the relative advantage of the incumbent technology over the new technology.

Keywords Redundancy, Ambiguity of Task-Technology fit, Permanence, Simultaneous use, Resistance to discontinuing behaviour, The Cloud

Paper type Research paper

Introduction

The next phase of hardware and software development is focused on alternative ways to create, manage and store consumers' personal content. The Cloud is currently the front-runner as a replacement for local hard drives. Consumers have adopted Cloud-only services in certain situations and applications often without realizing that they are doing so (e.g. social media applications). However, they have also shown themselves to be

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resistant to giving up their local hard drives for the creation, management and storage of personal content; often based on the level of importance they ascribe to the content (Maimona, 2013).

The Cloud was originally promoted by service providers as a way to backup files stored on the local hard drives and to provide ubiquitous access to those files. Along with positive messages about being able to access data from anywhere and on multiple devices, negative messages such as the high cost of hard drive storage and warnings about the possibility of hardware failures were used (Wilson, 2011). These promotional efforts can be considered successful, as an estimated 90 per cent of Internet users have adopted at least one Cloud-based service (e.g. storage applications such as Dropbox; photo sharing applications such as Picassa; or software applications such as Adobe) (Danova, 2014; Truong, 2010). These services were previously offered as software applications housed on the user's local hard drive.

Based on the successful introduction of these aforementioned services, the Cloud was projected to completely replace local hard drives (ICTC, 2013; Maisto, 2012). Instead what is observed is that users rarely give up their local hard drives even when they have adopted the Cloud (Danova, 2014).

Rogers (2003) urged researchers to consider not only the relative advantages and compatibility of a new technology over incumbent technology but the consequences of using the new technology. We believe that when resistance to discontinuing an incumbent technology is observed among those who have adopted the replacement technology, it reflects the user's belief that critical features found in the incumbent technology are missing from the replacement technology.

Prior research with paper and e-books found that users are able to articulate the factors in their decision to use both paper and e-books. In that situation, a tangible (paper book) and intangible technology (e-book) were used. An important difference between the content in paper and e-books is the direct (paper book) or indirect (e-book) access to the content through a device. The content and device of the paper book are one. The content in the form of text or images of the e-book is separate from the device. The device has no useful purpose without the content. This study uses two intangible technologies, that is, content that is mediated through a device. Our study conceptualized local hard drives as the incumbent technology and the Cloud as the replacement technology.

The focus of this exploratory study is to discover whether the same dimensions and supporting factors that explained simultaneous use of paper and e-books can be used to explain the simultaneous use of local hard drives and the Cloud.

Using qualitative research methods, we found that Permanence, Redundancy and Ambiguity about Task-Technology Fit are the factors that act as barriers to the successful implementation of Cloud-only options. Our research suggests that service providers should pay more attention to the critical characteristics of incumbent technology that make it resistant to replacement. Where simultaneous use behaviour is found among adopters over a long period of time, it may be signalling that the replacement technology is an inadequate substitute for the incumbent technology.

Literature review

The Cloud can be conceptualized in different ways and across a spectrum of offerings (Khorshed *et al.*, 2012). The National Institute of Standards and Technology defines Cloud computing as:

> […] a model for enabling convenient, on-demand network access to a shared pool of configurable computing resources that can be rapidly provisioned and released with minimal management effort or service provider interaction (Mell and Grance, 2011).

Cloud Computing has three categories: Software as a Service (SaaS), Platform as a Service (PaaS) and Infrastructure as a Service (IaaS). Individual consumers use SaaS applications. Examples of SaaS are content storage (e.g. Dropbox), content distribution (e.g. Facebook, Instagram and online banking or purchase) or content management (e.g. Google Drive and Microsoft Office 365). Business customers may be users of SaaS and through PaaS or IaaS, they offer SaaS applications to their customers (Mell and Grance, 2011). This study will explore consumers' use of SaaS applications as a way to augment businesses' understanding of their customers and to improve their Cloud offerings.

