CLOUD-BASED COLLABORATIVE ENVIRONMENTS IN THE BUSINESS WORLD:
A STUDY IN EDITING PRACTICES

Aaron P. Carpenter

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Committee:
Dr. Terry Herman, Advisor
Dr. Fay Gao
Mr. Anthony Fontana, M.Ed.
ABSTRACT

Dr. Terry Herman, Advisor

Cloud-based collaborative learning environments are used in many companies today. The problem of this study was to identify if cloud-based collaborative learning environments were actually being used in the business world and what behavioral change, if any, comes about due to their use.

The objectives of this study were to: 1.) Study the use of cloud-based collaborative environments in the business world. 2.) Investigate how the editing capabilities are used. 3) Examine whether or not the collaborative systems in place have any impact on user behavior in the company.

To complete this study, both qualitative and quantitative measures were utilized to gather data. Surveys, as well as interviews, were the methods used in conjunction with a company that currently uses a cloud-based collaborative system in the workplace.

This study brings some new data and issues to light in how these new collaborative cloud-based systems are used in the business environment, but it is recommended that further research be continued to get a different perspective on how other companies use these technologies.
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CHAPTER I: INTRODUCTION

Context of Problem

Ever since the wiki was created back in 1995 it has slowly been working its way into our social conscience (Taylor & Masters, 2005). The most famous example of a wiki is Wikipedia, the online encyclopedia that has been the source of constant debate over its value to the civilized world. Despite the arguments over its usefulness, the humble wiki is an immensely powerful tool that can hasten collaboration across space and time. Viewable by all who have access, instantly and quickly edited by multiple users at once, they provide the flexibility that is needed to help spread knowledge and ideas. John Seely Brown has often remarked about the powers of collaborative thought and learning (Hagel & Brown, 2009), and the wiki, along with other forms of cloud-based collaborative environments, is the culmination of many of these concepts.

Unlike email, which resides on either a remote server or one person's computer, cloud-based systems are located remotely where anyone can have access. This makes sharing files, ideas, text, videos, or almost anything else quick and easy with minimal searching. This is just one of the reasons why these online environments have been adopted by the business community. They can make sharing information on projects quick and easy and can be used to reduce the number of meetings, emails, and phone calls. However, the purpose of this study is to investigate some possible issues with using such a system in the work environment.

Statement of the Problem

Cloud-based collaborative learning environments are used in many companies today. The problem of this study was to identify if cloud-based collaborative learning
environments were actually being used in the business world and what behavioral change, if any, comes about due to their use.

**Statement of the Objectives**

The objectives of this study were to: 1.) Study the use of cloud-based collaborative environments in the business world, 2.) Investigate how the editing capabilities are used, and 3.) Examine whether or not the collaborative systems in place have any impact on user behavior in the company.

**Purpose Statement**

The intent of this proposal was to study the use of cloud-based collaborative environments within the business world. The primary area of interest was the editing capabilities that such a system has the ability to facilitate and whether or not such systems are used to their full potential or are disregarded. Data analysis as provided by a case study set the stage for determining the usage patterns of the online collaborative environment. Another area to be examined was whether or not the system users will edit company documents created by their superiors, and vice versa. The goal was to see if any behavioral change comes about after the system is instituted and whether or not it plays a role in changing the basic power structure and systems that are in place. One of the main areas to be investigated in this study focused upon the editing capabilities that are inherent to these relatively new cloud-based solutions and whether or not users modify their behavior and edit documents based on their position within the company.

**Assumptions and Limitations**

It is important to note that this research study was based on case study research for one company and is not necessarily generalizable as a whole throughout the industry.
Significance of the Study

Many articles have been written about cloud-based collaborative environments and how they have been used in both the public realm and the business world and the benefits and drawbacks associated with their use. The goal of this study was to discover not just how they are used, but the why affecting their usage. This study will investigate the organizational fabric of the companies that use these new cloud-based systems and how users do or do not modify their behavior.

Definitions and Terms

A few key terms need to be operationally defined for the purposes of this study before delving deeper into the subject matter of cloud-based collaborative environments.

**Closed system.** A *closed system* is defined as “A system in which the specifications are kept secret to prevent interference from third parties based upon the inherent security procedures in place” (“Closed System,” n.d.). A closed system, for example, will be defined to be a company’s private wiki that is only open to the employees and other users deemed important, such as consultants. In essence, no person outside of the company will have access.

**Cloud computing.** According to James Martin (2010), cloud computing refers to “free or subscription based services delivered in real time over the Internet” (p. 29). Blue and Tirotta say that cloud computing can “make it possible for learners to interact, simulate, collaborate, and document learning experiences and real world problem-solving” (2011, p. 31).

**Collaborative learning.** According to Dillenbourg, it is “a situation in which particular forms of interaction among people are expected to occur, which would
trigger learning mechanisms, but there is no guarantee that the expected interactions will actually occur” (1999, p. 5).

**Dormancy rate.** According to Merriam Webster, *dormant* is “marked by a suspension of activity” (“Dormant,” n.d.). Hence, it is the percentage of active users who stop using the system 3 months after they originally start using it. Dormancy is an important concept as the users still show up as a user in the system but are no longer an active contributor.

**Open system.** An *open system* will be defined as “a system that allows third parties to make products that plug into or interoperate with it” (“Open System,” n.d.). In other words, it is one that is viewable and editable by anyone.

**Power dynamics.** According to Merriam Webster, *dynamics* is a “pattern or process of change, growth, or activity” (“Dynamics,” n.d.). In this thesis, *power dynamics* relates to the power that the authority figures in the company wield to influence policy and decision-making. An area of interest exists in whether or not the cloud-based collaborative systems have the ability to change or shift the typical structure of the company to make it more open and willing to transfer and share knowledge.

**Wiki.** According to Rupley, the word came to be from the Hawaiian term for “quick” or “fast,” and a *wiki* is “a small piece of server software that lets people freely create and edit Web content using any Web browser, then have it hosted as an archive on the Web” (2005, p. 90).
CHAPTER II. LITERATURE REVIEW

Introduction

This literature review will focus upon the use of collaborative media systems in the business environment. The primary area of interest is upon the editing capabilities that such systems have the ability to facilitate and whether or not such systems are used to their full potential or are disregarded.

History

Before Ward Cunningham created the wiki in 1995 (Taylor, 2005), the most common way for people to exchange information and work on projects was through email. This method presents a number of drawbacks; for example, it is difficult to know who has the latest version, who made the edits, whether or not everyone has the newest copy, or if someone might have not been copied on the email. What was needed was a new way to collaboratively share information. This led to the wiki. The word came to be from the Hawaiian term for “quick” or “fast,” and a wiki is “a small piece of server software that lets people freely create and edit Web content using any Web browser, then have it hosted as an archive on the Web” (Rupley, 2005, p. 90). One of the main benefits is that the pages are in a central location so everyone has access, as well as collaborate and work on projects in real time (Dahl, 2006). The main theory that makes the wiki actually work focuses on the group dynamics inherent in such a system. According to Nicole Martin (2007), wikis work because “group intelligence drives them toward accuracy and completeness in their coverage of a topic” (p. 57).

