Wiki Behavior in the Workplace: Emotional Aspects of Content Development

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Wiki Behavior in the Workplace: Emotional Aspects of Content Development

by

Deborah Ann Gears

A dissertation submitted in partial fulfillment of the requirements for the degree of Doctor of Philosophy in Information Systems

Graduate School of Computer and Information Sciences
Nova Southeastern University

2011
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An Abstract of a Dissertation Submitted to Nova Southeastern University in Partial Fulfillment of the Requirements for the Degree of Doctor of Philosophy

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July, 2011

Wikis have been found to be an easy-to-use, low-cost, and Internet-based technology useful in creating and mobilizing knowledge. Wikis hosted within firms (corporate wikis) have become a popular way for employees to share information and collaborate.

Preliminary research suggested that as few as 6% of wiki consumers contributed to the development of wiki pages. Conventional approaches argued that employees judged the costs of participating in wikis (e.g., authoring or changing material, reading messages, following an argument, and posting responses) to exceed the benefits of participating in wikis (e.g., recognition, reputation etc.) – thus many people “lurked” but did not post. Considering that people contemplated perceived benefits with costs of participating in wikis, research emphasized the cognitive aspects of decision-making.

The emotional aspects of wiki participation in firms have received little research attention. Yet, research in other fields such as law, economics, and health showed that emotions played a critical role in human decision making, where feelings were shown to outweigh contemplated costs and benefits. For example, Kiviniemi, Voss-Humke, and Siefert (2007) found that positive feelings about exercise resulted in more physical activity whereas positive feelings about food resulted in unhealthy food choices. For Wikipedia, a public wiki, studies suggested that emotion might be an important motivator in participation.

The purpose of this research was to study the role of emotion in corporate wiki participation. Since the area of research is new, the contextual details of wikis in an organizational setting made it difficult for a researcher to separate the context from the main effects. A grounded theory approach was needed. Under grounded theory, one starts with the data and builds arguments or theories from the “ground up.”

This study used a grounded theory methodology to reveal data through interviews, employee journals, observations, wiki statistics, and other documentation. Data were analyzed on a continuum using grounded theory coding to identify codes, categories, concepts, and properties and to recognize relationships among concepts. An exploration of emotion in an organizational context resulted in theories that provided an important beginning to understanding wiki experiences and improving wiki outcomes.
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Chapter 1

Introduction

Wikipedia, a wiki-based encyclopedia created by volunteers from around the globe, ranks among the world’s most successful Internet-based collaborative initiatives. Many wonder how a project that emerged from grassroots beginnings, developed by an open and egalitarian community could rank in the top 10 of the world’s most visited Web sites (Coleman, 2009; Lih, 2009). Content developed through open collaboration, where contributors were not paid nor recognized for their time and knowledge was noted among Wikipedians as a concept that worked in practice, but not in theory (Kane & Fichman, 2009).

Following Wikipedia’s lead, companies began to recognize the collaborative power of wikis to influence business through creation and sharing of knowledge (Kane & Fichman, 2009; Lynch, 2008; Mader, 2008; Tapscott & Williams, 2006). The grassroots, egalitarian nature of open, participatory networks contrasted sharply with traditional authority and control management common in corporations (Hasan, Meloche, Pfaff, & Willis, 2007; Meloche, Hasan, Willis, Pfaff, & Qi, 2009; Pfaff & Hasan, 2006). Corporate domains were traditionally closed, bound by cultural norms, evaluation systems, organizational structures and hierarchies, employment responsibilities, and relationships. For information systems that implemented corporate policy, strategy and
operations, wikis represented a shift from capture and disseminate to democratization (equal access via the Internet) of knowledge (Pfaff & Hasan).

Despite inherent differences in each domain’s sphere of influence, open and closed communities shared a common denominator: technology (the collaborative medium) + people (who contributed). Wiki technology was not considered revolutionary; its usage by people “was” (Lih, 2009). Unknown in this equation were the effects of contextual influences on human processes, both cognitive and emotional, that directed participation, or not.

Wikipedia studies provided new clues into wiki participation and identified opportunities for future information systems research. Kane and Fichman (2009), in a study of Wikipedian behavior and information systems, reported, “collaboration on Wikipedia is a much messier, more emotionally charged, and highly contentious process than is typically reflected in most accounts of online collaboration” (p. 4). In Andrew Lih’s (2009) book, The Wikipedia Revolution, the word “passion” was used repeatedly to describe Wikipedians’ obsession to contribute. According to Kane and Fichman, emotion was likely an important motivator for people to contribute.

Social Computing and Wikis Defined

Social computing constitutes a category of Internet-based software that facilitates communication, information sharing, and open collaboration. Cohen and Clemens (2005) described social networks as a combination of “technology and services that create unique personal profiles, map out relationships, and leverage those connections to accomplish a task” (p. 252). Schuler (1994) described social computing as a computer-
based tool that provided a forum for relations among people. Others maintain that wikis provided a low-cost means for collaborative content development, and emergence of knowledge enabled in a repository of collective intelligence (Hasen & Pfaff, 2006a; Mader, 2008; O’Reilly, 2005; Weiss, 2005).

Social computing tools—synchronous and asynchronous—offer a variety of collaborative forums. Weblogs (blogs), wikis, e-mail, instant messaging, and social networks are common social computing tools. Other social computing tools provide a means for sharing photographs, e.g., Flickr; creating virtual communities, e.g., Second Life; and chronicling a sharable repository of frequently visited Web sites, e.g., del.icio.us. All of these tools are Internet-based, platform independent software applications available to the public, typically with no usage fees.

A wiki, classified as a social computing technology, is designed to facilitate collaborative content authoring, information sharing, and knowledge creation. Wiki content is built on HTML pages, a database, and other Web technologies, such as PHP and PERL. These technologies provide a platform for a community of users to create, modify, and delete wiki pages and information content. Wikis collaborative utility provides talk pages for discussions, and maintains a history of wiki changes, as well as easy access to restorable content. According to Mader (2008), wikis had a low learning curve where content development was “easy for people at all levels of technical knowledge” (p. 45). Wikis are Internet-based; therefore, content can be extended to intra-corporate associates and externally with customers, suppliers, and business partners. Web 2.0 social computing technologies have incorporated Enterprise 2.0 applications, which spawned corporate concerns such as enhanced security.
Discussions within each page are a major tenet of wiki technology where consensus is achievable. Wikis are touted as a conversational knowledge management technology that mimics the way humans collaborate naturally through discussion, and serves to democratize information in organizations (Hasan & Pfaff, 2006a). Authorship is not necessarily attributed to specific individuals; however, individual identity of contributors is possible. Wiki widgets are available to improve basic functionality and to enhance the collaborative nature of wikis. For example, voting widgets provide a consensus utility for content discussions. IBM, specifically, used a widget to seek popular opinion through voting that ranked business issues and proposals (Bulkeley, 2007).

**Could Wikis be Appropriate for an Enterprise?**

Collaboration, information sharing, and knowledge creation were considered fundamental to organizational health, wealth, and survival in a global economy. Sharing of ideas was thought to be core to collaboration where one idea had the potential to trigger others (Hasen & Pfaff, 2006a, 2006b; Rangaswami, 2006). Wikis were easy-to-use and offered a low-cost means for firms to facilitate these fundamentals among employees, suppliers, customers, and partners (Jedd, 2008; Mader, 2008). Researchers were finding that wikis were not a “fad” technology; usage was sustainable over time (Majchrzak, Wagner, & Yates, 2006).

Knowledge management systems traditionally sought to capture and disseminate explicit and tacit knowledge in hierarchical and controlled environments (Cohen & Clemens, 2005; Mader, 2008; Meloche, et al., 2009; Millen, Fontaine, & Muller, 2002; Snowden, 2006). Groupware, corporate repositories, document management, content
management, and computer supported collaborative work (CSCW) software were examples of knowledge management systems that followed the corporate model using structured means to collaborate and share information (Jedd, 2008; Lamb & Davidson, 2005; McAfee, 2006).

Wikis provided a less structured Internet-based information system that mobilized information and spawned creativity in communities (Hasen & Pfaff, 2006a, 2006b; Mader, 2008; Meloche, et al., 2009). Wiki participation in open-domains was egalitarian and organic, mimicking the way people naturally collaborated, thereby enabling knowledge to emerge (Kane & Fichman, 2009; Lih, 2009; Mader). Wiki simplicity, flexibility, affordability, accessibility, and usability made them a viable knowledge management solution for an enterprise (Desilets, Paquet, & Vinson, 2005; Hasen & Pfaff; Mader; Meloche, et al).

Wikis were part of the groundswell among Web 2.0 technologies (Li & Bernoff, 2008). Web 2.0, coined by Tim O’Reilly (2005), dubbed the new Web generation, was a universal platform that would facilitate the creation and sharing of collective intelligence using lightweight and innovative technologies. While definitions varied, typical Web 2.0 applications included blogs, social networks, wikis, and other tools that openly connected people, ideas, and information. Andrew McAfee (2006) coined Enterprise 2.0 as Web 2.0 technologies that could bring value and a new information architecture paradigm inside the corporate firewall. Software companies such as Microsoft were integrating Web 2.0 collaborative capabilities into their proprietary platforms, e.g., SharePoint.

Use of Web 2.0 technologies were on the rise in companies that recognized their value (Bughin, Mayyyka, & Miller, 2008; Li & Bernoff, 2008). Individuals, groups, and
communities employed corporate wikis for collaboration in software development, client relationship management, technical support, policy management, resource management, research and development, and in education (Mader, 2008; Majchrzak, et al., 2006). At a more granular level, wikis were used to publish personal profiles, commentaries, meeting notes, training, project reporting, product development, debates, frequently asked questions, conduct brainstorming, publishing, and document collaboration (Mader).

Some organizations reported positive outcomes of wiki usage (Bulkeley, 2007; Charman, n.d.; Hof, 2004; Mader, 2008; Rangaswami, 2006). IBM instituted BluePages, a social computing network that employed over 20,000 wikis with 100,000 wiki users (Bulkeley, 2007). IBM recognized key benefits in team collaboration and project management. Dresdner Kleinwort Wasserstein (DrKSW), a European global investment bank, expanded the use of wikis “slowly and organically” (p. 1) through the business to improve communication and collaboration (Charman). In 2006, Dresdner Kleinwort Wasserstein claimed to have the largest corporate wiki in existence, where over 40% of employees were active users (Charman; Rangaswami) with reports of significant reductions in e-mail and face-to-face meetings (Weinberger, 2007).

In addition to recognizing practical business applications, Majchrzak, et al. (2006) reported that wiki use was sustainable over time. This was important for skeptics who dismissed the wiki as another fad technology. In their study, Majchrzak, et al., found that the longer a wiki had been in existence, the more users accessed it as both contributors and viewers.

Wikis offered an easy-to-use, low-cost solution for information sharing, internal and external collaboration, and knowledge creation. Mader (2008) believed that “the wiki is
the most significant development on the Internet since the web browser” (p. 5). It seemed reasonable to assert that wikis were technically feasible, economically, and socially desirable for enterprise-wide use (Coleman, 2009; Swisher, 2004).

**Statement of the Problem to be Investigated and Goal to be Achieved**

While wikis were recognized as an easy-to-use collaborative, knowledge creation, and information sharing technology, its adoption was slow in the workplace (Hildreth, 2007; Laff, 2007; Mayfield, 2006; Nielsen, 2006; Tapscott & Williams, 2006). Some CIOs were “fearful” that Web 2.0 technologies, with “open” collaboration, would weaken corporate power. Some employees were apprehensive (Hasan, et al., 2007; Li & Bernoff, 2008; Lynch, 2008; Majchrzak, et al., 2006; Meloche, et al., 2009; Pfaff & Hasan, 2006).

A trend of sketchy participation in social computing was not new. Some companies abandoned the use of Enterprise 2.0 technologies (Beenen, et al., 2004; Bughin, Mayyka, & Miller, 2008; Hasan, et al., 2007; Meloche, et al., 2009); others were showing value (Hasan, et al.; Jedd, 2008; Mader, 2008; Majchrzak, et al., 2006; Mayfield, 2006). For online communities, “under-contribution had been a problem” (Beenen, et al., p. 1). Further, wiki technology usage in organizations was feared to yield unexpected, unintended, and under-utilized results (Kane & Fichman, 2009; Orlikowski, 1992). Simply making a wiki available in the enterprise was not enough to achieve widespread adoption (Beenen, et al.; Mader; Mayfield; Orlikowski).