Local hard drives are positioned in the same physical location as the user and completely under their control. Users can choose to create, manage or store their content on an internal or external local hard drive using a device such as a laptop, tablet or smart phone (Wilson, 2014). We use the term "manage" to indicate the ways in which content can be manipulated. Users may create, update, change or delete their content using software programs.

Alternatively, users can create, manage and store their content in the Cloud without using local storage media and software. However, Cloud content is stored in a location unknown to the user (Truong, 2010) and users have only limited control over their content as granted by the service provider.

Synchronized Cloud Content combines local storage and Cloud storage. Drop Box, for example, synchronizes the content stored in the Cloud, with a duplicate copy stored on the user's local hard drive. When changes are made to either copy, the information is resynchronized once an Internet connection is established. Availability of synchronized applications suggests that some service providers recognize user-perceived limitations of Cloud-only content creation, management and storage.

In this study, we extend research first conducted with simultaneous users of paper and e-books. Studies investigating the reluctance of readers and university students to give up paper books even though they had adopted e-books found that the factors that influence resistance to giving up an incumbent technology are different than those that influence adoption or non-adoption. A key conclusion of these studies was that readers want to use both technologies to realize the benefits available in each of them (McNeish *et al.*, 2014; McNeish and Hazra, 2014).

Paper books are characterized as tangible objects. Because of their material qualities, the content of paper books can be observed and handled directly by users (Ishiim, 2008), while the content of e-books is mediated through a device and is considered to be intangible.

This study seeks to extend the understanding of resistance to discontinuing behaviour when there are two intangible technologies. Both local hard drives and the Cloud can be considered intangible, as they are manipulated indirectly through a device such as a tablet, laptop computer or phone. We label users as simultaneous users when they have adopted the replacement technology but resist discontinuing the incumbent technology.

Using the model developed by Rafaeli and Vilnai-Yavetz (2004), paper books were found to be multi-dimensional artefacts with three dimensions (Aesthetic, Symbolism

and Instrumentality). However, e-books were limited to being digital objects with only one dimension, Instrumentality (McNeish and Hazra, 2014).

First, we must assess whether local hard drives and the Cloud are considered to be uni-dimensional or multi-dimensional artefacts. As the digital content of local hard drives and the Cloud is accessed through a device and in a similar manner to e-books, Instrumentality is likely to be found in both local hard drives and the Cloud. What is less clear, is whether the dimensions of Symbolism and Aesthetics will be associated with, and differentiate between local hard drives and the Cloud. Both of these dimensions were important to simultaneous users of paper and e-books, and explained why they continued to use paper books even though they had adopted e-books. Beyond the uni- and multi-dimensional artefactal nature of local hard drives and the Cloud, this study seeks to understand the factors that differentiate between the two and why simultaneous users use both.

Symbolism

McCracken (1986) commented that the meaning of an artefact comes from the user's interpretation and may not be associated with its functionality. One symbolic meaning that is inherent in a discussion of information is its authenticity (Zimpardo, 2008). We presuppose that the user believes that the information stored in their local hard drive is the authentic version created by them. Is the user willing to make the same claim for information stored in the Cloud?

Users may have concerns about the authenticity of their content when it is stored and managed in the Cloud. These perceptions are based on their experience with the way that firms and individuals manage access to the user's digital information and the ability of others to access and manipulate their information without permission (DeVries and Kiger, 2005; Jarvelainen and Puhakainen, 2004).

Aesthetics

Sensory systems provide information to the user about an object. Consumers' reactions are derived from the design and sensory properties of the product not just its performance or functional attributes (Bloch, 1995). In the case of content created, stored and managed in local hard drives and the Cloud, the only sense that is activated is the visual sensory system. The content is accessed through a device, and thus, the visual display of the content is mediated and dependent on the quality of the device's screen (Rosinski and Squire, 2009). We have difficulty anticipating any mentions of the Aesthetics dimension as an explanation of differences between local hard drives and the Cloud.