According to Wardle (2010), “For a company wiki to operate effectively it needs a critical mass of people able to contribute” (p. 23). The success of a wiki or other
collaborative environment depends purely upon the user base. Without people who are willing to add content, edit, read, and learn, there is no benefit to having one. It is the job of management to explain the benefits and abilities of the wiki and do their best to create enthusiasm for their new communal, collaborative resource.

In a way, cloud-based systems have the power to function as a personal open source network. In Wikinomics, the authors tell a story about a mining company, Goldcorp, which made the choice to open up their data to outsiders in exchange for a prize (Tapscott & Williams, 2006). In a short amount of time, they received submissions from all around the world and through this method they were able to identify many different areas that had been previously overlooked.

There are many examples similar to this one, where companies and individuals got the information they needed by being willing to look outside their normal spheres of influence. Collaborative systems have this same power; they can help with teamwork and knowledge generation by harnessing the minds of a large and possibly diffused group of people.

Most companies are based on an office structure with a defined hierarchy of command, which puts people into a defined role or category. Although this type of system has been in place since time immemorial, there is a movement to a different type of hierarchy in the open source community called peering (Tapscott & Williams, 2006). In essence, peering takes away the normal structure and puts everyone on equal footing, where the main things that matter are skill and knowledge. Cloud-based collaborative systems have the ability to function in the same fashion; if used correctly, they make it easy for employees to more fully share their ideas without fear of reprisal.
Wikis are a form of peer production, a system based more on meritocracy than current forms of hierarchy (Tapscott & Williams, 2006). Everyone has the chance to add and change content. One key advantage to this system is that the people working on the project automatically self-select what they will work on, instantly increasing the quality of the work (Tapscott & Williams, 2006).

There are a few key concepts that should be kept in mind when thinking about new media technologies such as cloud-based collaborative systems. They are the concepts of modularity, automation, variability, and transcoding (Manovich, 2001). Each plays a role and has an impact on how technology is used, and having an understanding of these concepts will open the doors to their full potential.

Modularity infers that all cloud-based collaborative systems are composed of distinct elements that help form objects, which “can be combined into even larger objects—again, without losing their independence” (Manovich, 2001, p. 30). In other words, the pages, documents, photos, text messages, etc. that are created help form and create the whole system. These parts are also easily deleted and movable (Manovich, 2001).

Cloud-based collaborative systems are also automated. According to Manovich (2001), they “assemble the information from databases and format it using generic templates and scripts” (p. 32). For example, templates that have been created for use do not have to be made from scratch each time. Access can be automated as well. The systems in use have the capability of generating huge amounts of data, and automation makes it easier to keep track of it all and index it so it can be more easily found.

Variability is another key concept. Cloud-based collaborative systems are “not something fixed once and for all, but something that can exist in different, potentially
infinite versions” (Manovich, 2001, p. 36). The data created by such systems are in a constant state of flux, as editing and adding data is happening constantly. Variability also works in conjunction with modularity. Because the data is digital, all media elements “maintain their separate identities and can be assembled into numerous sequences” (Manovich, 2001, p. 36), which can lead to samples being “created and customized on the fly” (Manovich, 2001, p. 36).

The last concept on new media technologies such as cloud-based collaborative systems focuses on transcoding. According to Manovich (2001), “Because new media is created on computers, distributed via computers, and stored and archived on computers, the logic of a computer can be expected to significantly influence the traditional cultural logic of media” (p. 46). For example, a computer’s file structure influences how data is organized, or file formats are predetermined. The system sets the boundaries on what can be done with it, and until new capabilities are created and added, it has the potential to limit the user base.

**The Cloud – A Collaborative Space**

There is a growing trend to offload and store data in both the personal and business world. This is quite often referred to as *cloud computing*. According to Martin, “Cloud computing refers to free or subscription-based services in real time over the Internet. It may involve software as a service, file storage, synchronization, backup, or other utility computing, or infrastructure” (2010, p. 30). Henderson and Iyer elaborate further: “Cloud computing is an evolution of both computer technology and the dominant business model for delivering IT-based solutions. With cloud computing, an enterprise’s product-centric
and firm-based model for applications and systems can be transformed to a global, distributed, service-centric model” (2010, p. 117).

Some examples of cloud-based systems are wikis, GoogleDocs, and the Microsoft Exchange. All these tools are “… tools conducive to collaborative writing, are Web pages that can be accessed, viewed, and edited through browser software,” (Blue & Tirotta, 2011, p. 34).

Blue and Tirotta compiled a list from other authors about some of these online collaborative systems’ many advantages. Caverly and Ward state they allow for “work on group projects virtually and asynchronously” (Blue & Tirotta, 2011, p.34). Nevin mentions the sharing of “resources and content” (Blue & Tirotta, 2011, p.34), and Pace and Blue state that there is “an electronic space for feedback, commenting, and editing work” (Blue & Tirotta, 2011, p.34). Giniat states they also allow companies to “move away from managing their own data centers to focusing their attention and their resources—financial and human—on their core competencies” (Blue & Tirotta, 2011, p.34).

However, there can be issues with such online collaborative systems. Martin (2010) created a list of common problems that still plague and create misgivings about storing all one’s information in such a system, and they include “privacy, availability, data loss, data mobility and ownership, and tool robustness” (p. 29). Each of these issues are important in their own right and need to be considered carefully and individually in how they can affect the scope of any project that will be using the cloud.

There is more to the cloud than just making group work and basic collaboration easier. Garmon claims that this purely online way of working actually changes the way we look at creating work and the meaning behind true ownership. “Cloud computing is not
merely saving documents in the cloud rather than a hard drive—this possible paradigm is actually changing the way users think about master documents and co-authorship” (2011, p. 1). In other words, a project is considered differently when multiple people work on it collaboratively in the cloud, and it challenges our preconceived notions of what intellectual property is and where it truly is located. Data created in the cloud naturally has a more communal feel to it, as it is not physically located in any one person’s personal space.

**Company Culture**

Each company has its own separate and identifiable culture. Sharma quotes Deshpande and Webster and defines organizational culture as “the pattern of shared values and beliefs that give members of an organization meaning, and provides them with rules for behavior in the organization” (1994, p. 514).

Technology influences how employees communicate with each other, and that has been no truer than now. Email was one of the first major transformational systems that entered the workplace. According to Garmon, it flattened the workplace hierarchy, improved employee performance, and also helped with collaboration (2011).

According to Edmondson (2008), there are four rules that form a framework to help govern the creation of a successful company culture that has an emphasis on continual learning and improvement:

1.) Use best knowledge available to inform the design of specific guidelines.