David Weinberger, in *AIIM E – Doc Magazine* (Jedd, 2008) suggested that the Network Effect was needed to recognize “value” in using Enterprise 2.0 technologies (including wikis); that is, value was derived when more people used it. Nielsen (2006)
drew on the 90:9:1 theory to illustrate that low participation was a problem in online communities. For wikis, this equated to 90% of wiki users lurking (read but did not contribute), 10% contributing (content or comments) occasionally, and 1% of users contributing most of the time (Nielsen). Li and Bernoff (2008) showed an even lower contribution rate of 6%, revealed in a Forrester survey of over 10,000 U.S. consumers. These numbers illustrated a beginning for wikis, along with a shortfall in network effect. Mass participation was needed to increase wiki value, a problem in organizational contexts (Jedd, 2008; Mader, 2008; Mayfield, 2006; Nielsen; Olivera, Goodman, & Tan, 2008; O’Reilly, 2005).

Voluntary contribution behaviors in organizations using online technologies had been the subject of research in many cognition and motivation studies (Olivera, et al., 2008); few addressed wiki technology (Meloche, et al., 2009). Researchers were just beginning to address the question of “why” employees participated in corporate wikis. Findings suggested there was something more personal underlying wiki interaction than with traditional information systems, where more research was needed (Kane & Fichman, 2009; Meloche, et al., 2009).

Considered “ground breaking” research, Hasan, et al. (2007) allowed, “[wiki] issues to emerge from the employees” (p. 34) through qualitative research focused on employee attitudes and willingness to participate, similar to this research study. The results showed that to be effective, wiki structures needed to emerge from users (rather than management) and employees needed to feel “safe” participating. This implied employees felt greater personal risk posting ideas and engaging in discussion. Majchrzak, et al. (2006) further acknowledged that employees may not have participated because they
feared criticizing co-workers openly. This was understandable considering wiki collaboration, achieved through discussions and content modifications, could result in conflict (wiki wars) that was visible to all users, and was permanently recorded (Lih, 2009). That is, arguments were documented in wiki discussions, which rendered a level of discomfort for some employees.

The Meloche, et al. (2009) research also refuted some previously held assumptions about employee attitudes toward wiki participation. For example, it was previously believed that employees required acknowledgement for their contributions to a corporate wiki. The findings indicated that knowledge workers in this organization did not have concerns about being recognized, indicating altruistic motivation.

Based on a study of Wikipedia contribution behaviors, Kane and Fichman (2009) found emotion to be an “important motivator for why people contribute” (p. 5). The high activity and high volume Virginia Tech Massacre article, for example, resulted in over 10,000 page edits by nearly 2,000 editors, seemingly charged by contributor emotion to “get involved” rather than acting as a “passive reader” (Kane & Fichman).

In their book, *Groundswell*, Li and Bernoff (2008) discussed the upsurge of people obtaining information and commodities from each other using Web 2.0 technologies, rather than from companies. Li and Bernoff posed the quintessential questions about groundswell participation (including wikis):

“Why do people participate in the first place”? (p. 59)

“What’s their emotional motivation”? (p. 60)

Studies of emotion and the user experience were not new to information systems research. Petrie and Harrison (2009) conducted a study to further understanding of
emotion words that described the user experience with Web sites. Six popular Web sites (including Wikipedia) were analyzed to identify user feelings rather than to focus on their cognitive assessments. Two Emotion Word Prompting List’s (EWPL) were developed, which provided adjectives to identify common emotions; valence (positive/negative) feelings were also indicated.

Zhang and Li (2005) studied the role of affect (mood, emotions, and feelings) on user acceptance of a university Web site. The researchers defined affective quality as the “ability of an object or stimulus to cause changes in ones’ affect” (p. 105) and that affect impacted user acceptance of technology. The results were significant since affective quality was considered a predictor for technology acceptance.

**Problem Statement**

Open collaboration using wiki technology was a new paradigm for many employees and managers in corporations where some employees felt that the personal risks outweighed the benefits, thereby resulting in sub-optimal participation rates. Emotion appeared to influence participation in other domains and information technology research; it was unknown how organizational influences in combination with employee feelings influenced decisions about corporate wiki participation.

**Goal**

The goal of this research was to develop theory that conceptualized human emotion and wiki behavior amid organizational influences in the workplace. The theories
proposed used grounded theory data collection and analysis methods, resulting in substantive theory in business.

**Research Questions**

The primary research questions in this study were:

1. Do emotions interact with norms of an organization that influence corporate wiki participation decisions?
2. In what ways do emotions (feelings), distinct from cognitive contemplation (thinking), influence decisions about wiki behavior?
3. Do emotions affect motivation directly, or through cognitive judgments of costs and benefits of wiki participation?
4. Do different organizational influences, e.g., governance structures, pay, performance objectives and evaluations, promotion, rewards, recognition, culture, and policies, result in different types of wiki participation, including no participation?
5. Are organizational influences in conflict with emotions about wiki participation?
6. Are motives to participate in corporate wikis altruistic or egoistic?

**Relevance and Significance of Proposed Research**

Technologists and corporate leaders could be better prepared to leverage emergent information technologies such as wikis by learning more about the workers that use them. Cyberpsychology emerged as a discipline that studied the behavior of individuals and
societies that adopted new and innovative technologies (Barak, 2008). This research was relevant since it recognized that implementing a technology did not guarantee adoption. It took a broad and deep view of emotional and motivational aspects of wiki behavior in the organizational context where content originates.

Psychology literature provided evidence that emotions, or affective associations, influenced behavioral choices. Several studies suggested “that affect can predict behavior over and above beliefs and evaluations” (Richard, van der Pligt, & de Vries, 1996, p. 112). According to Mellers, Schwartz, and Ritov (1999), how people anticipated their feelings about choices can be used to predict their decisions. Understanding aspects of emotion, organizational influences, and wiki experiences was an important first step to addressing wiki behaviors. Knowledge gained from this research could enable organizations to manage better the experience and improve outcomes of wiki instances.

Wikis were viewed as a contemporary information system that mobilized information and knowledge creation in a manner consistent with human collaboration. The wiki’s simple technology architecture was less perceptible in the collaborative process, especially when juxtaposed with hierarchical and control-based information systems. Pfaff and Hasan (2006) urged information systems researchers to move beyond 20th century technology thinking because wikis introduced a paradigm shift from traditional scientific approaches to conversational technologies. Insights gained in this study offered direction to technologists for new enhancements and/or performance capabilities that aligned more directly with automatic appraisal systems in human emotion.

“Mass collaboration is changing how companies and societies harness knowledge,” innovate, and “create value” (Tapscott & Williams, 2006, p. 20); the wiki was considered
an enabling mass collaboration technology. A few corporate wiki implementations touted value-added results, while others reported a power law distribution of participation.

Theory emerging from this research had the potential to increase the value of wikis in the workplace (a closed-community) by addressing human factors that influenced wiki behaviors.

**Barriers and Issues**

Two issues were associated with the proposed research. Researcher bias and engagement of participants for data collection and analysis were the primary concerns. The researcher strove to maintain an open-mind and allow theory to emerge through concepts discovered in the data. Open-mindedness was further required during interviews, in developing questionnaires, and during observations. Employees could have felt uncomfortable sharing their innermost feelings about wiki participation. The researcher assured employees that their participation was confidential and that results would be reported in the aggregate. The researcher also emphasized the importance of the research and focused on creating a relaxed interview atmosphere.

The researcher possessed over two decades of industry experience interviewing individuals and groups, through Joint Application Design (JAD), to gather and analyze data for application development and enterprise architecture analysis and design. This practitioner experience proved useful in mitigating the aforementioned issues.
Chapter 2

Review of the Literature

Intrinsic motivation appears to encourage people to collaborate in open community wiki domains. Wikipedia, the largest open-community wiki project and seventh most popular Internet site in 2009, illustrates self-motivated collaborative behavior (Li & Bernoff, 2008; Lih, 2009). Thousands of people from around the world work together, making original contributions, participating in topic discussions, and modifying content to develop a “free” global encyclopedia. No formal governing body solicits, compensates, directs, or coordinates the development of content in Wikipedia, and there were no extrinsic rewards for contributors. Yet, people contribute their time and knowledge voluntarily.

Early wiki motivation studies examined human behavior in open wiki community contexts, such as Wikipedia. Open communities are distinct from closed organizational contexts as they are free from constructs intrinsic in employment relationships. Juxtaposing open community wiki contexts with corporate domains exemplify contrasting influences with different goals, objectives, responsibilities, controls, monitors, rewards, and recognition. Little is known about wiki behavior behind the corporate firewall.
In the workplace, organizational influences compound individual influences. The classic corporate model engenders governance structures, employee performance objectives, salary, strategies, rewards, and recognition, etc., where corporate performance drives organizational posture. Personal influences exist in open and closed wiki communities. Figure 1 illustrates possible organizational influences encompassing personal influences, along with possible feeling states.

![Diagram showing possible individual and organizational influences, emotions, and wiki behavior.](image)

Figure 1. Possible individual and organizational influences, emotions, and wiki behavior.

Reports of wiki success have been attributed to open, grassroots, organic, egalitarian cultures (Hasan et al., 2007; Hasan & Pfaff, 2006a, 2006b; Mader, 2008; Pfaff & Hasan,
2006; Tapscott & Williams, 2006). Pfaff and Hasan have suggested that environments constrained by organizational controls, monitors, and rewards stifled willingness to participate. Tapscott and Williams have suggested that wiki participation motives were “intrinsic and self-interested” and “more complex than fun and altruism” (p. 70).

A general principle of volunteerism suggests that people volunteer their time and knowledge because they want to, not because they are required (Clary & Snyder, 1999; Deci, 1971). Forcing people to volunteer is thought to weaken inner “motivational force” (Clary & Snyder, p. 158) and distinguish intrinsic motivation (Deci). One could not help but wonder if corporate influences infuse a level of obligation and constraint that could snuff the very wiki characteristic that makes it a unique and valued technology.

The remainder of this literature review focuses on: 1) definitions and theories in psychology: feelings, emotions, affect, motivation (extrinsic, intrinsic, altruistic, and egoistic), attitude, and human behavior; 2) existing cognitive theories in information systems adoption research; and 3) existing motivation theories in wiki participation research. These elements are collectively and fundamentally believed to be essential for the research questions.

**Psychology: Definitions and Theory**

Feeling, emotion, affect, motivation, and attitude were psychology terms fundamental to this research. There was consensus in psychology literature that these terms evolved over time and spawned many cognitive, motivational, evolutionary, biological, sociological, anthropological, and psychoanalytic theories that define each one and their relationship to each other (Plutchik, 2003). Several theories considered basic emotions
that stimulate motivation to a behavior (Ekman, 2003; Frijda, 2000; Izard, 1977; Plutchik; Turner & Stets, 2005). The discussion of psychology terms that follows was drawn from motivation theories in psychology considered foundational to this research.

Feeling states were considered to be intertwined with definitions of emotions. It was widely accepted in the literature that emotions manifest through feelings. I feel happy; I feel sad. Feeling states were thought to be “emotional sensations” where one could not identify with an emotion without experiencing a feeling (Solomon, 2000, p. 10). A feeling resulted from a stimulus that prompted a thought and/or an evaluation of that thought. From a biological perspective, feelings require stimulation of the neocortex in the brain and may or may not result in a physiological reaction (Turner & Stets, 2005). Words used to describe emotion were considered labels for feeling states (White, 2000). Reber and Reber (2001) found that feelings involved conscious sensing or experience. Attitude differed from feeling or emotion in that attitudes held a conscious belief about something that may be accompanied with an intention to act in a particular manner (Reber & Reber).

There was “no consensus among emotion theorists on the proper definition of emotion” (Nielsen & Kaszniak, 2007, p. 362). Most scientists in the field agreed that emotions involved an external situation, or antecedent condition, which prompted identifiable feelings, functions of the nervous system, and external responses primarily observable in facial expressions (Ekman, 2003; Gorman, 2004; Izard, 1977; Plutchik, 2003; Reeve, 2005). Some have suggested that emotions were secondary to cognition and reasoning while others believed “emotions trigger and guide cognition” (Izard, p. 2). Others emphasized a two-way connection between emotion and cognition (Izard). Izard viewed emotion as the primary motivation in human behavior. Much debate arose as to
the order of emotional and cognitive responses to external events. Did the nervous system, e.g., rapid heart rate, prompt feelings of fear, or did feelings of fear trigger a rapid heart rate? Ekman provided a useful definition for the research.

*Emotion* is a process, a particular kind of automatic appraisal influenced by our evolutionary and personal past, in which we sense that something important to our welfare is occurring, and a set of physiological changes and emotional behaviors begin to deal with the situation. (p. 13)

Emotions were thought to be brief, temporary feeling states, typically stimulated by an external event (Ekman, 2003; Gray & Watson, 2007; Plutchik, 2003; Reeve, 2005). Emotions were distinguished from “moods,” which were longer lasting than emotion (hours, days, even weeks) and not necessarily attributed to a specific event (Gendolla, 2000). Unlike reasoning (cognition), which considered evidence prior to decision making, feelings (emotion) were experienced without conscious contemplation that directs behavior (Gardner, 2008).