Instrumentality

An artefact contributes to the goal of a task through the dimension of Instrumentality (Gibson, 1979). Three factors were useful in explaining simultaneous use of, and differentiating between paper and e-books: Redundancy, Permanence and Facilitates Work Process (McNeish and Hazra, 2014). The authors believe that Redundancy and Permanence will prove useful in this study; however, Facilities Work Process is problematic. Facilities Work Process was a distinguishing factor between paper and e-books because of the separation of the content from the device. Users expressed an uncertainty about the underlying product in the context of e-books. They were unsure whether it was the format, the device or the content that constituted an e-book (McNeish and Hazra, 2014). Ambiguity

about Task-Technology Fit may be a more useful factor in this study, as it has been used to explain the lag in adoption of software applications and hardware devices among non-adopters (Goodhue and Thompson, 1995).

Redundancy

Backup systems (Redundancy) are one form of protection against failure (Landau, 1969) and are used keep the overall system functioning (Zissis and Lekkas, 2012). Firms are able to cope more easily than consumers with technical and service problems outages because of they have greater financial and technical resources (Ambrose and Chiravuri, 2010). Individual users are aware of and have experience with the difficulties involved with managing technical problems (Arp and Dickman, 2002). The Cloud was originally promoted by service providers as a way to backup files stored on local hard drives and not as a stand-alone service. The promotional messages included warnings about the possibility of hard drive failures. Strangely, it is much more common to read headlines about the failure of Cloud service providers to protect against security breaches in customer data (Fisher, 2015). Users may have concluded from these headlines that the Cloud on its own does not provide adequate protection for their personal content.

Permanence

Data that are considered permanent has three characteristics: usable, accessible and under the control of the user (Savic, 1995). Users create, manage and store data to achieve personal and professional outcomes with firms or individuals with whom they have relationships. They have an expectation that the data will be available for them when they need it and for as long as they chose (Yu *et al.*, 2010). In addition to technical problems that create the need for redundancy, data that are in the Cloud service may be subject to time and access decisions made by a service provider with/or without the user's consent (Ion *et al.*, 2011). Thus, users are concerned about its impermanence.

The Cloud is also used for collaboration between individual users (Plouffe, 2007). One user invites another to access the Cloud. Little has been written about the downside of this practice for individual users (Tarasewich *et al.*, 2002). The "inviter" has the ability to deny access to the "invitee" at any time, and for any reason whether or not the invitee agrees. If the content is not stored locally this loss of access can have effort, time or financial consequences for the user. Users may resist giving up local hard drives to avoid being dependent on firms or individuals for access to their data.

Ambiguity about Task-Technology Fit

Zigurs and Buckland (1998) found that the characteristics of the task to be completed through the use of technology is impacted by the user's perception of the ability of the technology to provide the necessary support to achieve the outcome required. The two constructs leading to Task-Technology Fit are the task requirements and tool functionality. Although consumers' content creation, management and storage needs are less complex than the decision framework that businesses and government use, consumers must consider whether the Cloud-only is sufficient for their required outcomes (Clemons and Chen, 2011).

Method

Qualitative methods were used to elucidate the underlying logic of simultaneous users' behaviour with local hard drives and the Cloud. Data were collected and analysed using

a two-stage process. In the first phase, we collected comments posted in response to 30 articles published from 2010 to 2013 in ten online technology magazines. Online comments portray peoples' attitude towards a technology (Schuth *et al.*, 2007) and can improve our understanding of consumer behaviour by presenting diverse opinions unmediated by the researcher (Verdegram and De Marez, 2011). After cleaning the dataset for promotional links, 938 comments remained.

For the second phase, ten participants were selected by purposive sampling and came from various professional backgrounds. Participants were recruited from professional associations of which the researchers were members. They agreed to participate in an interview about their personal use of online services. No incentives were offered to the respondents.

Two researchers conducted five face-to-face and five telephone interviews based on the participant's preference. Interviews were conducted with four female (44-57 years) and six male participants (21-46 years) who use local hard drives and the Cloud. The interviews were semi-structured and included basic usage questions and open-ended questions. The interviews ranged from 20 to 90 min and the recordings transcribed.