2.) Enable their employees to collaborate by making information available when and where it’s needed.

3.) Routinely capture process data to discover how work is really being done.

4.) Study the data in an effort to find ways to improve.
These steps, although simple in concept, can provide a major change to the goals and mission of the company. The focus is now on continuous improvement, not just speed, efficiency, or results (Edmondson, 2008).

A company that has this mindset and culture in place will reap the benefits of higher productivity from employees that feel they are part of the company, not just a worker. It is a premise of this study that new collaborative technologies can help bring about positive changes to company culture.

**Benefits**

Cloud-based collaborative environments make collaboration easy and accessible. Their main strength lies in their format, where anyone has the ability to add, change or delete information (Rupley, 2005). They also help reduce cluttered email inboxes, as files, photos, videos, and other media can be inserted into the system, which reduces the problems of sending files back and forth (Dahl, 2006).

Another valuable result of instituting a cloud-based collaborative environment is the boost to productivity they can provide. Instead of having all the pertinent information scattered over multiple personal computer and email inboxes, it consolidates it into one location that is viewable by all. According to Biro, an employee of the MWW Group, after he instituted a wiki at his company it “slashed the number of meetings and conference calls: Anyone can simply pull up the wiki on his or her Web browser and get a full progress report at any time, as well as cutting email use by 30%” (Dahl, 2006, p. 42). Another company, Dresdner Kleinwort, a Frankfurt-based investment bank, noticed a 75% reduction in email, mainly due to the company wiki and instant messaging, a result that
saves countless man hours, as its users can find all the most recent and updated information in just one source (Carlin, 2007).

Another advantage of cloud-based systems is that they allow a form of transactive memory, a term coined by psychologist David Wegner (Gladwell, 2000). In essence, Wegner claims that we use other sources to store information for us, such as address books and even other people. In the almost overwhelming amount of data that is available, systems are needed to make sense of the chaos. A cloud-based system can function in this way to make information available that does not need to be memorized, but is still needed on a somewhat regular basis.

These systems can be more than just a sounding board for work projects. Since it is essentially a holding ground for user-generated content, it can also be a place for showcasing individual creativity. In Wikinomics, the authors see socially constructed sites as public venues, or areas where companies can meet with customers in new and engaging ways (Tapscott & Williams, 2006).

Wikinomics lists some key benefits to incorporating peer production into the business model (Tapscott & Williams, 2006). They claim that it helps with harnessing external talent, keeping up with users, boosting demand for complementary offerings, reducing costs, shifting the locus of competition, taking the friction out of collaboration, and also developing social capital (Tapscott & Williams, 2006).

Like the open source software Linux, a cloud-based collaborative system has the ability to function in a similar manner. In Wikinomics, Ross Mayfield, CEO and founder of SocialText, states, “Wikis compel teams to engage in a constant state of rapid prototyping” (Tapscott & Williams, 2006, p. 256). In other words, the work is never fully finished. With
multiple users combing through the data there is always a sense of continuous improvement, as if it’s a piece of software that is still in beta.

Part of the reason wikis are popular and productive falls to the very nature of the system it helps create. Ross Mayfield states, “(Wikis) have very different properties, because they ask users to share control, and that actually fosters trust. The more participation that you have the greater quality you’ll have in a project, in the same way that open source works” (Tapscott & Williams, 2006, p. 254).

**Disadvantages**

As valuable as collaborative cloud-based systems can be, there are still some flaws and disadvantages that are inherent to any system where multiple users have access. One major problem deals with hierarchy and structure. For example, when a wiki starts to have many pages on multiple topics it can lead to organizational issues. Users may post information in the wrong areas. What is needed is “a steward or gardener, who can ‘refactor’ the content from time to time” (Byrne, 2009, p. 8). This involves “renaming, moving, or combining pages or entire wiki instances,” (Byrne, 2009, p. 8). If there is not a person who is working and maintaining the wiki it can become disorganized and more difficult to use, and thus could fall out of use, thereby rendering a valuable resource inactive.

Another problem deals with usage. According to Wardle (2010), one of the most difficult challenges after instituting a collaborative system is simply getting the prospective users to use the system. He cites problems with creating enthusiasm, especially amongst those members that are more resistant to change, and counsels getting the younger and more tech-savvy employees on board first to help convince the others (Wardle, 2010).
Another option is to be sure to explain what the system is capable of and how it works (Wardle, 2010).

Despite the power that wikis and other collaborative software have, there are still some drawbacks. As with any other product or service, it has the ability to be used for creating value, or it has the potential to be misused. In Wikinomics, author Jaron Lanier, is quoted as saying that collaborative communities are “suffocating authentic voices in a muddled and anonymous tide of mass mediocrity” (Tapscott & Williams, 2006, p. 16). Bill Gates also spoke of the how online communities are threats to companies striving to make profits (Tapscott & Williams, 2006).

**Business Use**

In general a wiki that will be used in a company will have stricter controls in place as opposed to those that are open to the public, such as Wikipedia. Many companies put their employees through training on the wiki and institute codes of conduct similar to those that are in place for email use (Dahl, 2006). These steps can help remove posting and other conduct problems that are commonplace on public sites.

As mentioned above, it is also a good idea to create access restrictions. The online collaborative space might be created in such a way that only a few people in the company will have the ability to make new posts. This can also help cut down on clutter and chatter that is irrelevant to the business environment.

Collaborative systems can lead to bottom-up knowledge creation and distribution. Since everyone has the ability to post information it can transfer communication control to the employees (Tapscott & Williams, 2007). Companies such as IBM, Xerox, and Best Buy’s Geek Squad are using this technology in this fashion to help create more collaborative
learning environments for their employees, getting users from all different aspects of the company to work together and brainstorm (Tapscott & Williams, 2007). In Wikinomics, the authors talk with John Seely Brown, a former chief scientist at XEROX. In regards to wikis he states, “A lot of corporations are using wikis without top management even knowing it. It’s a bottom-up phenomenon” (Tapscott & Williams, 2006, p. 253).

As the speed of business increases, it is crucial to be able to keep up with the flow. Wikis and other collaborative media allow users to keep in touch while companies get increasingly decentralized and geographically dispersed (Tapscott & Williams, 2006). Also, the nature of work is changing. It is becoming “more cognitively complex, more team-based and collaborative, more dependent on social skills, more time pressured, more reliant on technological competence, more mobile, and less dependent on geography” (Tapscott & Williams, 2006, p. 246). Lastly, the Net Generation is rapidly using and adopting new tools to hasten the business process (Tapscott & Williams, 2007).

Dave Wardle has compiled a list of the Pros and Cons of wikis (2010, p. 22).

Pros:

• Relatively easy to implement and promises to be a sustainable way of capturing knowledge.
• Fully searchable. You can find everything—even inside attachments.
• Excellent context to the information so you can trace the thought process.
• Contributors are publicly recognized and can be rewarded.
• Creates a tangible knowledge asset for the future.