The term “affect” was often used interchangeably with “emotion”; however, they were distinguished in psychology contexts. Plutchik (2003) suggested that psychologists use “emotion” to denote emotional disorders, whereas clinicians distinguished “affect” in case documentation. Greenberg and Paivio (1997) shared the view of some psychologists that “affect refers to an unconscious biological response to stimulation” (p. 7) such as a facial expression and other autonomic responses. In their study of the relationships between affect heuristics, risks, and benefits, Finucane, Alhakami, Slovic, and Johnson (2000) provided a definition of “affect” appropriate for this research: “Affect may be viewed as a feeling state that people experience, such as happiness or sadness. It may also
be viewed as a quality (goodness or badness) associated with a stimulus” (p. 2). Therefore, emotion, feeling states, and affect were used interchangeably in this research.

**Emotion of Anxiety**

Ohman (2000) provided useful definitions for the current research in her study on evolution of fear and anxiety. Ohman generalized that *anxiety* was a result of the anticipation of a threat, whereas *fear* was a behavioral response to an identifiable stimulus, e.g., fight or flight. Moreover, Ohman wrote that human fear responses evolved from threats to survival valid for our ancestors, but were “harmless in the ecology of modern humans” (p. 576). “Survival considerations, either contemporary or in an evolutionary perspective, are relevant for most situational dimensions of human fears” (p. 575). Arrindell, Pickersgill, Merckelbach, et al. (1991) found that anxiety was partitioned into four types ranging from fear of interpersonal events to fears of physical harm, animals, and public and closed spaces. Fear of interpersonal events created a threat of “criticism and social interactions, rejection, conflicts, evaluation, and interpersonal aggression” (Arrindell, et al., in Ohman, 2000, p. 575). Anxiety associated with fear of interpersonal events had direct relevance to the theoretical argument in this research.

**Measuring Emotion**

In his study of universal emotions, Ekman (2003) identified physiological changes in facial expression, vocal tone, and body language. While physiological changes were an observable means for identifying emotion, Ekman further suggested that identifying feeling states were more likely to occur through interviews or questionnaires. Self-
reported emotion states were relevant for this study. “Self-report is the most common and potentially the best (Clore, 1994; Diener, Scollon, Oishi, Dzokoto, & Suh, 2000; Plutchik, 2003; Watson, 2000) way to measure a person’s emotional experiences” (Robinson & Clore, 2002, p. 934).

Terms used to identify feeling states have been studied, organized, and tested in emotion research since the early 1960s (Plutchik, 2003). “Happiness” reflected a feeling state (emotion) also described as joy, pleasure, quiet, satisfaction, elation, and love (Turner & Stets, 2005). Adjective checklists were useful in measuring emotion in self-report questionnaires and interviews. Plutchik provided adjective checklists developed and tested in psychology chronicles that assessed emotion, affect, mood, and feelings. One challenge in self-reported feeling using adjective checklists was that individuals could associate different meanings with the items (words).

Watson, Clark, and Tellegen (1988) recognized the value and simplicity of partitioning and measuring affect from positive and negative dimensions. Following significant analysis, existing scales polarized feeling states as “generally pleasant” (good) and “generally unpleasant” (bad). Watson, et al., developed the Positive Affect Negative Affect Scales (PANAS) measurement scales for self-report assessments. PANAS listed 10 Positive Affect and 10 Negative Affect terms designed to evaluate feelings and emotion, in the moment and from the past. The PANAS scales used terms such as “interested,” “excited,” and “inspired” to describe positive feelings, and “irritable,” “nervous,” and “hostile” to describe negative feelings and emotions.

Watson and Clark (1994) extended PANAS to include additional emotion states broadening the adjective list to 60 items. Key outcomes of the PANAS-X scales included
self-report emotion assessments that produced reliable and valid results that were of temporal applicability. According to Watson and Clark, PANAS-X was easy-to-use and the majority of subjects completed the assessment within 10 minutes. The PANAS-X adjective list included more terms than the PANAS scale, including several feeling states for each emotion type, i.e., general positive and negative emotions, basic negative and basic positive emotions, and four additional affective states. The PANAS-X Protocol is illustrated in Appendix B.

In their review of emotional self-report, Robinson and Clore (2002) discussed types of knowledge relevant to the efficacy of measuring emotion. Experiential knowledge detailed emotions (feelings) as they were happening and episodic knowledge (memories) summoned feelings from the past. Episodic memory was contrasted with semantic memory, which was not connected to a specific moment in time; rather, it was a generalization from long held beliefs. In this study, asking employees how they felt about technology on the job, in general, was an example of semantic memory.

Robinson and Clore (2002) suggested that it was possible to assess past, current, and future (anticipated) emotion through self-reported means. “Online” reports measured emotion in real-time. “Retrospective” reports measured emotions that occurred in the past. “Prospective” reports predicted emotions that were likely to occur in the future. While experiential knowledge was the closest means to assess actual emotion, episodic memory could be prompted to report on previously experienced feelings. The recollection of an experience could surface an emotion through “reflective appraisal.” Therefore, it would be possible to recreate the feelings of emotion from a previous event or social situation. In the case of episodic memory, recalling contextual details would help to
rekindle feelings, though they could not be duplicated exactly. When assessing emotion retrospectively, the greater the delay in recalling episodic memories, the greater the probability that feeling states could not be recalled accurately.

Motivation was defined as an internal state, need, or desire that energized and directed behavior (Deci & Ryan, 1985; Myers, 2005; Reber & Reber, 2001; Reeve, 2005). Antecedent conditions influenced a person’s motivation status (Reeve). For example, a person-in-need influences the motivation to give, and a personal threat influences avoidance (Reeve). Motivation creates a sense of wanting something that “cannot be separated from the social context in which it is embedded” (Reeve, p. 16). Motives were generally classified as intrinsic or extrinsic, and created desires that were manifested in goal-oriented behavior, physiological responses, and self-reported feelings. Figure 2 provides an illustrated framework used by motivation psychologists to help understand motivation described by Reeve.

![Motivation framework](image)

Figure 2. Motivation framework.

Types of motives were explained in needs, cognition, and emotion theories. Needs as a motivator, may be biological (e.g., food for survival), psychological (e.g., need to feel
competent), or social (e.g., need to feel powerful). Cognitive motivation came from a person’s thoughts, e.g., “belief, expectation, and self-concept” (Reeve, 2005, p 7).

Emotions involved feelings that directed responses to events (Reeve). In organizational sciences, content theory (needs-oriented) and process theory (cognition-oriented) have been used to explain worker motivation. Studies of knowledge sharing using information and communication technologies were attributed to Maslow’s higher order needs, e.g., self-actualization motivated knowledge sharing (Hendriks, 1999).

Individuals moved to do something for the sake of the activity itself were said to be intrinsically motivated. Intrinsic motivation was thought to be prompted by feelings of interest, enjoyment, sense of accomplishment, or personal challenge (Deci & Ryan, 1985; Reeve, 2005). The more intrinsically motivated employees were, the greater their feelings of autonomy (Deci & Ryan). For example, a worker interested in performing felt the freedom to do research on their own for feelings of competence and joy.

The traditional definition of extrinsic motivation asserted that desired outcomes resulted from prodding, pressure, rewards, or threats of punishment, i.e., “do this and you will get that” (Deci & Ryan, 1985; Reeve, 2005; Reiss, 2000; Ryan & Deci, 2000a, 2000b). Extrinsic motivation was said to be prompted in a social context external to the “self” that influenced an individual’s attraction toward, or avoidance of an outcome. Extrinsic motivation was believed to increase the probability of a behavior through positive and negative incentives such as praise, a trophy, bonus, getting fired, deadlines and surveillance (Reeve). For example, working employees driven to perform a task based on the promise of a bonus or praise were said to be extrinsically motivated. (Deci & Ryan; Reeve; Ryan & Deci, 2000a, 2000b).
Self-Determination Theory

Based upon three decades of motivation research, Deci and Ryan (1985) defined theories that distinguish types of motivation. The self-determination theory (SDT), that included the cognitive evaluation theory (CET) and organismic integration theory (OIT) sub-theories, provided a broad motivation framework describing human motivation based upon perceived locus of causality (Deci & Ryan; Ryan & Deci, 2000a, 2000b). Collectively, these theories considered social and environmental contexts and their effect on motivation along a continuum of amotivation, various levels of extrinsic motivation, and intrinsic motivation. The SDT combines both content (innate psychological needs/goals) and process (cognitive/regulatory) motivation theories to understand and predict goal-oriented behavior (Deci & Ryan, 2000). “Specifically, in SDT, three psychological needs-for competence, relatedness, and autonomy-are considered essential for understanding the what (i.e., content) and why (i.e., process) of goal pursuits” (p. 228).

The CET asserts that strong feelings of competence and autonomy increase intrinsic motivation. Competence and autonomy were variables determining motivation type along the spectrum (Ryan & Deci, 2000). The CET considered the effect of environmental contexts on intrinsic motivation. Rewards, controls, and ego were factors affecting an individual’s interest and intrinsic motivation.

The OIT (Deci & Ryan, 1985) provided a motivational taxonomy along a continuum of regulatory processes that distinguished four types of extrinsic motivation. The OIT details “different forms of extrinsic motivation and the contextual factors that either
promote or hinder internalization and integration of the regulation for these behaviors” (Ryan & Deci, 2000a, p. 61). Levels of extrinsic motivation were determined by internal locus of control, that is, the degree of autonomy associated with behavioral outcomes regulated by internalization of values, belief systems, or goals.

The four levels of extrinsic motivation defined along the continuum were: external regulation, introjected regulation, identified regulation, and integrated regulation. External regulation classified a motive for external rewards or threats of punishment, i.e., high external control. Introjected regulation classified a motive driven by internalized feelings of guilt, goodness, or pride that affected self-esteem and internalized by societal norms. Identified regulation classified a motive based upon the importance of something to the individual, that was freely chosen, e.g., career advancement. Integrated regulation was a classification that shared “many qualities with intrinsic motivation, being both autonomous and unconflicted” (Ryan & Deci, 2000a, p. 62). Integrated was the most autonomous form of extrinsic motivation that influenced a desired outcome. Integrated motivation coincided with a person’s internal values and needs. For example, while carpooling (outcome) may not be considered fun, it serves to conserve resources and protect the environment (internally valued).

Theory of 16 Basic Desires

The theory of 16 basic desires or sensitivity theory (Reiss, 2000) describes a model of human desire constituting intrinsic motivation. Reiss developed his theory from Maslow’s (1954) theory of human needs, and William James’ (1950) theory of basic instinctual desires. Based on a study of 6,000 participants from different countries, Reiss
believed that human desires were genetic, i.e., “ego motives” (Reiss, 2004), which defined intrinsic motivation. Reiss further believed all humans possessed the 16 basic desires on a spectrum, varying in intensity from low to high, not consciously chosen. While desires were considered genetic, how humans acted upon those desires was shaped by the intensity of desire, culture, and their individual experiences (Reiss).

Who Am I? The 16 Basic Desires that Motivate Our Actions and Our Personality (Reiss, 2000) provided detailed criteria to help identify desires evident in others. The criteria details were useful in this research to identify intrinsic motives in individuals that might affect wiki behavior. The 16 basic desires were (ordering of desires not relevant): curiosity, power, independence, acceptance, order, saving, idealism, honor, social contact, family, status, vengeance, romance, eating, physical activity, and tranquility (Reiss). To follow are brief descriptions of several desires relevant to the current study according to Reiss.

Power

The desire for power, according to Reiss (2000), was the degree to which someone felt joy from mastery, competence, leadership, and challenges satisfied through achievement. Those with a higher need for power derived enjoyment from impacting and influencing others. The desire for power was evident in wiki pioneers, business, and IT employees deploying wiki technology and influencing others to participate.
Curiosity

The desire of curiosity was the degree to which someone experienced joy from the act of learning itself. Not to be confused with intelligence, curiosity was measured in the level of enjoyment derived from learning experiences. Those driven by curiosity were also truth seekers, who strove for distinguishing fiction from fact. Curiosity also stimulated a strong desire to analyze things. Employees who were curiosity-driven derived great joy from the act of learning the wiki operation.

Independence

The desire for independence was the degree to which someone experienced joy from self-reliance and freedom. People who were independence-driven, derived great joy relying on their own capabilities, and avoided relying on others to satisfy their needs. Independently driven individuals would rather help others than be helped, possessed a propensity for defensiveness, and were annoyed by people who discouraged freedom.