We explored the comments and interview transcripts with Nvivo (Miles and Huberman, 1994). By allowing excerpts from participants' words to represent a theme, the interpretation is kept closer to the observed contexts (Fereday and Muir-Cochrane, 2006). After collecting the data, two researchers and one coder met to review and discuss the online comments. We engaged with the data in an "active way" (Braun and Clarke, 2006, p. 87) to illuminate emerging patterns. One coder coded the data to generate basic themes, while a second researcher recoded the data to ensure inter-coder reliability. Average Kappa inter-coder statistics are presented to evaluate the consistency of the coding (Hallgren, 2012). Each code was analysed based on their representation in the data and then grouped the basic themes to generate organizing themes. We discarded basic themes that either did not have reasonable representation in the data or did not illuminate the research problem. Finally, we explored the organizing themes to the themes we derived from the extant literature at the beginning of the study.

Findings and discussion

This study sought to discover whether the same dimensions that explained simultaneous of paper and e-books can be used to explain the simultaneous use of local hard drives and the Cloud. As the content of local hard drives and the Cloud is mediated by a device as are e-books, Instrumentality is found in both local hard drives and the Cloud. Symbolism and Aesthetics were not found in this dataset and that would also be consistent with the findings around e-books. The factors associated with Instrumentality (Redundancy, Permanence and Ambiguity about Task-Technology Fit) (Table I) are reported and discussed in this section.

Redundancy

Overall, we find that two themes explain their "aversion to dependence" and the need to "back up". We conceptualize these as data vigilance where simultaneous users aim for risk mitigation by being vigilant about how their data are kept and protected. We suggest that users seek redundancy as a long-term strategy when it comes to risks associated with managing and storing their digital content.

Table I. Thematic analysis results–summary[a]

Basic theme	Average kappa (inter-coder reliability) (%)	Inter-coder agreement range (%)	Representation in codes (%)	Organizing Theme	Themes derived from literature
Aversion to dependence	39.5	80.43-100	16	Data vigilance	Redundancy
Backup	66	70.54-100			
Service availability	65	80.64-100	25	Data control	Permanence
Uncertainties around content ownership	52.75	62.91-100			
Non-collaborators accessing the content	65.75	77.89-100			
Cloud functionalities (positive and negative)	45.75	79.21-100	24	Confusion about cloud services	Ambiguity about Task-Technology Fit
Lack of understanding of the Cloud	52.5	85.85-100			
What the Cloud Is	85.25	91.21-100			
Cloud as a jargon	82.75	90.38-100			

Notes: [a]Some basic themes such as social impact, cost and technical jargon were discarded from the final analysis; these themes had low representation in the data and did not illuminate the research problem by in the context of personal use of the cloud; we believe that these themes may shed light on organizational use of cloud services; however, they are out of scope of this paper and will be pursued in future research

A pattern of comments was observed that explains why respondents are averse to become dependent on anyone (individual or company) for data access. They are not sure whether Cloud service providers, no matter how big they are, will be able to continue their current business models. Consumers use local hard drives as a way to backup their data and mitigate the risks associated with losing their data through the action of Cloud service providers. Below are examples of comments that were coded under "aversion to dependence":

> It's a bad idea to put all your eggs in one basket, especially when it's someone else's basket. I think I will personally keep my own data under my own surveillance, and continue doing my own backups.

A related theme is the need for "back up". Online commentators argue that the Cloud is a backup location for their local hard drive, but that it cannot be the primary location. The depth interviews reinforced the need for "back up" that was found in the online comments:

> I sort of like the idea of it but as an addition to local storage rather than a replacement. That way if the Cloud screws up, I still have everything synced on a local machine. If it's lost in the Cloud I'm not screwed. But I still have the ability to pull that data down from wherever I want, plus I'll have a backup if my local storage dies.