Cons:

• A different way of working for many people.
• Releasing previously withheld information is threatening to some employees.

• The thought of being open to public scrutiny can be threatening to some employees.

• Generally the systems have poor integration with email.

• Having access to so much information can be overwhelming at first.

**Personality Types**

To hasten the adoption rate of these new online collaborative tools in the workplace, it is important for managers to identify those employees that can help with the process. Gladwell (2002) identifies the three disparate personalities that can help. Gladwell calls them Connectors, Mavens, and Salesmen. Each has a different skill that can help you get the rest of the employees on board. What they manage to do is take the basic idea and change it so it is more likely to have more meaning for the listener (Gladwell, 2000).

Connectors are people that are skilled at making new friends (Gladwell, 2000). They know lots of people and are a natural source to go to if ideas need to be spread to others. They are networkers (Gladwell, 2000).

Mavens are those that “accumulate knowledge” (Gladwell, 2000, p. 60). They not only are skilled in collecting information and keeping track of trends, but more importantly, they are not knowledge hoarders (Gladwell, 2000). If a manager properly identifies a Maven in their office and takes the time to properly explain the rationale for incorporating a wiki, they will do their own research.

Salesmen have the “skills to persuade us when we are unconvinced of what we are hearing” (Gladwell, 2000, p. 70). They have the power and skill to pressure those who doubt.
Instituting New Collaborative Tools

Instituting new collaborative tools is not something that should be taken lightly. Wikinomics lists the key questions that Mozilla Foundation, the creators of open source software Firefox, asks before making changes to their software (Tapscott & Williams, 2006, p. 300).

- Will our developments truly benefit our users (as opposed to merely benefiting our company)?
- Will it enrich the user’s experience and not mess up what’s already working for them?
- Does what we’re doing have consensus among our community of users?
- Do we always behave from a position of consistent values with our audience?
- Have we maximized the amount of authenticity and transparency to deliver participation, accountability, and trust?
- Are we letting our passion show, even if this means that we’re occasionally wrong because of it?
- Do we start by directing the following questions to our audience “what do you think and why?” and “what value could we provide to you?”

Conclusion

The shift towards collaborative information systems is being increasingly driven by the upcoming workforce, whom has grown up with computers and are perfectly comfortable using them. “We are shifting from closed and hierarchical workplaces with rigid employment relationships to increasingly self-organized, distributed, and
collaborative human capital networks that draw knowledge and resources from inside and outside the firm” (Tapscott & Williams, 2006, p. 240).

These new cloud-based systems have much to offer the business world, from the ability to hasten collaboration across geographic boundaries to instilling a sense of ownership in one’s company. They can help foster new ideas from unlikely directions and prompt people to think in different ways. However, for them to be truly effective there needs to be a company culture in place that will keep an open mind and attempt to use them as a true collaborative resource, one that respects changes being made by all and information from everyone.
CHAPTER III: METHOD

Introduction

The research study focused on the use of cloud-based collaborative environments within the business world. The primary area of research was the editing capabilities that such a system has the ability to facilitate and whether or not such systems are used to their full potential or are disregarded. Data analysis as provided by a case study set the stage for determining the usage patterns of the online collaborative environment. Another area that was examined is whether or not the system users will edit company documents created by their superiors, and vice versa.

Restatement of the Problem

Cloud-based collaborative learning environments are used in many companies today. The problem of this study was to identify if cloud-based collaborative learning environments are actually being used in the business world and what behavioral change, if any, comes about due to their use.

Restatement of the Objectives

The objectives of this study were to: 1.) Study the use of cloud-based collaborative environments in the business world, 2.) Investigate how the editing capabilities are used, and 3.) Examine whether or not the collaborative systems in place have any impact on user behavior in the company.

Research Design

The research design of this study was a mixed methods design, which, according to Creswell, makes “pragmatic assumptions” towards knowledge claims by utilizing “closed-ended measures” and “open-ended observations” (2003, p. 20). This study blended
together a case study (qualitative) component plus a survey (quantitative) component. This data will be used to analyze how the chosen company uses its cloud-based collaborative environments.

**Characteristics of the Study Population**

A case study was conducted with the chosen company that currently incorporates a cloud-based collaborative environment into their information systems. The data set focuses on all users of the system, from managerial staff to the lowest-paid workers. This company has offices located in Georgia, Florida, Virginia, and Ohio. However, this study focused upon just the employees of the Ohio office, which is comprised of 20 individuals. They provide hardware and software information technology solutions to the legal industry. The company was recruited because they use a cloud-based collaborative system based upon Microsoft products, another system called Auto Task which is used for issue tracking for clients, a knowledge base, and time entries, and also sell their own proprietary cloud computing tools, some of which include virtualized versions of software such as Microsoft Word.

**Study Procedure**

A mixed methods approach was taken for data analysis. Both surveys and interviews were utilized to analyze the affects of cloud-based collaborative environment use in the chosen company.

A survey, which was based on the Likert model, was sent to all employees in the Ohio office that use the company’s online systems via email to gather their responses. SurveyMonkey was the service used to create and disseminate the survey. The survey was conducted over the course of 10 days at the chosen company. A Web link to the survey was
first sent to the researcher’s contact at the Ohio office, and that person forwarded the link
to the rest of the people in the Ohio office. After 1 week a reminder email was sent to the
researcher’s contact in order to gather more responses. The survey was 12 questions in
length and took approximately 10 minutes to complete. The questions ranged from general
demographic information to set a baseline on each user, then moved on to the user’s usage
patterns, comfort with the system, pressure to use the system, how it is actually used in the
company, and engagement levels. See Appendix D for the full list of questions.

A Likert scale survey was used for this study. This method is capable of measuring
attitude (Jamieson, 2004), as it allows answers that do not have numerical value. To make
sure that the questions were appropriate, Bowling Green State University’s Human
Subjects Review Board vetted them. This office’s main role is to be the “administrative and
decision-making body having responsibility for review and approval of research involving

At the end of the case study, individual interviews were also utilized, two of which
were conducted in person at their Ohio office and one that was conducted via telephone.
Each interview was recorded in order to make sure the information gathered was as
precise as possible. Interviews focused on one person from management, as well as one
person who uses the system the most and one person who uses the system the least. Both
types of users were determined by the answers given on the SurveyMonkey survey in
regards to familiarity with the system, length of use in years, weekly usage rate, amount of
different tools used, and editing amount of the cloud-based collaborative system.

A wide perspective was needed to best gauge usage patterns and office management
choices that affect how the cloud-based collaborative environment was utilized in the
company. The interview process gave more individualistic and free-flowing data than could be gathered with the more narrowly focused survey. An employee who uses the system the most was interviewed to get the perspective of someone who uses the system on a regular basis, and another employee was also questioned to attempt to understand the perspective of someone who uses the system less often.