Idealism

The desire for idealism was the degree to which someone experienced joy acting on the behalf of mankind. According to Reiss (2000), many psychologists suggested that idealism was linked to altruistic behaviors. People idealistically driven were charitable, aided the disadvantaged, addressed social inequities, and took risks to advance a cause. Wiki participants evidenced idealism by taking risks to further the wiki, working to benefit other employees, and to improve the organization as a whole.
Order

The desire for order was the degree to which someone felt joy in stability, control, and predictability. People driven by order felt greater comfort in planning, scheduling, making lists, establishing rules, following tradition and formal procedures. Some were stressed in disorganized contexts because this implied unpredictability and chaos. Those driven by order were more joyful when given a sense of predictability. An obsession for order can create conflict in the home and in social settings.

Honor

The desire for honor was the degree to which someone experienced joy in being loyal to family, groups, culture, tradition, moral code, and jurisdictions. People with the need for loyalty placed high importance on duty and adherence to principles, and experienced feelings of shame and guilt otherwise.

Tranquility

The desire for tranquility was the degree to which someone experienced joy in the absence of stress, anxiety, and fear. People driven by tranquility were motivated to live in peace and avoided disturbing and disruptive situations. The desire for tranquility impacted lives, e.g., avoidance of the wiki, to reduce anxiety, stress, and pain.

Prosocial Behavior: Altruism and Egoism

Altruism and egoism were generally described in psychology literature as motives that resulted in prosocial behavior. Prosocial behavior was described as a voluntary and
conscious decision to behave in a manner that benefited someone else (Bar-Tal, 1976; Batson, Oleson, Weeks, Healy, & Reeves, 1989; Mastain, 2006). Motives behind prosocial behavior were differentiated through anticipation of a reward (Batson, Fultz, & Shoenrade, 1987; Mastain; Myers, 2005, 2002). Altruism was considered a motivation to help someone else without anticipated reward. Egoism was considered a motivation to help someone with an expectation of personal benefit. Subtleties existed in the definition of prosocial behavior; however, there was overarching agreement that altruism and egoism evoked prosocial behavior.

As with prosocial behavior, differences in psychology and social psychology literature prohibited a concrete and universal definition of altruism (Bar-Tal, 1976; Penner, 1995). A common definition was used as a basis for discussion in this research. Altruistic motivation prompts a voluntary act of one person that will benefit another, or others, without the expectation of personal gain in return (Batson, et al., 1989; Batson, et al., 1987; Myers, 2002; Penner). That is, altruistic motivation prompts a person to behave in a manner that would improve another’s situation without the need for personal reward.

According to Myers (2002) and many other behavioral psychology researchers, behavioral psychology egoism motivated behavior with expected returns. Egoism prompted a person to act voluntarily in a manner that benefited another with a goal of personal gain (reward) in return. The reward may be extrinsic, e.g., money, or intrinsic, e.g., increased self-esteem, peer affirmation (Mastain, 2006), relief of guilt, or personal satisfaction (Batson, et al., 1989; Mastain). Bar-Tal (1976) suggested that compensation, i.e., the expectation of reciprocation, was another form of egoistic reward.
Researchers in disciplines, in various contexts, have examined motives that directed altruistic and egoistic behavior (Batson, et al., 1987; Mastain, 2006; Penner, 1995). Social biologists, psycho-analytics, cognitive and social psychologists, and philosophers sought to explain the motives behind selfless and self-centric behavior. These studies included emotion-motivation theories such as social-exchange theory (Blau, 1964; Nord, 1969), volunteerism theory (Clary & Snyder, 1999), drive-reduction theory (Myers, 2005), and archaic tension-reduction and traditional tension-reduction theory (Batson, et al., 1987).

**Emotive and Cognitive Behavioral Theories**

For decades, researchers conducted behavioral studies that considered the role of emotion, emotion and cognition, and cognition alone on decision-making and behavior. Emotion-based studies illustrated a relationship between emotions and behaviors. Emotion and cognitive studies illustrated the relationships among feelings and cognition (thinking states, judgments, perceptions, beliefs, and attitudes), and behavior. Purely cognitive studies illustrated the relationship between cognitive aspects and behavioral choices or behavioral intent. Studies suggested “that affect can predict behavior over and above beliefs and evaluations” (Richard, et al., 1996, p. 112).

Batson et al.’s (1987) contemporary tension-reduction theory associated vicarious emotion, prosocial motivation, and behavior. Batson, et al. confirmed a relationship among feelings, emotion, motivation, and behavior prompted by a person suffering or in need (refer to Figure 3). The tension-reduction theory focused on two key assertions: (1) that emotions of empathy were distinct from emotions of personal distress when
witnessing someone suffering, and (2) that these two emotions evoked different prosocial motivations, namely altruism and egoism.

![Figure 3. Feelings to behavior continuum (adapted from Batson et al., 1987).](image)

Data collected in a series of six studies validated Batson et al.’s assertions. Subjects self-reported their feelings and intent to behave through Likert scale surveys after watching people suffer in contrived settings. The data illustrated the fundamental relationship between emotion and behavior. Elements of the prior research were relevant to this study of emotion and wiki behavior since:

- A qualitative distinction existed among various emotions.
- Feelings were testable through self-reporting in surveys and being observable in contrived studies.
- Adjectives used to describe feeling states were generalized or categorized as emotion.
- Emotions were found to evoke altruistic motives that resulted in behavior that benefitted others.
Emotions were found to evoke egoistic motives, which resulted in behavior that benefitted oneself.

- Emotions were distinguishable and identifiable, and motivated specific behavior.
- Emotions could be qualitatively distinguishable in wiki-enabled corporate situations.

While many studies linked emotion to behavior, others considered aspects of cognition and affect in decision-making (Finucane, et al., 2000; Kiviniemi, Voss-Humke, & Seifert, 2007; Richard et al., 1996). Finucane, et al. theorized that affect played an important role in risk/benefit judgments and subsequent behavior. Their study illustrated that feelings, which directed behavioral choices, preceded contemplation of risk and benefit. Similarly, Richard et al. found that attitudes about life activities, such as the consumption of drugs or junk food, differed from anticipated affect. Richard, et al. further concluded that purely cognitive studies such as the Theory of Planned Behavior (TPB) (see below) can be improved with the addition of affect in the framework. Kiviniemi, et al. supported this assertion in their study that considered affective associations in the TPB model. The conclusion showed that beliefs regarding cost and benefits of diet and exercise options were mediated through affective associations.

**Cognitive Theories in Information Systems Technology Adoption Research**

For decades, information systems research explored the motivation for intended and actual use of computing technologies (Davis, 1989; DeLone & McLean, 1992; Muduganti, Sogani, & Hexmoor, 2005). The literature provided several theories that
considered cognitive factors that influenced technology adoption behaviors, or intentions to behave by individuals and organizations. Cognition, i.e., what a person “thinks” was in sharp contrast with emotion, i.e., how a person “feels.” Cognitive theories, discussed below, evolved to posit relationships among motivation, behavioral intent, and actual usage of computing technology.

Social psychologists Ajzen and Fishbein (1980) used the Theory of Reasoned Action (TRA) to predict human behavior in many contexts. The TRA also served as a basis for theory development in information systems research to predict computing technology adoption (Muduganti, et al., 2005). The theory asserted that subjective norm and attitude determined behavioral intent (behavioral intention = f (attitude toward behavior * attitude derived weights) + (subjective norm related to behavior * subjective norm derived weights)). Subjective norm (peer pressure), in this case, was a consciously contemplated influence that others have in a person’s decision to behave in a particular way. Attitude in the TRA was defined as the collectively contemplated beliefs that a person holds towards a particular behavior.

The Theory of Planned Behavior (TPB) (Ajzen, 1985) extended the TRA, adding perceived behavioral control (ability to perform) to subjective norm and attitude toward a behavior. Morris and Venkatesh (2000) used TPB as a basis for their research to determine motives for adoption of a Windows-based information storage and retrieval system in the workplace where age was added as a mediating variable. In this study of 130 customer account representatives in a medium-size accounting firm in the U.S., age was determined to be a significant factor in system usage, in addition to TPB independent
variables. Younger workers were influenced more by attitude; older workers were influenced more by subjective norm and perceived behavioral control.

Davis (1989) developed the Technology Acceptance Model (TAM), supplanting attitude and subjected norm in the TRA with perceived usefulness and perceived ease of use. The TAM asserted behavioral intention = f (perceived usefulness + perceived ease of use). Perceived ease of use was a belief that a particular technology would require little effort to operate. Perceived usefulness was a belief that a particular technology would enhance on-the-job performance. These motives were useful in predicting system use behavior for improving information system quality.

In an empirical study of 120 subjects at IBM and 40 graduate students, Davis (1989) validated the measurability of perceived ease of use and perceived usefulness in the TAM theory. PROFS e-mail and XEDIT text editor were the technologies used in the study. The self-reported results verified the measurability of perceived ease of use and perceived usefulness that were highly correlated with intended and actual usage.

Davis, Bagozzi, and Warshaw (1992) differentiated intrinsic and extrinsic motivation in a study to determine behavioral intention to use technology in the workplace. Perceived usefulness (extrinsic motivation) and “enjoyment” (intrinsic motivation) were independent variables in this variation of the TAM theory. Ease of use was a mediating variable and task importance was a moderating variable. MBA students in two separate studies used either a word processor or business graphics software as the subject technologies. In this study, Davis, et al. did not consider the negative impacts of rewards on intrinsic motivation (Deci, 1971). Results showed that individual perceptions of
“perceived usefulness” was the primary influencer of predicted technology usage; enjoyment was shown to influence intent but to a much lesser degree.

Using the TAM as a foundational theory, gender was also considered a variable of social influence on intended and actual usage of technology in the workplace (Gefen & Straub, 1997; Venkatesh & Morris, 2000). Venkatesh and Morris conducted a study using 445 individuals, working in five organizations, each using different, but similar, information storage and retrieval systems to test the extended technology acceptance model. The results showed that males were influenced more by perceived usefulness and females influenced more by perceived ease of use and subjective norms. Gefen and Straub (1997) conducted a study of 392 e-mail users in North America, Asia, and Europe. The results of this study showed that females perceived e-mail differently than males but the usage patterns were the same; communication methods were perceived differently by gender. The unit of analysis in these studies was the individual working in different organizations.

The Theory of Reasoned Action (TRA), Theory of Planned Behavior (TPB), and Technology Acceptance Model (TAM) are cognitive theories derived to explain and predict the use of information systems. These theories have been extended and tested in self-reported, field, and experimental studies. Subjective norm, attitude, perceived behavioral control, perceived ease of use, perceived usefulness, age, enjoyment, and gender were independent variables shown to be correlated highly with intended and actual usage. These theories were based on cognitive factors that did not consider affective associations with information technology usage.
Existing Wiki Behavioral Research

Several studies were conducted that investigated motivation and Wikipedia contributors. A few studies were found that investigated wiki participation in the workplace though none were found to investigate emotional affect and organizational influence. There were distinct contextual differences between a Wikipedia open-community and a workplace closed-community. Though these distinctions were significant to underlying human affect in each domain, Wikipedian motivation studies were presented here as a basis for discussion.

Altruistic motives and wiki collaboration was not a far-fetched notion. Wagner and Prasarnphanich (2007) conducted an exploratory study of Wikipedia collaborator (Wikipedian) motivation, asserting that altruistic motives were distinct from open source development motives. The study addressed altruistic dimensions of individualism, collaboration, perspective, and effect on others. The research concluded that altruism was more likely a motive for Wikipedia collaboration than a motive in open source software development projects.

While the study was a useful beginning to explain the relationship between altruism and Wikipedia collaboration, it fell short in several respects. First, altruism was never defined in the study, making it difficult to validate the research questions, design, and conclusion. Second, the sample size was limited to 35 of the 140 Wikipedians responding to an e-mail survey. Finally, the survey was limited to three open-ended questions without any follow-up with the respondents. The researchers noted that broad conclusions were not possible and that the study “barely scratches the surface of the phenomenon of
open, collaborative content collaboration” (Wagner & Prasarnphanich, 2007, p. 9).

Underlying feelings and emotions were not explored.

Using the Value Sensitive Design approach, Friedman (1996) and Kuznetsov (2006) described motivation and related values associated with Wikipedian contributors. Motives were identified based on the data collected from two existing surveys of open-source projects, and informal polling of New York University students. The analysis revealed that the opportunities for information sharing, learning new skills, and working with community were the primary motives. The values associated with these motives were altruism, reciprocity, community, reputation, and autonomy. This study was considered preliminary since the pre-existing survey data analyzed were specific to open-source projects and not Wikipedia, proper, and the New York University data collected were based on perceptions of intent versus actual Wikipedia participation.