> As an active helper on the Gmail help forum, I can tell you that it can be disastrous to put 100 per cent trust in Cloud data storage without also having your own backup of the data (redundancy). I don't know if this applies as much at the corporate level, but e-mail users can lose their account due to a variety of reasons (disabled, compromised, etc.) and with it all the data stored in it (for Google that could include e-mail, docs, pictures, blogs, etc.).

> I trust Google to keep my data safe at the server level (in aggregate with all the other users hosted on that server). But there are too many non-recoverable things that can happen to me as an individual user; I must maintain my own backups.

All participants were opposed to the idea of Cloud-only options offered in some devices and in addition to more logical rationale, they expressed their resistance through emotional language. They argued that it makes them "very uncomfortable". Some of them could not explain why it creates such an uncomfortable feeling.

When it was pointed out that they had been using the Cloud for their online banking and personal emails, most respondents reacted with words and behaviour that suggested that this information came as a surprise. They also expressed bewilderment at their own lack of understanding of how these online services function. This new information served to reinforce their need to backup data in their local hard drives and even in multiple hard drives.

Permanence

Three basic themes formed the organizing theme of Permanence: "service availability", "uncertainty around content ownership" and "non-collaborators accessing content" which we organized under "data control". After further analysis, we related these themes to Permanence.

We find that users are very concerned with the flawed and inconsistent availability of the Cloud. They argue that unlike local hard drives, the Cloud relies on too many factors uncontrolled and unknown to them to be a reliable and exclusive digital storage space.

They list remote locations, weather conditions, human errors and potential security threats as reasons for being cautious about service availability. The comments below exemplify those arguments:

> We just had Hurricane Sandy on the East Coast […]. Crippling infrastructures, business and especially the power companies […]. No power, no data, right??! This is THE NUMBER ONE issue with cloud computing.

> If I need to go somewhere and I don't have access to internet […] for example, I was in Nova Scotia just this week and the internet there in my hotel was nowhere near the quality you could get in a city like Toronto or Ottawa […] so, if I had to access my files with the internet access, I would not be able to access […] that's a probability […] and I think it's also that there is a lot of restrictions for people […] for people in areas where the internet access isn't all that good […] somewhere like northern Canada […] for my line of my work I do travel a bit […] I think the cloud will probably make my life a lot more difficult […] if I can carry around with me a hard drive or something […].

The argument for simultaneous use of local hard drives and the Cloud flows in part from users' "uncertainty around content ownership". Unlike local hard drives where users are certain that they own their data, they are not clear who owns the data in the Cloud. In addition, they are concerned about the consequences of data loss caused by Cloud service providers. Can they claim for damages as a result of their loss? Are the Cloud providers legally bound to provide users with access to their data, if a user ceases using the service? If the Cloud service provider ceases operations, can users get access to their data? We conclude that users are uncertain about how to ensure ownership and access of their data. As they are not content with the level of ownership protection available to personal users, many cloud users indicate that they put unimportant content into the Cloud, while their important content remains on their local hard drives. The following comments point to these issues:

> There is a HUGE problem that most people seem to be overlooking when arguing about simple cost comparisons. The problem is: When you stop paying you will no longer be able to open any of the artwork files you have created. To me this is a horrendous thought.

> I want to know where my data physically resides because the laws that govern its protection are different depending on where it is. The fact of the matter is that I am a big fan of the cloud but the privacy thing is still a concern for me.

> The Cloud is just another way of control. Once everything is in the Cloud, there will never again be ownership of your own stuff.

Another frequently basic theme in our dataset is the concern for "non-collaborators" accessing users' personal content without the consent of the data owner. People expressed concerns about service providers, government agencies and other third parties, accessing their Cloud content, whether for fraudulent or non-fraudulent purposes. Users are aware of the ease for others to mine, alter or take-over users' digital content. The comments below reveal the deep sense of anxiety that surrounds the exclusive use of cloud services for creating, managing and storing their sensitive data:

> I am also concerned about privacy. I understand encryption and all that, but the more information that moves to the cloud, the more it will try to be cracked, and eventually, someone will succeed and have access to an insane amount of information.