**Hypotheses (Null & Alternative)**

1. The company’s users of cloud-based collaborative environments will not modify their behavior and will not edit documents differently.

2. The company’s users of cloud-based collaborative environments will modify their behavior and will edit documents differently.

**Quantitative Questions**

1. How often does the cloud-based collaborative environment get used per employee?

2. Who has editing privileges?

3. What is the dormancy rate towards usage in the company?

4. Identification of the employees who use the system the most and the least.

5. Appearance of a top-down, bottom-top, or level knowledge transfer.

6. How often is the captured data analyzed?

**Qualitative Questions**

1. Is the cloud-based collaborative environment used in such a way that it influences the company culture? If so, what impact does it have?

2. How does the company promote or encourage employees to use the system?

3. What knowledge gaps does the cloud-based collaborative environment fill?
4.) How do the interviewees use the cloud-based collaborative environment?

5.) What systems are set up to capture and analyze process data?

A mixed methods approach was utilized to analyze the questions put forth by the hypotheses. Quantitative questions are best answered by using surveys as produced in the form of the Likert scale. The survey was offered in digital format, with the option of printed versions as well, if the situation merits. Qualitative questions were interview-driven. A purposeful sample of employees was taken. Management, as well as employees who use the system the most and the least, were questioned.
CHAPTER IV: FINDINGS

This chapter will outline the results from the surveys and interviews conducted on the topic of cloud-based collaborative systems. The following are the results from the survey and a breakdown of each response.

Background of Measurement

The online survey (Appendix D) was conducted over the course of 10 days. The survey was 12 questions in length and was based upon the Likert model. All questions were designed to create a baseline on each user in regards to usage patterns. Questions included demographic, quantitative, and qualitative data.

Survey Results

Demographics. Of all survey respondents, 50% of them were in the 18-29 age category, 16% were in the 40-49 category, and 33% were in the 30-39 category. Of the 6 respondents to the question of gender, 100% of respondents identified themselves as male. Of the 6 respondents to the question about position in the company, 16% identified themselves as Management, 33% as Production, and 50% as Other.

Response rate. The survey was conducted over the course of 10 days at the chosen company. The company has a small staff comprised of 20 people. The researcher's contact at the company sent all employees a link to the survey via email. After 1 week, a reminder email was sent to the researcher's contact in order to gather more responses. Of the 20 employees, six responded to the survey, which equals a response rate of 30%.
Responses

**Question 4:** How familiar are you with cloud-based collaborative systems (ex: Microsoft Exchange, SharePoint, Google Docs, wikis)?

![Pie chart showing familiarity with cloud-based collaborative systems]

*Figure 1. Familiarity With Cloud-Based Collaborative Systems.*

Of the 6 respondents to the question of familiarity with cloud-based collaborative systems, 33% answered Somewhat Familiar and 66% answered Very Familiar.
**Question 5**: Approximately how long have you checked or read cloud-based collaborative systems (ex: Microsoft Exchange, SharePoint, GoogleDocs, wikis)?

![Pie chart showing usage length of cloud-based collaborative systems](image)

**Figure 2. Usage Length of Cloud-Based Collaborative Systems.**

Of the 6 respondents to the question of usage length of cloud-based collaborative systems, 66% claimed 5 or More Years, 16% claimed 3 Years, and 16% claimed Never.
**Question 6:** How often do you approximately check or read the cloud-based collaborative systems on a weekly basis?

This open-ended question garnered a variety of responses of differing types and values.
- Hundreds
- 7 days a week
- All day
- 3-5 hours
- 7 days a week
- N/A

**Question 7:** How many times do you post content on the cloud-based collaborative systems during the week?

This open-ended question garnered a variety of responses of differing types and values.
- Hundreds
- 7 days a week
- Very often
- 0-1 hour
- 0
- N/A
Question 8: What do you use the cloud-based collaborative systems for? Please check all that apply.

Figure 3. Cloud-Based Collaborative Systems Usage.

Of the 6 respondents to how they use cloud-based collaborative systems, 83% use it for filling knowledge gaps, 83% for collaboration on projects, 33% for company news, 67% for project information, and 16% for message board.
Question 9: Most valuable usage of cloud-based collaborative systems:

![Pie chart showing the most valuable usage of cloud-based collaborative systems.]

Figure 4. Most Valuable Usage of Cloud-Based Collaborative Systems.

Of the 5 respondents to the most valuable usage of the cloud-based collaborative system, 40% said it was Collaboration on Projects, 20% was Project Information, and 40% was Filling Knowledge Gaps. One person chose not to answer.
**Question 10:** Least valuable usage of cloud-based collaborative systems:

![Least valuable usage of cloud-based collaborative systems](image)

*Figure 5. Least Valuable Usage of Cloud-Based Collaborative Systems.*

Of the 5 respondents to the question regarding the least valuable usage of the cloud-based collaborative system, 60% said Company News, and 40% said the Message Board. One person chose not to answer.
**Question 11:** How often do you edit other people’s documents?

![Pie chart showing responses to Question 11](image)

*Figure 6. Editing of Other People’s Documents.*

Of the 6 respondents to the question of how often the user edits other people’s documents, 50% said Rarely, 16% said Never, and 33% said Very Often.
**Question 12:** Do you edit documents created by people who have supervisory authority over you?

![Pie chart showing distribution of responses to the question.](image)

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*Figure 7. Editing of Other People’s Documents Who Have Supervisory Authority.*

Of the 6 respondents to the question of how often the user edits other people’s documents who have supervisory authority over them, 50% said Never, 16% said Somewhat Often, and 33% said Rarely.

**Interviews.** Interviews with three employees were conducted to help gain more insight on how the collaborative cloud-based systems are being used. A manager, as well as employees who use the system the most and the least, were interviewed. These individuals
were determined by the answers they gave in the survey. Each interview lasted approximately 15 minutes. The following is a trend analysis of the answers.

**What are your main uses of the system?**

All of this company’s resources are actually cloud-based. All persons interviewed use Microsoft Exchange Server for email, task lists, and calendars. Another service called Auto Task is used for internal issue tracking for clients, a knowledge base, and time entries. World Dox is used for client document management. The company has also created virtualized versions of Microsoft Office and other programs, so, in the words of one employee, “There is literally nothing we don’t do in the cloud, except for printing.”

**How would you describe the company culture?**

All persons interviewed believed that the company culture followed the typical pyramid structure in terms of chain of command. However, all stated that the company was relaxed, loose, and not micromanaged, which, as one stated, lets them “work well together as a collaborative team.” The general consensus is that this is due to the small size of the office, which has around 20 people on staff.