In his study of 151 Wikipedians, Nov (2007) used Clary, et al.’s (1998) six motives from volunteerism theory, plus fun and ideology from open source research, to assess motivation and Wikipedian contribution types. Nov developed survey questions, assessing type of motivation based on respondent opinion and correlated these with actual contribution activity using Pearson correlation coefficient (significant to .001). Fun and ideology were the top, overall, self-reported motivations with social, career, and protective the lowest; fun, values, understanding, enhancement, protective, and career positively correlated with contribution level – ideology and socialization were not. This study served as an interesting model for this research since type of motivation was assessed in a questionnaire and correlated with actual activity.
These studies introduced Wikipedia motivation, each indicating that further research was needed. These studies examined motivation for Wikipedia behavior, illustrating research designs, including useful questionnaires in a non-corporate setting. Altruistic and egoistic motives appeared to prompt Wikipedian contributions. The emotions that evoked these motives were not examined. These studies could be useful as a starting point in designing additional research that evaluate wiki motivation in a corporate setting, acknowledging differences in control (corporate policy), social context, and corporate goals.

**Conclusion**

This review of the literature focused on foundational terms and behavioral models in psychology, relevant cognitive theories in information systems research, and current studies in wiki participation. One important psychology model included the tension-reduction theory (Batson, et al., 1987), suggesting that external stimuli affect behavior. Many of the theories in information systems research were drawn from psychology and/or extended from previous information systems research. Exploration of human emotion that motivated wiki behavior in an organizational context of corporate influences (refer to Figure 3) were not found. Finally, research in collaborative content development, using wikis, was preliminary with the focus on open community wikis such as Wikipedia. Refer to Appendix A for a collective summary of these theories.
Chapter 3
Methodology

Grounded Theory in Information Systems Research

Based on the literature, how wiki behavior and emotion apply within the context of organizations was unclear. It was not possible to propose a hypothesis based on existing theories at the time since the context and phenomena were not clearly separated. Therefore, a study in grounded theory was conducted in this research. The researcher developed theoretical assertions based on an exploration of emotion motivating wiki behavior within organizational contexts. Grounded theory was appropriate for substantive theory development in this information systems research, and provided an important beginning to understand wiki experiences and improving outcomes.

Qualitative analysis was needed in information systems research to build theory within the organizational contexts where people use technology (Hughes & Jones, 2004; Matavire & Brown (2008); Myers & Avison, 2002; Orlikowski, 2002). Developing theory from the ground up (grounded theory) was useful in exploring phenomena within complexities of organizational boundaries immersed in cultural norms and social interplay (Charmaz, 2006; Martin & Turner; 1986; Matavire & Brown; Myers & Avison; Orlikowski). Complexities in organizational domains were considered to align technology usage in firms (Orlikowski).
Orlikowski (2002) developed substantive theory using a grounded theory methodology to understand adoption of a computer-aided software engineering (CASE) tool in two organizations. Orlikowski studied the actions of workers in systems development contexts to improve the experiences and outcomes of CASE tool implementations. Her work was important to this research as it illustrated an interpretive, versus positivist, approach to grounded theory research (Hughes & Jones, 2004).

Orlikowski acknowledged that new technology adoption required more than installation and deployment. In her acclaimed 1993 work¹, Orlikowski’s research demonstrated the importance of grounded theory in information systems research with its grounding context and process-orientation in enterprises. Her work was frequently referenced in grounded theory information systems literature. An increase in grounded theory research in information systems followed Orlikowski’s publication (Matavire & Brown, 2008).

In concert with related grounded theory methods (Charmaz, 2006; Corbin & Strauss, 2008; Glaser & Strauss, 1967; Martin & Turner, 1986), Orlikowski (2002) collected data through a cycle of observations, interviews, concept development, data analysis, and identification of themes. Orlikowski’s study assumed an interpretive versus positivist grounded theory approach that resulted in a theoretical framework through cycles of data collection, analysis, development of concepts, and their relationships over time, which was a model well-suited for this study. Studying the temporal interplay among

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¹ Wanda Orlikowski was awarded the MIS Quarterly Best Paper Award in 1993 for her grounded theory research in information systems.
organizational influences, emotion, and wiki behavior was necessary in the research to facilitate informed development of theory.

Matavire and Brown (2008) conducted a study of grounded theory usage in information systems research. They acknowledged that grounded theory was applied in a variety of ways, and described four approaches in their research: 1) Glaserian, 2) Straussian, 3) Analytical, and 4) Mixed. Glaserian and Straussian grounded theory applied practices established by Barney Glaser and Anselm Strauss respectively. The Analytical approach did not follow Glaserian or Straussian principles, strictly; rather, it applied techniques from each, such as types of coding appropriate for the research. Analytical grounded theory could begin with a priori theory that was verified or refuted in an investigation. The Mixed approach combined grounded theory with other research methods such as action research and case study.

Matavire and Brown (2008) examined the top 50 information systems journals to locate grounded theory research studies from 1985 through 2007. The results indicated variations in grounded theory approaches in information systems. Of these, 62% employed the Analytical approach, 17% the Straussian approach, 13% the Mixed approach, and 8% the Glaserian approach. Matavire and Brown noted a sharp increase in grounded theory usage in information systems research between 2001 and 2007. The epistemologies were predominantly interpretive, though positivist inquiry was also noted in each grounded theory approach.

A few studies are mentioned here that introduced various types of information systems research using grounded theory. Hunter, Hari, Egbu, and Kelly (2005) investigated the role of knowledge management in the construction industry using Strauss and Corbin’s

**Grounded Theory Approaches**

Glaser and Strauss (1967) formalized Grounded Theory as a qualitative methodology in *The Discovery of Grounded Theory*, which marked acceptance of grounded theory as a viable research methodology through “systematic strategies for qualitative research practice” (Charmaz, 2006, p. 5). Glaser and Strauss introduced a qualitative approach that directed theory to emerge from the data, abstract categories, properties, and hypotheses as opposed to “deducing testable hypotheses from existing theory” (Charmaz, p. 8). Glaser and Strauss (1967) emphasized the analysis of qualitative data in generating theory; however, they asserted that quantitative data can also be used; “generating theory is independent of the kind of data used” (p. 18).

The work of Glaser and Strauss (1967) was of historical importance as they convinced researchers, particularly the dominant positivists of the time, that grounded theory was an important methodology for discovery of theory. Over time, disagreements about principles, techniques, and procedures resulted in Glaserian and Straussian grounded theory positions (Charmaz, 2006; Matavire & Brown, 2008). Glaser and Strauss agreed that the discovery of data was independent from the researcher’s experiences and
interpretation, a positivist view. Since publication of that original work, grounded theory varied in application from positivist (and objectivist), where data were considered to exist on its own accord (Glaser & Strauss), to interpretive (and constructivist), where data were constructed through the researcher’s “shared experiences and relationships with participants” (Charmaz, 2006, p. 130).

Charmaz (2006) promoted interpretive inquiry and constructivism based upon her experiences with grounded theory research, alongside the evolution of grounded theory. Her preference for theorizing was “unabashedly interpretive” (p. 128) contending that the researcher must be immersed in the domain under study where data and analyses were “created from shared experiences and relationships with participants” (p. 130).

Aligning with the principle of continuous comparative analysis, Charmaz theorized that continuous data collection and analysis “depends upon the researcher’s view; it does not and cannot stand outside of it” (p.130). In conjunction with principles of comparative analysis and theoretical sampling, data collection and analysis methods should be directed by the research as it progressed, i.e., allowing the emerging theory to direct subsequent sampling (Charmaz, 2006; Corbin & Strauss, 1998; Glaser & Strauss, 1967; Matavire & Brown, 2008). Data collection methods might include a combination of interviews, textual analysis, discussion groups, questionnaires, and perhaps joining a special interest group. Further, data analysis techniques could be selected from a variety of coding schemes such as initial, focused, axial, and theoretical coding. Charmaz described initial coding techniques such as word-by-word, line-by-line, coding incident to incident, and in vivo codes, and how these can be applied by the research.
Kathy Charmaz, in *Constructing Grounded Theory: A Practical Guide through Qualitative Analysis* set forth a comprehensive guide for grounded theory research. Charmaz provided a historical rendering of interpretive and positivist grounded theory, along with their constructivist and objectivist derivatives, enabling the reader to distinguish between these approaches. For example, in her discussion of interview questions, Charmaz compared the types of questions asked by a constructivist with that of an objectivist. Charmaz introduced key distinctions between interpretive, positivist, constructivist, and objectivist approaches while providing descriptions of procedures, definitions, and examples. Charmaz also included descriptions of various grounded theory methods that provided a supplemental lens into her practices—predominantly those borrowed from her teachers, Glaser and Strauss.

**Grounded Theory Approach Applied**

Misuse, false claims, and variations of grounded theory inquiry prompted this researcher to commence a methodical and deliberate journey through data collection, coding, memo writing, analysis, and theoretical development. From lessons learned in grounded theory described by Adolf, Hall, and Kruchten (2008), the researcher followed an iterative balance of grounded theory study, application of grounded theory methods, reflection, and writing. Based on their grounded theory experiences in software development studies, Adolf, et al. urged the grounded theorist to avoid temptations to mix methods and apply the chosen methodological approach. Therefore, the grounded theory and coding strategy in the research followed Charmaz (2006).
Grounded Theory Coding

Coding—the hallmark of grounded theory—was the process where data was identified, sorted, analyzed, categorized, and theorized. Charmaz (2006) began analysis with initial, or “open coding” (Glaser, 1978) of pure text, followed by focused coding and identification of tentative categories, categories, theoretical concepts, and inherent relationships between them. Data collection, data analysis, and memo writing continued throughout the coding process where the codes, categories, and theoretical concepts evolved, sometimes in parallel, through continuous comparative analysis (Charmaz; Glaser). A conceptual data model is included below (refer to Figure 4), that illustrates the relationships among coding entities in Charmaz’ grounded theory approach.
Initial coding associated a name to individual words, lines, incidents, or chunks of textual data. It served to divide the long textual interview transcription into small chunks of data that were meaningful in some way. Initial coding examined the empirical data from various angles and codes in as many ways as appropriate (Charmaz, 2006; Glaser 1978). A chunk of text could appear in multiple initial codes and initial codes could contain multiple chunks of related text. According to Charmaz, code names should be stated as actions in the active state using gerunds, e.g., working (as opposed to work), writing (as opposed to write).
Focused coding helped to organize large amounts of data (frequently used initial codes), which were analyzed and interpreted to some degree. Posturing focused codes in active tense helped the researcher to see these as potential categories. Focused codes were sorted, synthesized, and organized into categories as theoretical sampling continued.

Categorization evolved focused codes or tentative categories into theoretical concepts. Theoretical concepts could be further defined with dimensions, conditions, and/or subcategories. Categories represented key concepts that were related to other concepts during theory development.

Axial coding was recommended by some grounded theorists (Strauss & Corbin, 1990) as a means to scrutinize open [synonymous with initial according to Charmaz (2006)] and focused codes, and organize them in meaningful ways. Charmaz did not follow the strict formation of conditions, actions, and consequence prescribed by Strauss and Corbin. Charmaz recommended developing categories, subcategories, and dimensions as a means for making sense of data, finding gaps, and uniting the data into theoretical concepts.

Charmaz (2006) and Glaser (1978) echoed the following reflection to help the analyst align with the topic under study. Throughout the coding process, the analyst should review the intent of the study, categories of incidents, and continue to explore what the data were conveying about experiences of participants. The research followed these recommendations, along with the coding process described by Charmaz.

Memo Writing

According to Charmaz (2006), memo writing was the conduit for moving data to codes and grounded theory. Charmaz asserted that writing memos was the most
important analysis mechanism through immersing the researcher into an analysis mindset by thinking out-loud, on paper. Writing allowed the researcher to host conversations with the self, elucidating thoughts about the context, data, codes, categories, and inherent relationships among them. Memo writing, as described by Charmaz, was found to be a free-flowing act that prompted and captured thoughts, enabling the researcher to make comparisons and connections within the data. Memo writing brought new questions into focus and illuminated areas that required further exploration.

Charmaz (2006) provided a useful guide for developing various types of memos. For each type, Charmaz provided a series of cross-functional questions intended to prompt deep, well-rounded reflection from early to advanced memo writing. These questions helped the researcher to identify concept dimensions by analyzing and describing the data in terms of context, actions, connections, comparisons, situations, beliefs, time, and traceability from multiple vantage points.