> So all the data you ever enter into an MS or Google service is harvested and analyzed for advertising opportunities. It's creepy to have some Big Brother mega corporation know everything you ever wrote, every word of every email you received, every search you've performed.

> What are really needed are services that let you keep your data out there, but encrypted so that even the cloud provider can't access it. But they don't want that, since then they can't exploit your data so easily. Sure, it makes the data less useful out there, but for me, the cloud is 90 per cent about remote backup and syncing, not "all your data belong to us".

A careful analysis of the three basic themes ("service availability", "uncertainty around content ownership" and "non-collaborators accessing content") discussed above reveal a consistent requirement to maintain control over the data. Therefore, we organize these themes under "data control". But the question remains: what does "data control" mean for the simultaneous user? Further analysis helped us to deepen our understanding by connecting the themes through "permanence". Based on the analysis of the basic themes, we argue that users desire a digital content management service that guarantees them permanent information (i.e. data that is continuously usable, accessible and under the control of the owner).

Ambiguity about Task-Technology Fit

This factor summarizes the user's perception of the ability of the technology to provide the necessary support to achieve the outcome required. It is part of the rationale for using both local hard drives and the Cloud. Users are confused by the use of the term the Cloud and therefore are unsure of its ability to support the creation, management and storage of their content on its own. The underlying themes that constitute this theme are "functionalities of Cloud, positive/negative", "lack of understanding Cloud", "what the Cloud is" and "Cloud as jargon". These have been organized under "confusion about Cloud services".

We believe that service providers are unaware of how little that users understand the Cloud. In contrast to their certainty and confidence in local hard drives, simultaneous users are confused as to what the Cloud is and how it functions. They appear to conclude that it is inadequate for the tasks and outcomes that the user would like to accomplish. The comments below can explicate the ideas discussed above:

> Sometimes "catchy" terms like "the cloud" really aren't. When you've got a name that the majority of people are completely confused by even after hundreds of millions of dollars, worth of advertising by many large companies, it is time to move on to something else and simplify.

> For years now, in networking models, anytime you send something across the internet it would be represented as a cloud. The reason it's represented as a cloud is BECAUSE it's ambiguous. Now, any guesses where the term "cloud" came from, or what it means. Why would anyone think to use a purposely ambiguous symbol to try and explain things? I hate when people say you should start using the cloud because it's so innovative. I use the cloud every time I visit this website, google something, or upload a photo to Facebook. Cloud equals the internet, end of story. Stop marketing ridiculous buzzwords that only serve to further confuse people about technology.

In the depth interviews, we asked the respondents to focus only on their personal use. Those participants who use the Cloud for business purposes are uncertain about its

application for their personal content. They do not appear to be aware of and/or find much utility in using the collaboration potential of the Cloud for personal content. Those who use it for sharing do so with small personal groups such as family and close friends. Some felt uncomfortable with putting their pictures into services identified as the Cloud but not with posting the same pictures on Facebook:

> I think it's just more convenient for me personally to have them on my computer […] I don't find I have the need to use the Cloud. Makes me feel little uneasy […] I feel like I am not holding onto anything on the internet, it's all out there […] I would feel very vulnerable personally.

We find that the misunderstanding about the functionalities and possibilities of the Cloud and the lack of knowledge about what the term Cloud actually means creates confusion among consumers. We suggest that this confusion, if conceptualized as the Ambiguity about the Task-Technology Fit, appears to provide an explanation of simultaneous users' decision-making criteria.

Conclusion

This study sought to discover whether the same dimensions, Instrumentality, Aesthetics and Symbolism that explained simultaneous use of paper and e-books could explain the simultaneous use of local hard drives and the Cloud.

Only Instrumentality emerged from users' comments. We conclude that local hard drives and the Cloud in this same way as e-books, can be identified as a uni-dimensional artefacts. The source of differentiation between local hard drives and the Cloud flows from the different factors of Instrumentality and provides an explanation as to why simultaneous users use both.