**Does the cloud have any impact on the company culture?**

The general trend was that the cloud did not have any significant impact on company culture. Also, most of the main functions of the company were taking place before cloud-based collaborative systems were instituted, such as fixing and installing software and servers. One stated, “The real meat and potatoes conversations happen in person.” Despite the fact that this company is in the Information Technology (IT) field, the general consensus is that face-to-face communication still has a high value.
The main benefit is that the cloud-based collaborative systems enable the company’s employees to know the status of everyone else in the company, mainly due to the use of the Microsoft Exchange systems. This has helped reduce workplace confusion, as all company data is open to all employees.

**How would you describe your coworkers’ behavior online as compared to the normal office environment?**

All answers trended towards the belief that coworkers’ behavior online as compared to the normal office environment was not different. All believed that their fellow users did not modify their behavior. For example, if someone is generally lighthearted and amusing in person that behavior was prevalent in his or her online communication as well. However, all agreed that users do modify their behavior, contingent upon the individual being contacted and the situation at hand. One interviewee said that their emails “reflect the appropriate formality and openness regarding the topic of conversation and the audience.”

**How would you react if someone edited your documents? Has anyone?**

All agreed that if a document was changed without their consent they would be upset. All agreed that if it was a document that was collaborative in nature then they would be more open to changes being made to their work. However, all preferred a system such as the Track Changes feature in Microsoft Word being used as opposed to having their text actually moved and changed. All interviewees agreed that there is a need to track what changes are being made and by whom, and methods are needed to retain the original document for comparison purposes.
Are you more or less open to feedback online as opposed to the office?

Generally, the answers provided trended towards preferring online communication, such as email, as a mode of communication for feedback. Email is the company’s main pathway for communication and was considered the best method by all interviewees, but all stressed the need for the emails to be constructive in nature. The general consensus is that email also makes it easier to accept feedback that was not agreed with, and also gives more time for personal reflection before a response is needed. The top user claimed to be equally open to either method but preferred face-to-face communication. Rationale given was that face-to-face communication creates the perception that they are taking more time out of their day as opposed to composing an email, and shows openness to truly reflect how a person feels, therefore leaving fewer things up for translation.

Would you be more or less comfortable posting your opinion on the company system if it was anonymous?

All interviewees except for the manager said that they would not be comfortable posting their opinions on the company system if it were anonymous in nature. All mentioned that the company culture has created an environment of trust amongst the staff and anonymous posting could have a detrimental effect. One user did agree that anonymous postings could lead to people being more truthful in giving feedback. Another user did not agree with the idea of anonymity, as they believe a name being used is a safer process and also wanted to be recognized for their work.
How do employees view the system?

Answers trended significantly positive towards the use of cloud-based collaborative systems. Answers given as rationale for support included: ability to work from home, more flexibility, improved quality of life, and ease of maintenance for IT.

Summary

The combination of quantitative and qualitative analysis as provided by the survey and interviews provide a glimpse into how companies today view and use cloud-based collaborative systems. Overall, the data collected shows that cloud-based collaborative systems have made an impact on the business world but have not created much change in regards to how documents are edited.
CHAPTER V: SUMMARY, RECOMMENDATIONS, & CONCLUSION

This chapter provides a summary and conclusion of the data collected throughout the course of this study. This proposal provided an opportunity to gain insight into how cloud-based collaborative systems are truly used in the business environment, and what impact, if any, they have upon editing practices.

Summary

The problem of this study was to analyze how cloud-based collaborative learning environments are actually being used in the business world and what behavioral change, if any, comes about due to their use. Three objectives were used to address the problem of the study. Each objective will be addressed individually.

1.) Study the use of cloud-based collaborative environments in the business world.

Cloud-based collaborative environments are becoming increasingly popular in the business world, as the cost of entry has been significantly lower. In a way, working in the cloud is taking computer usage full circle: The original computers were large mainframes that were connected to “dumb” workstations and the mainframes contained all the processing power. As processors became faster and smaller it became possible for the personal computer to be developed. Now, due to advances in networking capabilities, devices are being made with minimal storage and pulling and storing all data in external networks.

The literature review introduces the concept that “Cloud computing is an evolution of both computer technology and the dominant business model for delivering IT-based solutions” (Henderson & Iyer, 2010, p. 117). Therefore, it makes sense for companies such as the one featured in this study to use this cloud-based power to open up new ways of
connectivity and opportunities to conduct business. The company that was the target of this case study has all of its software and systems stored in the cloud—there is not a single service that is not available. Even programs such as Microsoft Word have been virtualized and ported over. The cloud has simplified the way this company does business, and many of its services would not exist without the capabilities of cloud-based collaborative systems.

2.) Investigate how the editing capabilities are used.

In the literature review, Blue and Tirotta explain some of the advantages of cloud-based collaborative systems, such as the ease of asynchronous group projects, sharing resources more easily, and providing a space for editorial feedback (2011). Despite all the capabilities that these systems offer, the cloud-based collaborative systems in place at the company that was the target of this research study are used in the traditional manner, i.e., email, calendars, documents, and more proprietary functions through their systems such as Auto Task and World Dox. Practically all document editing at the company takes place with the consent and knowledge of the content creators. Changes are recommended through tools such as Track Changes in Microsoft Word, and users do not appear to edit the actual document themselves. Processes are in place so accountability is maintained throughout the workflow.

3.) Examine whether or not the collaborative systems in place have any impact on user behavior in the company.

There is no evidence to suggest that the cloud-based collaborative systems in place at the company have any significant effect on changing user behavior in regards to editing capabilities. The traditional workplace hierarchy does not appear to been changed, i.e.,
employees still do not feel comfortable with editing the documents of peers or superiors without prior knowledge or consent. Users claim that there is a need for accountability in the editing process, whereby the document still exists in its original state, and all changes are made in a nondestructive fashion with the names of the editors attached.

However, there appears to be an impact on user behavior in regards to other, more qualitative values. The constant connectivity that a collaborative cloud-based system provides does lead to employees having greater access to the schedules, ideas, and knowledge base of their peers, thereby leading to greater level of familiarity amongst the staff. This access may have the same effect that email helped contribute towards when first introduced, which is the flattening of the workplace hierarchy and increased employee performance (Garmon, 2011).

Limitations and Future Research

This study provided information regarding how companies use cloud-based collaborative systems in the business world, how documents are edited, and what impact they have on user behavior. There were some limitations during this study. The survey format restricted the number of questions that were asked and lent itself to a lack of specificity in some of the data. There is a need for a larger sample size to better gauge how companies with different business models and client bases use these tools, and what differences, if any, exist with their use. Based upon the data collected throughout the course of this study, the researcher recommends that this study be expanded to a wider variety of companies that have incorporated cloud-based collaborative systems into their work environments.
Further research upon this topic could include analyzing and tracking the documents that the company creates, more complete demographic data of the users, gaining more specific information on the exact types of cloud-based collaborative systems used, and conducting observations of the users. Research in these areas could help increase the breadth and quality of data on the subject of cloud-based collaborative systems and how they are used in the business environment.