**Interviewing**

In grounded theory, a data collection strategy should identify methods that resonate with the research problem, recognizing that the strategy might change as the study progresses (Charmaz, 2006; Corbin & Strauss, 2008; Glaser & Strauss, 1967). One or more data collection methods may be used, depending on concepts revealed throughout data collection and analysis. According to Charmaz, one open-ended question could be sufficient to elicit complete disclosure with suitable detail, whereas other situations would warrant different or multiple data collection methods, depending on the responses from participants and correlation with the phenomena studied.
According to Charmaz (2006), interviews were a vital and intricate source of data that influences grounded theory analysis. The interviewer was advised to develop rapport, remain open to the emergence of new concepts, avoid leading questions, use language that was meaningful to the participant, avoid making assumptions, identify and define in vivo codes, remain engaged and attentive to participant feelings and views, avoid interrogation, and to recognize and relate to participants feelings as they were being recounted (Charmaz). The intent of each interview was to create a “construction-or reconstruction-of a reality” (Charmaz, p. 27) that cultivated an interpretation of the participant’s experience.

Developing prescribed interview questions at dissertation proposal time was at odds with ground up theory development. According to Charmaz (2006), an Institutional Review Board (IRB) typically required advanced review of survey instruments that would be used in the study; contrary to the “emergent nature of qualitative research in general, and grounded theory, in particular” (p. 30). According to Charmaz, “proposed interview questions must be sufficiently detailed to convince evaluators that no harm will befall research participants yet open enough to allow unanticipated material to emerge during the interviews” (p. 30). Charmaz encouraged grounded theory researchers to develop an interview guide that would facilitate “unanticipated material to emerge” (p. 30) without imposing risk to subjects.

Structured interviews were generally discouraged by grounded theory researchers (Charmaz, 2006; Corbin & Strauss, 2008; Glaser, 1978). Corbin and Strauss noted that unstructured interviews were not effective in all situations where the occasional structured interview became necessary. Charmaz (2006) asserted that preparation of an
interview guide would ready the researcher for actual interviews by increasing the researcher’s confidence, permitting the researcher to concentrate on what is said during interviews, and to convince the IRB that participant’s interests would be protected. Care should be taken to prevent questions from emerging that would lead responses into preconceived categories or concepts (Charmaz; Corbin & Strauss, 2008; Glaser, 1978). Charmaz did not recommend taking the interview guide into actual interviews in order to maintain “informal and conversational” (p. 29) communication, noting that novices benefited from more preparation.

This research followed interpretive grounded theory research that resulted in substantive theoretical assertions (wikis in business/health insurance industry). The research followed grounded theory principles of emergence, constant comparative analysis, theoretical sampling, and theory development according to Charmaz (2006). Charmaz’ grounded theory coding, memo writing, data analysis, and interviewing methods were followed through interpretive analysis.

Applying Grounded Theory using Nvivo 8

Nvivo 8\(^2\) was a tool used for managing, analyzing, and reporting subject data and developing theory. Nvivo 8 provided a platform to collect, code, and analyze data using transcription, data management, node management, models, memo writing, and reporting utilities. Online support provided by QSR International, along with the study of several

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\(^2\) Nvivo 8, a QSR International product, is a qualitative data collection, analysis, and reporting tool.
published texts assisted the researcher in leveraging product features throughout the research.

*Code Development using Nvivo 8*

Since not all qualitative research is the same, an ongoing challenge was to align the grounded theory coding paradigm to Nvivo 8’s node structure. Nvivo 8 provided constructs for nodes and tree nodes for qualitative coding. Coding in grounded theory, however, constituted an evolution of textual data, initial codes, focused codes, categories, and theoretical concepts that were not custom-designed into the Nvivo 8 product. Therefore, the node structure was aligned to grounded theory code development. For example, free nodes in Nvivo 8 were used for initial codes while tree nodes were used to identify themes, focused codes, categories, and theoretical concepts via sub-nodes in a tree. Memos and models aided the researcher to understand the relationship between codes throughout the analysis.

*Code Evolution Example for Feeling Fear about Changing Content*

To illustrate the evolution of interview data, coding, and theoretical concepts using Nvivo 8, an example follows. The coding process began with a transcription of recorded interviews and the assignment of initial codes. An example of transcribed data for the *Feeling fear about changing content* initial code is provided below. A complete sample of the original initial codes for the *Feelings of Ownership* theme is provided in Appendix D.
**Transcription Example**

**John B:** I was pretty open to the idea from the start, they seem to I guess see the bigger picture in terms of how it would benefit us. In terms of business folks, I honestly think at least a large chunk of their anxiety was related to the idea of editing someone else's work. They kind of felt like it was intrusive, and presumptuous to be altering someone else’s work and that kind of thing...I could do this better, explain this better or more detail or however ya know specifics of what they were thinking but it seemed that that was the biggest hang up....well I don't own this.

**John B:** Um, I would say, it all kind of happened within a month or two, and I guess to some degree I was nervous because a wiki tends to be relatively informal in most cases, in terms of discussions that go on related to changes and modifications of pages and things like that and yet the corporate environment seems so much more rigid and formal than that. So, I was nervous how that kind of gap would be bridged to the relative informal nature of wiki and formal nature of the environment.

**Mark J:** They're [anti-wikites] very afraid that obviously an insurance company is afraid of change, they're afraid of people having access to be able to change things.

**Researcher:** Is there a concern or worry that you may be stepping on somebody's toes, or changing incorrectly or just generally feeling uncomfortable?

**Susan K:** I think it’s all three. I think it’s all three. I still...even when I know I'm making the right change, I think I've gotten over the “uncomfortableness” but that took me a long time to get to that point.

Following transcription and initial coding of several interviews, the researcher identified themes in the data. Theoretical sampling continued where gaps in the data were observed. For example, initially employees not participating in the wiki were weakly represented. The researcher addressed this gap by identifying and inviting non-participating wiki subjects to be interviewed. Over time, when a sufficient mass of interview data was processed, initial codes evolved into focused codes and emerging concepts, refer to Figure 5.
**Theme:** Feelings of Ownership  
**Category:** Not Engaging in Changing of Content  
**Sub-category:** Experiencing fear (afraid, nervous, anxiety) that content could be changed

**Focused Codes:**
a. Changing content viewed as a limitation  
b. Comfortable making format changes but would not change content without coordinating with author  
c. Contribute but don’t change existing content  
d. Coordinating with author rather than changing pages  
e. Changing content could alter intended meaning  
f. Don’t know how to change content but wouldn’t be comfortable with that  
g. Feeling anxiety about changing content  
h. Feeling it’s not natural in corporation to change content  
i. Others don’t feel comfortable making changes  
j. Others fearing content could be changed  
k. Security feeling that people will abuse it

**Category Dimensions:**
a. Encouraged to change content (context of situation)  
b. Restrained by established norms (personal, corporate, professional, social) (why)  
c. Multiple genders and age groups; individual contributors, leads, or managers; from business, IT, and IT liaisons to business departments (who)

**Relationship to Concept:** Culture resistant to change

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Figure 5. Framework for experiencing fear theoretical concept.

A theoretical model developed using Nvivo 8 helped to sort out the relationships between codes and concepts during analysis. This model, the early theoretical framework, of theme, category, and concept hierarchy is provided in Figure 6.
Nvivo 8 was useful for managing, analyzing, and reporting large amounts of textual data in the research. Nvivo 8 was used for transcribing audio files, managing subject data, including demographics and multiple text files, identifying themes through node analysis, searching and statistically reporting frequency of words and phrases, developing analysis models of related categories using node structures, and producing standard and customized queries and reports.
The Study

Study Site

Excellus BlueCross BlueShield (Excellus) was the study site selected for the research. Excellus BlueCross BlueShield, a not-for-profit company, provided health insurance plans to 1.7 million members in 30 Upstate New York counties. Excellus was chosen because of its size (number of employees), breadth of employee demographics, wiki profile, employee participation ratio, and the convenience of Upstate New York locations to researcher proximity. The researcher had no employment relationship with Excellus.

In December 2009, Excellus employed approximately 6,500 workers operating in regional offices located in Central New York, Central New York Southern tier, Rochester and Utica New York. [Univera Health Care] Employees performed in many different business and technology roles, possessing a range of technology experience from general computing to software engineering.

The company wiki, Excellupedia, began as a grassroots initiative with the Enterprise Architecture (EA) department in 2006. In July 2007, Excellupedia’s community of participants was extended to employees working in the IT department, and later in that year to all Excellus BlueCross BlueShield employees, plus Univera Health Care. This community encompassed 30 departments and approximately 35 projects. In August of 2010, 51,062 wiki pages were created (including talk pages), where 15,145 of those pages contained actual content.

Excellupedia was used for knowledge management purposes by employees, working in both business and technology departments. Employees used the wiki internally for
collaboration and informational dissemination purposes where participation was considered voluntary. Wiki content development was not the product of a corporate dictum; rather, it began as a grassroots effort and was maintained in egalitarian fashion.

Excellupedia participation varied from “no use” to “active collaboration.” Collaboration ranged from simple (minor edits or discussions) to sophisticated (content negotiation and changes). Approximately 500 employees were considered wiki participants mirroring the power law distribution with a participation rate of 7.7%. Wiki activity on Excellupedia exhibited the following participation behaviors:

- Addition of new content
- Modification of existing content
- Comments in content discussions
- No authoring contributions to content or comments
- Reading (lurking) content only

Wiki Behavior Defined

For the purpose of analysis and reporting in the research, wiki behavior was defined as interaction that occurred between an employee and the wiki. Specifically, wiki behavior within the context of this research included:

1. Addition of new content to
   a. A new page
   b. An existing page

2. Modification of existing content
   a. Grammar or spelling
b. Synthesis through consolidation and rewriting of existing content

c. Addition of new content

3. Engaging in discussion through comments about content

4. Reading (lurking) content only

5. No reading, no authoring, no participation in comments

People who added, modified, and discussed content (items 1-3) were considered “contributors.” Those who read the wiki regularly (item 4) were considered “lurkers.” Contributors and lurkers were collectively considered “participants.” Those who did not read or were infrequent readers of the wiki, did not author content, or did not participate in wiki discussions (item 5) were considered “non-participants.” Actions performed by designated wiki editors and administrators were not considered in this definition.

Subject Selection

The study began with a review of documentation that assisted in selecting subjects, identifying and assessing wiki participation, and learning more about the corporate domain. Documentation reviewed included wiki activity reports, content pages, discussion pages, and archived pages. Business documentation reviewed included organization charts, corporate policy, annual reports, and newsletters, which provided a starting point for learning more about the corporation and employees.

Selecting subjects based on activity data provided useful insights into wiki behavior in the Kane and Fichman (2009) study. Therefore, subjects exhibiting high, medium, low, or no wiki participation behavior were invited to participate. Wiki leaders also recommended employees for interviews based on their knowledge of employees’ wiki
participation behavior. Subjects were identified and invited to participate according to the subject selection criteria described below.

**Subject Selection Criteria**

Employees invited to participate:

- were selected from multiple business and technology departments/units or groups,
- possessed different roles and responsibilities, e.g., business analyst, programmer, finance officer,
- held different rank (refer to Appendix F) in the organization, e.g., front-line worker, lead, manager,
- had knowledge of, and access to, the wiki; and
- contributed to the wiki in the past or had never interacted with the wiki.

Subjects participating in the study worked in one of twelve business, technology, or business/technology liaison departments, located in Buffalo, Rochester, Syracuse, or Utica, New York. Gender was equally represented in the study with 12 female subjects and 12 male subjects, ranging in age from 26 to 55. Subjects self-identified their rank as an individual contributor (no formal leadership or management responsibilities), lead (leadership responsibilities in a domain without supervisory responsibilities, e.g., lead analyst), manager (supervisory responsibilities for a group of employees), or senior manager (supervisory responsibilities for managers) (refer to Appendix F). Of the 24 subjects, 20 subjects interacted with the wiki, whereas four subjects knew about the wiki
but did not participate. A summary of data collected and analyzed in the study is provided in Appendix E.

Data were collected through a variety of means that varied over the course of the study. The data collection strategy included unstructured interviews, personal journals written by subjects, observations during interviews, and post-interview questions addressed via e-mail or telephone.

Data collected were analyzed on a continuum, using initial and focused coding to identify concept categories, category properties, and to recognize relationships among concepts. These relationships evolved into four theoretical assertions that emerged from the data over time. Since the specification of subject sample size at the beginning of grounded theory research was not appropriate methodologically (Charmaz, 2006; Corbin & Strauss, 2008; Glaser & Strauss, 1967), data collection and analysis continued until theoretical saturation was achieved - meaning no new categories and relationships among them were discovered.

In psychology, interviews and journaling were indicated as an effective means for attaining self-reported feeling states and for identifying emotion. Therefore, interviews facilitated a natural flow of conversation about subjects’ decisions, thoughts, and feelings from experiences with the wiki. Journals were designed to capture thoughts and feelings as they were actually happening.