The factors associated with Instrumentality varied between local hard drives and the Cloud. Simultaneous users of local hard drives and the Cloud adopt the Cloud for the benefits not available in local hard drives, that is, ubiquitous access. However, ubiquitous access is an insufficient reason for consumers to give up local hard drives and use only the Cloud. An explanation for consumers' resistance to giving up local hard drives can be found in their requirement for data permanence, especially because of confusion around content ownership when it is posted in the Cloud, for a backup system or redundancy to ensure their self-created digital content is not lost to technical or software failure and their ambiguity about the Cloud's Task-Technology Fit.

Firms are concerned about safeguarding their corporate and client data. In the same way, consumers wish to maintain control over their personal content and do so on local hard drives to mitigate risks associated with technical and access problems and to have proof of ownership should it be required.

As this research is qualitative, there are limitations. We found that Permanence, Redundancy and Ambiguity of Task Technology Fit to be useful factors and adequately encapsulated the data.

However, quantitative research with a larger sample size and one whose demographic and behavioural characteristics are collected along with the responses would serve to confirm whether or not these categories are complete and to determine their relative size in relation to each other as well as the relationship between them.

Using online comments as a dataset provides no information about the commentators. Content analysis of online comments represents only those who have read and posted comments in response to the particular article. Additional data from the

in-depth interviews improves the interpretation of the online comments but introduces potential bias from the interviewer.

Rogers (2003) urged researchers to consider not only the relative advantages and compatibility of a new technology over incumbent technology but the consequences of using the new technology. The relative advantages of the incumbent technology should also be considered when examining the adoption of new technologies. Simultaneous use of an incumbent and new technology among a group of users is a signal that the new technology is an inadequate replacement for the incumbent technology. Many firms have both incumbent and replacement technologies in their product portfolio. Understanding that users may adopt a new technology while resisting giving the incumbent technology has implications for product development and product management strategies, time to market, and product launch and product withdrawal activities.

Along with measuring the adoption rate of a replacement technology, firms would be advised to measure the continued use of the incumbent technology among adopters. The continued use of the incumbent technology after a consumer has adopted the replacement technology suggests that the replacement technology has limitations that need to be understood by the firm. Without addressing the limitations, the firm may be faced with having to continue to support both the incumbent and replacement technology, or the customer's dissatisfaction if the incumbent technology is discontinued before its benefits are added to the replacement technology.

Conducting research with simultaneous users provides insight into the benefits and deficiencies of both technologies rather than focusing on the personal characteristics of adopters. As these users have adopted the replacement technology and thus the researcher's concerns about attitudinal resistance to change or habitual behaviour can be set aside.

As previously stated, Cloud content is stored in a location unknown to the user (Truong, 2010) and users have only limited control over their content as granted by the service provider. Cloud service providers may not be aware of how little that users understand the Cloud. In contrast to users' certainty and confidence in how local hard drives function, simultaneous users are confused as to what the Cloud is and how it functions. We argue that the functionalities of the Cloud and the legal and regulatory information that protect users' data need to be made clearer to the users if they are expected to give up the incumbent technology (local hard drives). Another approach would be to focus on the utility of the application with no mention of the Cloud. By using the term Cloud and insisting that users discontinue the use of local hard drives (e.g. Adobe products) may build reactance in users (Brehm and Brehm, 1981). Fitzsimons and Lehmann (2004) found that when consumers were confronted with advice that are inconsistent with their initial impressions or knowledge, they not only ignore the advice, but, in some cases, do the opposite.

This study suggests a more expansive meaning to the terms security and privacy when users' personal content is being discussed. Typically, security and privacy concerns about adopting the Cloud focus on the collection of personal identifying information such as the consumer's name or financial information without their knowledgeable consent (Quah and Rohm, 2013; Günther and Spiekermann, 2005). However, the discussion generally overlooks the content created by the user and their interest in having control and ownership over it. The results of this study suggest that

users are as concerned about protecting their self-created text, audio or visual content in considering, and this may be a more important explanation as to why they resist giving up their local hard drives.

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