Conclusion

The information gathered from this study on cloud-based collaborative systems leads to several conclusions regarding their use in the business environment. The following are the core concepts discovered from this study.

Overall, cloud-based collaborative systems do not have a noticeable impact on changing the editing practices and user behavior. In general, the physical office environment has been transferred to the digital one. Although these systems make it much easier for employees to stay in contact and collaborate on projects, people still follow the same tenets of the company power structure. For example, employees do not edit other people’s documents without consent. When documents are changed, it is generally with the consent and knowledge of the document creator. Also, the changes that are made are more along the lines of being considered recommendations through systems such as Track Changes in Microsoft Word.

This study also reveals that pride of ownership is still a strong concept when it comes to creating documents. Even though many companies have a focus on collaboration in the workplace and these cloud-based collaborative systems have the ability to adjust
how we view ownership, there is still a bias towards the employee creating things that they can take control of and get judged upon individually.

This study also suggests that cloud-based collaborative systems are indeed a form of transactive memory (Gladwell, 2000). Through the course of the interviews, all three individuals stressed how important it was that information such as address books, calendars, and a personal company knowledge base were available in the cloud. This kind of information is needed on a regular basis, but not so important that it needs to be memorized.

This study also suggests that companies that do use cloud-based collaborative systems use them to work together when staff is geographically dispersed, which is consistent with the literature (Tapscott & Williams, 2006). For example, the company featured in this research study has offices in many states and the cloud-based collaborative systems simplify the process and allow them to work together on projects.

According to the research gathered for this study, there is great potential for cloud-based collaborative systems to make an impact on how employees interact and collaborate. These systems have been shown to create change on productivity, quality of life, and how companies do business. It is the recommendation of the researcher that companies that decide to institute cloud-based collaborative systems analyze how to truly use these tools in order to reap the most benefits from their use. These systems represent the ability to open up and increase collaboration in many ways and it would be beneficial to the company to investigate how to properly use them. However, there is a need for companies to be open to ideas and feedback from all employees.
Businesses should also adjust how they view document ownership. The prevailing format of individual notoriety and accomplishment runs contrary to the basic structure that cloud-based collaborative systems provide, which excels at taking good ideas from all users and letting them combine them together in an innovative fashion. If this traditional configuration is maintained it could lead to using these new tools in the same way as the old ones, which would not create any kinds of knowledge gains.

Research on websites such as Wikipedia proves that there is power in anonymity, as it allows a more unfiltered critique of one’s work. However, companies, such as the one featured in this case study, seem reticent towards adopting such ideas. It is the recommendation of the researcher that businesses allow for a degree of anonymity towards group projects, as it has the ability to create more honest commentary.

The danger of cloud-based collaborative systems to company management is that they have the power to create cultural change and modify the company power structure. However, if this attitude is the prevailing sentiment then the company is no better off than before instituting these new tools. Simply conducting business in the same old fashion with new technology will maintain the status quo and this has the negative impact of defining, though the power structure, who is allowed to introduce new ideas without fear of recourse.

The use of these collaborative cloud-based systems and tools allow for much greater connectivity and collaboration amongst all users. However, this case study shows that even though these systems can impact how companies conduct business, this particular company is not using the tools to their full potential to create the cultural changes that these Web 2.0 tools may produce.
REFERENCES


http://www.pcmag.com/encyclopedia_term/0%2C2542%2Ct%3Dclosed+system&i%3D39846%2C00.asp


http://digilib.bc.edu/reserves/ed829/kenn/ed82908.pdf


Dormant. (n.d.). In *Merriam-Webster’s online dictionary*. Retrieved from

http://www.merriam-webster.com/dictionary/dormant

Dynamics. (n.d.). In *Merriam-Webster’s online dictionary*. Retrieved from

http://www.merriam-webster.com/dictionary/dynamics


Open System (n.d.). In PCMag.com. Retrieved from [http://www.pcmag.com/encyclopedia_term/0,2542,t=open+system&i=48478,00.asp](http://www.pcmag.com/encyclopedia_term/0,2542,t=open+system&i=48478,00.asp)


Dear Employee,

My name is Aaron Carpenter. I am a graduate student from Bowling Green State University. As part of my work on my Master’s thesis in the College of Technology, I am conducting a research study on the use of collaborative cloud-based systems in the business environment.

The purpose of this study is to learn how the systems are actually used in companies today and how this affects the organizational fabric of them.

If you would be willing to take part in this study I would greatly appreciate it.

If you have any questions or comments about this study, you can contact me at 419-768-6530 or acarpen@bgsu.edu; or Dr. Terry Herman, my project advisor, at 419-372-7265 or hermant@bgsu.edu.

The link to the online survey can be found here: https://www.surveymonkey.com/s/G7DHGMV

Thank you for your time.

Aaron Carpenter
Graduate Assistant
BGSU College of Technology
acarpen@bgsu.edu
419-270-8283
APPENDIX B: INTERVIEW QUESTIONS

Interviews

Interviews with three employees were conducted to help gain more insight on how the collaborative cloud-based systems are being used. A manager, top, and bottom user were interviewed. Each interview lasted approximately 15 minutes.

Interview Questions

1.) What are your main uses of the system?

2.) How would you describe the company culture?

3.) Does the cloud have any impact on the company culture?

4.) How would you describe your coworkers’ behavior online as compared to the normal office environment?

5.) How would you react if someone edited your documents? Has anyone?

6.) Are you more or less open to feedback online as opposed to the office?

7.) Would you be more of less comfortable posting your opinion on the company system if it was anonymous? Why?

8.) How do employees view the system?
APPENDIX C: INTERVIEW RESPONSES

Interviews

Interviews with three employees were conducted to help gain more insight on how
the collaborative cloud-based systems are being used. A manager (A), top (B), and bottom
(C) user were interviewed. Each interview lasted approximately 15 minutes. The following
is a list of responses by each interviewee.

Interview Responses

1.) What are your main uses of the system?

A: Exchange. Calendars, task lists, contacts, emails. Auto Task for internal issue
tracking, knowledge base, time entries. Run through a browser. World Docs for
document mgmt. system. “Everything is in the cloud for us.”

B: Subjects agreed that all their applications are cloud-based; all employees heavily
use software such as Microsoft Exchange, which contains their email, calendars, and
documents. All services are cloud-based. The company has even created and
virtualized a cloud version of Microsoft Word.

C: Email/remote help programs/not tied down/auto task/cloud – Gmail/MS
Exchange/our hosted product – desktops. “Pretty much everything.” No real social
networking. W/o Internet, saves time.

2.) How would you describe the company culture?

A: Relaxed. Small enough where everyone knows each other.

B: Typical pyramid structure, but not micromanaged. Still able to work together as a
collaborative team.
C: Pretty loose. I’m loud and outgoing. Everyone meshes well. If they don’t mesh they find a better fit somewhere else. Pretty relaxed. We do share knowledge. Consultants are good at relating knowledge to the clients.