**Journals**

Journals were provided to each subject as a means to document thoughts and feelings about the wiki. The researcher explained to subjects that interviews were useful for
measuring feeling states retrospectively, but that journal data was important to better understand emotions as they were actually occurring. For a two-week period, subjects were asked to write in their journals as they were feeling and thinking about the wiki. Journals were returned to the researcher via U.S. Mail identifying subjects only by their study identification numbers.

Interviews

This research followed Charmaz’s (2006) recommendations for developing an interview guide that included exploratory questions. Questions developed were thought to “foster participant reflection,” explore the topic in a manner that corresponds with the participant’s experience, and “be sufficiently general to cover a wide range of experiences and narrow enough to elicit and elaborate the participant’s specific experience” (p. 29). The interview guide included a list of questions relevant to the research problem. In the process of drafting questions, the researcher focused on framing open-ended questions that might stimulate subject’s feelings about wikis and their interplay with organizational influences.

Allowing the interviews to flow naturally, a basic tenet of grounded theory was the researcher’s goal throughout data collection. The interview guide served exactly that purpose, a guide or boundary that reminded the researcher of the research goal. Every interview began with the following, “Please tell me about your experience with the wiki [Excellupedia]?” Following that opening question, the interviews flowed naturally based on each participant’s story. No two interviews flowed in exactly the same path. Many of
the following questions also were asked depending on the flow and substance of each interview:

- In what ways have you interacted with the wiki?
- Why [do you] [or don’t you] participate?
- What do you think motivates your wiki behavior?
- Do you feel there are aspects of working for a company that affect your behavior?
- Have your thoughts or feelings changed about wikis since you first learned about them? In what ways?
- Is there something I missed that you would like to share with me about wikis, organizational influences, motivation, and/or behavior?

Following each interview, subjects were provided a personal wiki journal. Each subject’s name, age, gender, job title, role, department, work location, and wiki participation behaviors (metadata) were recorded in Nvivo 8. A unique identifier was assigned to each employee to protect his or her privacy in the data. Participation in the study was voluntary and employee information provided was kept confidential.

At the beginning of the study, initial interviews were anticipated to last approximately one-hour. Actual interviews, not including introductions and IRB review, ranged in duration from 12 to 43 minutes, averaging 27 minutes in recorded duration\(^3\), totaling 75,188 words. Follow-up interviews required less time, but were infrequently needed. Interviews were recorded and field notes taken of observations during interviews, within 24 hours of occurrence. Recorded interviews were transcribed, coded, and analyzed using

\(^3\) Actual interview times calculated exclude time taken for study introduction, rapport building, and attainment of IRB Consent Letter signatures.
Nvivo 8. Collection and comparative analysis of interview and journal data transpired over a six-month period, while attending to theoretical sensitivity. Data collection terminated when theoretical saturation was realized. Analysis of interview and journal data resulted in 543 categorized codes, 82 non-categorized codes, and 36 memos.

Each interview session began with a review of the IRB Consent Letter and a brief overview of the study. The researcher engaged subjects gradually and respectfully to create a comfortable information-sharing environment. Each interview followed questioning described in the interview guide. Interactions flowed naturally based upon responses to questions. Considering each subject’s wiki experience, ideas and circumstances surfaced that led to new, more specific questions.

During interviews, the researcher avoided the natural tendency to interrogate, and focused on an exploration of each subject’s experience. The researcher periodically asked subjects about their thoughts and feelings when deemed relevant to the research. The researcher paid close attention to facial expressions, vocal tone, and other non-verbal cues when it was believed a feeling was being recollected. The researcher concentrated on active listening to develop rapport, trust, and become involved in each subject’s story. The researcher depended on the recording of each interview and took infrequent notes during interviews to engage fully in a dialogue and formulate appropriate questions relating to the research topic. The researcher concentrated on subjects’ stories as they unfolded while formulating open-ended and non-leading questions as interviews progressed. Refer to Appendix E for a summary of subject characteristics.
Coding

When coding began, the researcher consciously disengaged from the literature, averting any temptation to make assumptions, interpretations, or entertain theoretical notions that might interfere with open, unbiased thinking. Initial coding followed Charmaz’ (2006) direction by naming words, lines, or segments of text. Not all lines were coded, however, as some dialog was considered off-track, i.e., not germane to the research questions. Initial codes contained one or many subject responses, and some subject responses appeared in several initial codes.

Initial codes were reviewed and refined on a daily basis. Initial codes grew voluminously. Frequent review of the data yielded a deeper connection to, and understanding of, the data to optimize thematic emergence and insights for theoretical sampling. When the initial code count reached 128, it became more difficult to sift through initial codes while analyzing transcript and journal data. The creation of theme titles, that is, organizing by families of data, aided the researcher in relating text to existing codes and recognizing when new codes were needed. Theme titles were developed ontologically to group initial codes that were related in some way. Assignment of theme titles constituted basic labels, such as negative affect, feelings of ownership, and collaboration, with little or no interpretation.

Through constant comparative analysis of initial codes and focused codes, themes emerged almost in parallel. Early in the analysis, focused codes were considered tentative categories. Focused codes were not considered fully formed categories; rather, the result of attaching meaningful labels to actions, not in-depth analysis of that meaning. Initial
code names sometimes changed as more experience was gained in grounded theory and in interpreting the data.

As the analysis and memo writing progressed, tentative categories merged into conceptual categories (elements in theory). This process of theoretical integration constituted analysis of meaning in, and between initial, focused codes, and categories. The coding process naturally followed the pattern of Charmaz’ (2006) recommended coding progression.

Memo writing proved to be imperative to thinking through the analysis and development of theoretical elements. For example, writing the memo, *Feelings of Ownership* (refer to Appendix C), resulted in an early theoretical framework (refer to Figure 5).

*Development of Grounded Theory*

The emergence of grounded theory resulted from the decomposition of interview data into discrete codes followed by reconstruction of salient codes into fully described theoretical concepts, and relationships among them. Theoretical concepts emerged from coding, theoretical sampling, memo writing, and continuous comparative analysis yielding fully developed concept details, such as sub-categories, conditions, and outcomes of relationships among categories.

In summary, grounded theory has historically been useful, and continues to grow in information systems research. Various approaches to grounded theory have been applied in information systems research from Glaserian to Straussian, and combinations therein. Kathy Charmaz’ constructivist grounded was described and used as a model for
interpretive and substantive theory development in the research. Nvivo 8 was a tool used to assist in managing and analyzing subject data, and developing theory.

Excellus BlueCross and BlueShield was the company selected for the study where subject data was collected over a six-month period. The study included review of extant written materials, and data collected from subject interviews and personal journals. Data collection and grounded theory coding was conducted until theoretical saturation was achieved. Theory was developed through continuous comparative analysis.
Chapter 4

Results

Introduction to Findings

The findings resulted from application of the grounded theory methodology described in Chapter 3. The theoretical concepts emergent from interpretive data analysis are summarized in the Wiki Behavior Concept Matrix (WBC) (refer to Appendix G). Terms, including in vivo codes, essential in reporting the results are defined in Appendix F. The WBC matrix, organized by type of wiki participation, enabled the researcher to draw conclusions among contextual influences, motivation, behavioral goals, and emotion.

Four theoretical assertions were discovered in the data that explain wiki participation behavior in a corporation. Definitions of motivation (refer to Chapter 2, Self-Determination Theory, Theory of 16 Basic Desires, and Prosocial Behavior: Altruism and Egoism) were applied to distinguish types of motivation and explain their relationship to participation and non-participation wiki behavior. The four assertions that follow move toward the coalescence of corporate wiki engagement theories.

Grounded Theory Assertions

The following assertions emerged in the analysis:

Assertion A: When required as a work responsibility, employees participate in a wiki.
**Assertion B:** In an egalitarian culture with grassroots influences, employees participate in a wiki when they perceive value, are not concerned about inappropriate wiki behavior, and experience positive affect.

**Assertion C:** Employees initially experiencing negative emotion participate in a wiki when managers share a positive attitude [about the wiki], and are given time to participate; emotions shift from negative to positive (mixed affect).

**Assertion D:** In a traditional culture, where content is thought to be owned by authors (content ownership effect), employees experience negative affect and do not collaborate in a wiki.

Assertion details, along with the motivational analysis of participation, are detailed in the following sections.

**Findings: Assertions and Concept Details**

Each assertion was developed from prevalent concepts that were related in the data and common to a group of subject’s wiki behavior. Each assertion corresponds to wiki participation or non-collaborative wiki behaviors. Assertions are restated, and concepts associated with each assertion are detailed in the following sections.

**Assertion A and Concept Detail**

The following assertion emerged in the analysis:

**Assertion A:** When required as a work responsibility, employees participate in a wiki.
Employment responsibilities and required use of the wiki were prevalent concepts emergent in the data that pertain to a group of subjects described below, who participated in the wiki. The corresponding concept analysis is detailed in Appendix G, Participation: Added New Content (regardless of lurking or collaborative behavior).

Analysis of the data revealed eight subjects who were required, or expected to use the wiki. Each possessed a unique role (refer to Appendix F) working in business, IT, or liaison (business/IT) departments at one of six different office locations. Two subjects held manager roles, one held a lead role, and five held individual contributor roles. Six subjects were female and two male, ranging in age from 26-53.

Employees participated in the wiki 100% when positioned as a requirement or expectation by managers, projects, or teams. Employees read, added content, and/or collaborated when their manager required or expected participation, when project teams used the wiki for managing projects, or when work teams used the wiki for information sharing or content development. Formal rewards or recognition, beyond typical employment agreements, were not offered as incentives for participation. For some employees, individual performance measures were associated with wiki participation.

Participation requirements varied from mandates, to measures against performance objectives. Subjects in this group reported that

- “Using the wiki was a requirement for working on the project.”
- “The group was required to write [and post to the wiki] quarterly white papers.”
- “Reporting on the wiki was part of the job.”
- “It was accepted, expected [to contribute to the wiki].”
• “We were told you had to use it.”

Two avid wiki users were not initially required to use the wiki but participation evolved into a performance objective over time. According to one:

Initially, it wasn’t any kind of order, wasn’t mandated in any way shape or form, but interestingly enough as wiki gained in popularity it eventually became tied to work performance. At one point, management would say we’re expecting you to be spending 5% of your week updating and providing content to the wiki.

Employees required to use the wiki reported a mix of positive and negative emotions. In the beginning, subjects described feeling “excited,” “afraid of the technology,” “frustrated because [the wiki] impacted an already overloaded work schedule,” “uncomfortable [about the technology and openness],” “optimistic,” “nervous that anyone can change content,” “apprehension due to the culture,” ambivalence—“it’s just another tool.” Over time, some emotions changed from negative to positive, and positive to negative.

Two subjects (one manager, one individual contributor) overcame their initial fear of the technology: One claimed, “The wiki became easy-to-use and took much less time than initially anticipated.” The other stated, “Now the resistance is gone. I feel more comfortable, or relaxed, about the wiki [technology].” Another individual contributor, initially skeptical, became a wiki advocate remarking, “In the beginning I was skeptical to neutral. Now, I like it! I think there’s a lot of value. I wish I had more time. Now….frustrated that other people don’t use it.”

Others reported feeling less positive as the wiki grew in presence. One manager described feeling, “Optimistic about it [the wiki] initially, excited. Now, I am
disappointed and a little frustrated.” This subject “did not like being told what to do,” claiming:

Trying to force everybody else to do it [use the wiki] isn’t going to work. I certainly don’t speak for everyone, it’s never gonna work on me though. The more you tell me I have to do it, the less likely I will.

**Assertion A Conclusion**

Expectations, controls, and monitors associated with employment were purely extrinsic motivators that prompted participation behavior for subjects associated with Assertion A. Rewards and recognition, beyond typical employment expectations, were not offered nor were they anticipated or expected by wiki participants. When tied to performance, employees contributed to reflect positively on individual performance reviews, or to avoid possible negative consequences. Employees participated by reading, writing, with little to no collaboration when interacting with the wiki was a requirement. Requirements to participate in the wiki damaged long-term motivation to participate, for some.

**Assertion B and Concept Detail**

The following assertion emerged in the analysis:

**Assertion B**: In an egalitarian culture with grassroots influences, employees participate in a wiki when they perceive value, are not concerned about inappropriate wiki behavior (corporate conscience), and experience positive affect [about the wiki].
Egalitarian culture, grassroots influences, perceived value [benefit to individuals, teams, customer, and the organization], corporate conscience, and positive affect [feelings about the wiki] were prevalent concepts emergent in the data that pertain to a group of subjects described below, who participated in the wiki. The corresponding concept analysis for Assertion B is detailed in Appendix G, Participation: Added New Content (regardless of lurking or collaborative behavior), and Collaborative Participation: Lurked, Added Content, Engaged in Discussions, and Changed Content.