3.) **Does the cloud have any impact on the company culture?**

A: Yes. Lots of collaboration, mainly all through email. Calendar access. Document collaboration. More open. Essentially, everyone has access to everything.

B: No. “The real meat and potatoes conversations happen in person.” “We find it necessary for the partners of the company to meet in person regularly, even though they are spread out all over the country.” “We still find face-to-face communication has a high value.”

C: No. Most of main functions were done before the cloud. People in relationships hasn’t changed how people act or deal with each other. Allows work from multiple locations. No change on workflow. Same as before. No more managing—less time used to troubleshoot the servers.

4.) **How would you describe your coworkers’ behavior online as compared to the normal office environment?**

A: No difference with people in the office. Depends upon audience and situation.

B: No. Generally more formal in emails. Pretty much reflects the appropriate formality and openness regarding the topic of conversation and the audience.

C: A bit different. Definitely younger crowd. Many other companies are much quieter. Interoffice—pretty much the same voice being used. Not too different. Pretty open.
5.) How would you react if someone edited your documents? Has anyone?
   A: Without knowledge, pretty upset. If collaborating, it’s ok. Passing it off as their own—hits on pride of ownership. Would always be with someone’s knowledge.
   Track changes in Word.
   B: Generally doesn’t happen. Methods needed to retain the original document. There is possessiveness to things you create. Need an original to compare to. No problems.
   C: Yes it happens. I don’t create many documents personally. When we do things we use Track Changes to not affect the original with the consent of the author. Would not be happy if there was a breach.

6.) Are you more or less open to feedback online as opposed to the office?
   A: More open from email. Might be easier if content is something I don’t agree with.
   B: Equally open. Prefers face-to-face communication. Shows openness to truly reflect on how a person feels, as things are left up for translation in emails.
   Perception that they are taking more time out of their day in face-to-face.
   C: Email is fine. As long as it’s constructive and on same page. Better to do remotely as people can think for themselves and on their own time. Project dependent on preference for method.

7.) Would you be more of less comfortable posting your opinion on the company system if it was anonymous? Why?
   A: Yes. Doesn’t come into play too much at office, as there is much respect. People would be more truthful if anonymous. Don’t want to bash them, but makes it easier.
   B: No. I’d prefer to be known as it’s a better safer process, and to be recognized for the work that I’ve done.
C: No. There is a comfort level and people will listen to what he has to say. Know each other well. Pretty open environment. When it's a work doc it has to be right.

8.) How do employees view the system?

A: No drawback to it. Because of the hours everybody works, lots of work can't be done during normal business hours. Ability to work from home. More flexibility. Improved quality of life. Ability to work as if they are all in one office, even though spread out. Price is now reasonable.

B: Overall a good thing. Cyclical. Back to a centralized model. "Servers are being made so powerful and so cheap, coupled with fast interactivity it makes more sense for things to be centralized in the technological realm." Easier as it's all in one location, from IT perspective. Culture of world is more integrated. Evolutionary in scope and fits in with the path of the world.

C: We couldn't survive well as an IT dept. without it. If we aren't proficient with them, we're no good in our jobs. We are open and want to learn more when it comes with the territory.
APPENDIX D: SURVEY QUESTIONS

How old are you?
A. 20-29
B. 30-39
C. 40-49
D. 50+

What gender do you self identify as?
A. Male
B. Female
C. It’s complicated

Position in the company:
A. Management
B. Production
C. Marketing
D. Other

How familiar are you with cloud-based collaborative systems (ex: Microsoft Exchange, Sharepoint, etc)?
A. Very familiar
B. Somewhat familiar
C. Somewhat unfamiliar
D. Very unfamiliar

Approximately how long have you used cloud-based collaborative systems?
A. 5 or more years
B. 3 years
C. 1 year
D. 6 months or less
E. Never

How often do you approximately check or read the cloud-based collaborative systems on a weekly basis?
______________ times

How many times do you post content on the cloud-based collaborative systems during the week?
______________ times

What do you use the cloud-based collaborative systems for? Please check all that apply.
   A. Company news
   B. Project information
   C. Message board
   D. Filling knowledge gaps
   E. Collaboration on projects
   F. Other(s)_______________________________

Most valuable usage of cloud-based collaborative systems:
   A. Keep up to date on company news
   B. Project information
   C. Message board
   D. Other______________________________

Least valuable usage of cloud-based collaborative systems:
   A. Keep up to date on company news
   B. Project information
   C. Message board
   D. Other______________________________
How often do you edit other people’s documents?
   A. Very often
   B. Somewhat often
   C. Rarely
   D. Never

Do you edit documents created by people who have supervisory authority over you?
   A. Very often
   B. Somewhat often
   C. Rarely
   D. Never
APPENDIX E: HSRB APPROVAL

DATE: February 23, 2012
TO: Aaron Carpenter
FROM: Bowling Green State University Human Subjects Review Board
PROJECT TITLE: [208752-3] CLOUD-BASED COLLABORATIVE ENVIRONMENTS IN THE BUSINESS WORLD: A STUDY IN EDITING PRACTICES
SUBMISSION TYPE: Response/Follow-Up
ACTION: APPROVED
APPROVAL DATE: February 23, 2012
EXPIRATION DATE: February 10, 2013
REVIEW TYPE: Expedited Review
REVIEW CATEGORY: Expedited review category #7

Thank you for your submission of Response/Follow-Up materials for this project. The Bowling Green State University Human Subjects Review Board has APPROVED your submission. This approval is based on an appropriate risk/benefit ratio and a project design wherein the risks have been minimized. All research must be conducted in accordance with this approved submission.

The final approved version of the consent document(s) is available as a published Board Document in the Review Details page. You must use the approved version of the consent document when obtaining consent from participants. Informed consent must continue throughout the project via a dialogue between the researcher and research participant. Federal regulations require that each participant receives a copy of the consent document.

Please add text equivalent of the HSRB IRBNet approval/expiration date stamp to the "footer" area of the electronic consent document.

Please note that you are responsible to conduct the study as approved by the HSRB. If you seek to make any changes in your project activities or procedures, those modifications must be approved by this committee prior to initiation. Please use the modification request form for this procedure.

You have been approved to enroll 25 participants. If you wish to enroll additional participants you must seek approval from the HSRB.

All UNANTICIPATED PROBLEMS involving risks to subjects or others and SERIOUS and UNEXPECTED adverse events must be reported promptly to this office. All NON-COMPLIANCE issues or COMPLAINTS regarding this project must also be reported promptly to this office.

This approval expires on February 10, 2013. You will receive a continuing review notice before your project expires. If you wish to continue your work after the expiration date, your documentation for continuing review must be received with sufficient time for review and continued approval before the expiration date.