Analysis of the data revealed 11 subjects in this group consisting of three females and eight males, ranging in age from 26 – 53. Subjects worked in one of eight different departments in business, IT, or liaison departments. Six subjects were individual contributors, two were leads, and three were managers. Three subjects in this group were, at some point, required to use the wiki for a specific task but actively participated in the wiki on their own volition before and after the requirement. Two subjects became self-appointed wiki gardeners (refer to Appendix F).

Employees associated with Assertion B were not required to use the wiki. The majority of subjects in this group considered they were “early adopters of technology,” “someone who likes to learn something new,” “creative,” or “innovative.” Many of these subjects used the wiki more extensively than others by changing content and/or collaborating through discussions in wiki pages. Subjects who were lurkers only were not considered in this assertion since they did not contribute. A detailed description of each concept associated with Assertion B is provided in the following sections.

Assertion B Concept: Egalitarian Culture
The wiki was implemented as an egalitarian platform, with intention. Wiki leaders and ambassadors (refer to Appendix F) cultivated an open participative culture by encouraging employees to read, add, change content, and engage in discussions, inviting all employees to participate without authorizations or approvals, assuring that wiki content was not secured for any groups or topics; all content was available to all employees.

The egalitarian cultural movement began with wiki leaders who consciously launched the wiki without the usual project controls and authorizations necessary for other corporate initiatives. The wiki was not managed as a corporate project. The wiki’s genesis was swift with intention by wiki leaders, “violating a bunch of Enterprise Architecture principles,” breaking “a few rules to get it started,” and bypassing corporate formalisms. According to one wiki champion,

If we went through the formal process people would have wanted, I mean, how’s material getting approved? Who’s authorizing? It would have been totally counter to a wiki, and by the way I still run into that today. I caught a lot of grief from people [about implementing the wiki informally]. I tend to be a person that if I think the rules should be broken I break it, and don’t worry about it. It was the right thing to do.

The wiki was described by subjects as a tool that provided an “easy-to-use” means to “solve business problems” with the promise of reduced bureaucracy, anticipation of improved work practices, and collaborative knowledge creation. Policies, processes, and procedures were not put in place to control content development. As expressed to employees from one wiki champion, “We’re going to let you put content out and not have
to go through process, and not have to wait four weeks [referring to the Intranet] to have something you created put out there, available for distribution to your co-workers.”

Formal approvals and long cycle times endured to publish to the corporate Intranet were in stark contrast with publishing instantly to the wiki. One manager described the cumbersome nature of the publishing to the Intranet:

My optimism [about the wiki] was centered around…it’s not an easy process to get information on our Intranet page. You have to go into this disgusting database and put in a service request. And there’s somebody who is sorting all the service requests, and if you’re important enough to make it, or not...then you have to name drop and call five people to get your service request up to the top of the list.

Despite criticisms from upper management, corporate security, and anti-wikites, wiki leaders held steadfast to their egalitarian plan of action with the promise of added corporate value:

I caught a lot of grief from people as it started to catch on because we hadn’t gone through a more formal process. It’s funny, because one VP fought me a lot on it. He’s now the CIO and he went to something a year ago at Gartner where they talked about wikis, and they said these things have to start in an informal way, otherwise they never work. If you try to put all the governance in place that you’re really violating the principles of the wiki and it just doesn’t work. ‘Ya know [CIO], you guys were right’!

Wiki leaders continuously defended and preserved the open presence of the wiki. One wiki leader in a senior management role stated:

Data security, if they had the choice they’d turn it into team rooms and lock it down. I recently had a battle with them over this, cause there are things that just, they don’t
like the fact that it’s such a free content source. I’m trying to make them realize if you turn it into another team room or shared drive, then we just have another team room and shared drive. This is meant to be something those things aren’t. I get frustrated when I see people trying to turn it into something else. If we do find inappropriate use, deal with that person to help them understand what they did wrong as opposed to eliminate the bulletin board.

Another wiki leader, and individual contributor with wiki experience and knowledge, reinforced an open community according to one subject:

So when people came to the table and said ‘I’d like to lock down some content that only my group can look at’. That’s when [wiki leader] was extremely vocal and would say ‘That’s great but not the spirit with which this type of media lends themselves toward. It’s more of an open community. If you have a need to maintain some documentation that is restricted and private, you should probably find another tool to do that.’

The corporate wiki in the study evolved from an egalitarian culture and grassroots beginnings. The wiki was launched and maintained as an open information resource available to all employees with no formal governance. Wiki leaders strategically implemented the wiki informally and promoted an egalitarian culture to facilitate open wiki participation. The wiki implementation was noted as a major culture change for employees. According to one information technology manager, “There was a lot of diligence on the part of [the wiki leaders] to roll something out like this, because it was a culture change, a major culture change for people.”
Assertion B Concept: Grassroots Influence

A tactical approach commandeered by wiki leaders and ambassadors (refer to Appendix F) influenced wiki participation among employees. The participation strategy set forth by these wiki advocates was to invite participation, publish content pages as examples of usage, pique curiosity through openness, communicate the benefits, share ideas about how the wiki could be utilized, show employees how to use the wiki, and promulgate usage organically (gradually, not through corporate bureaucracy). The presence of the wiki was described as a grassroots effort by many subjects. The message stated by one leader in a business department, “It was a word-of-mouth, grassroots kind of effort,” was echoed by many subjects in the data.

Leaders and ambassadors influenced others through a variety of means. They planted ideas regarding wiki usage in hopes of cultivating an organic growth in wiki activity. Employees were invited to participate in the wiki through e-mail and word-of-mouth invitations, informal conversations about how the wiki was being used, and discussions (informally or in meetings) about how it could be used. As wiki exposure grew, word spread through references to published material [on the wiki], a user group, corporate-level training, and talk among employees.

Wiki leaders and ambassadors targeted individuals “thought to be creative and open to new technology,” according to one ambassador. As part of their strategy, wiki leaders and ambassadors provided ad-hoc demonstrations when asked about the wiki, developed wiki templates for targeted content, shared accounts of corporate wiki successes, and for some employees, discussed how they worked and offered the wiki as a solution to their information-related problems. These wiki advocates extended expressions of “hope that
people would expand collective corporate knowledge.” Wiki users reported that wiki leaders and ambassadors “persuaded them to try the wiki.”

Word about the wiki appeared to spread on its own. Participants reported:

- “That it was just a tool out there I happened to hear about.”
- “It has permeated itself throughout the organization.”
- “As different areas saw how it could advantage them, once that was understood, it just kind of grew.”

Other wiki participants reported they heard “something” about the wiki prompting them to want to learn more. One avid wiki user from the business stated, “I can’t recall any corporate push or official corporate communication, there may have been I just might not recall it.”

Self-appointed wiki ambassadors and super-users (refer to Appendix F) emerged over time who offered guidance, informal training, and support to anyone asking for it. Curious employees contacted these disciples to learn more about the wiki for help in getting started, or asking specific operational questions. Basic wiki training was eventually offered by the training department illustrating a beginning step for enterprise-level support. Several subjects in the study, both users and non-users, reported that they were unaware of formal wiki training or a user group within the company illustrating the informal nature of the wiki. A wiki user group was also formed to discuss issues, share information, learn new things, and bring awareness to the wiki.

Wiki ambassadors who worked in the Enterprise Architecture (EA) group had experience with wikis outside the corporation or heartily embraced the value that the wiki could bring to the company. Ambassadors, like wiki leaders, did not prompt wiki
participation through the promise of rewards and recognition. The grassroots approach was thought to be effective by leaders, ambassadors, and other subjects given the exponential growth of wiki pages, number of users, and breadth of usage. Subjects associated with Assertion B were not required to participate in the wiki and were prompted to interact with the wiki through informal, grassroots queues.

Assertion B Concept: Perceived Value

Value was a concept discussed by both wiki participants and non-participants. The term “value” was stated 57 times in transcripts by nearly all subjects, to explain their reasoning about wiki participation decisions. Those who did not perceive any benefit for themselves or the company (value) did not participate. Those who acknowledged perceived benefit, for themselves or the company, chose to participate in the wiki. According to one wiki leader, “When shown what it [the wiki] could be used for, how it could advantage them, they [employees] ran with it.”

No one reported not using the wiki when they perceived value in wiki participation, however, a few reported participating because they were required to, not necessarily because they recognized the value. The notion of “value” appeared to be woven into the fabric of emotion, that is, those expressing positive affect also recognized the purpose and benefit of the wiki. Conversely, those expressing negative affect did not perceive the potential value.

The following benefits described “value” as discussed by subjects associated with Assertion B. Collaborative editing was viewed as “highly valuable” to the company by one manager. This manager further explained the wiki had the “the potential to leverage
knowledge of hundreds, or thousands of people in the company.” For many subjects, the wiki saved time and effort with the ability to “publish easily, and instantly.” The wiki was viewed by participants as a useful documentation, communication, and information sharing tool that supported colleagues and customers. According to one manager concerned about recent layoffs, the wiki serves as a “corporate memory” especially important when employees leave an organization, or the company.

Conversely, subjects not participating in the wiki reported they did not perceive value (or benefit) from the corporate wiki. As stated by three anti-wikites (refer to Appendix F), “I didn’t understand the purpose [of the wiki]. Truthfully, if they put a value on it, I’m there.” “How’s this gonna help me?” “I don’t see the value in it.” One anti-wikite expressed frustration that the company expended resources on the wiki.

According to wiki leaders, the value of the wiki would become evident over time as more employees added content and collaborated on the wiki. The wiki was not launched with a project-related cost and benefit analysis, nor did subjects in the study discuss weighing costs and benefits in their personal decisions to participate. One wiki leader was described by subjects as a patient and creative visionary who shared that it would take “a year or two” for value to be recognized.” One individual contributor shared his thoughts about value:

The longest I’m going to wait is a week and I wanna see results. [Wiki leader] would say, ‘Ya know what, if we start doing this like this, three years from now, the company is gonna find a lot of value.’ I’m like geez, this is great, I understand but I can’t wait till then. And before you know it, two years has gone by and ya know what, he was
right! With his approach and his diligence and his persistence, we got to where he said we might be able to get to.

Wiki leaders and ambassadors reported feeling that the value of the wiki did increase from the time it was extended to all of IT and to business departments in 2007, to August 2010. The wiki was used to develop and publish strategies, operational standards, processes, procedures, best practices, team and project documents; to manage corporate forms, information system requirements and specifications; to share organization charts, system models, and inventories; and as a forum for corporate questions and answers.

Non-participants, not necessarily versed in wiki as a collaborative technology, did not see any benefit for themselves or the company and shared negative attitudes about the wiki to others. According to one subject, “A few naysayers can spread negativity pretty quickly. The wiki was rumored to be a “Wikipedia-like dumping ground,” an unreliable repository of information created freely by anyone. “It’s on the wiki,” developed a negative connotation that was propagated by anti-wikites (refer to Appendix F).

According to one individual contributor using the wiki for three years:

There’s a common thread that I’ve heard lately which says, ‘Oh it’s on the wiki’. So the answer to everything ‘it’s on the wiki, of course’ and what they mean is that the thing is such a disorganized mess you’d never find it anyway.

Subjects not perceiving value in the wiki reported feeling resistant, frustrated that the wiki existed, frustrated they could not find information, and frustrated the wiki was not rolled out as a formal corporate initiative with formal governance. Those not valuing the wiki reported that they “would have participated if their manager had placed a value on it [wiki participation].” A few participants, initially unclear about perceived value, did
participate when encouraged by their manager, especially when given a potential purpose. Subjects associated with Assertion B participated in the wiki when they perceived benefit to individuals, teams, customers, or the organization.

Assertion B Concept: Corporate Conscience

Business operations revolved around highly sensitive business and health information, creating an information protection mindset. Protected health information (PHI) and proprietary information assets were considered confidential and protected by public health regulations, e.g., Health Insurance Portability and Accountability Act (HIPAA), and corporate dictum. The corporate philosophy was one of risk avoidance, requiring employees to attend annual information privacy training. A trainer’s axiom echoed, “If you question, even for a moment, whether information should be shared or not, don’t do it! Err on the side of privacy!” While the wiki did not contain any specific member (customers of health insurance plans) information, there was still a looming cloud of concern that strongly influenced decisions to participate. The threat of confidentiality breaches resulted in a corporate norm of privacy protection that eclipsed general information sharing on the wiki for some, and not others.

Wiki openness juxtaposed with privacy protection rules created anxiety, prompting non-participatory decisions by some employees. While PHI or competitive advantage breaches never came to question [on the wiki], it was viewed as unprotected, unsecured, and an information privacy risk. The privacy protection norm prompted feelings of anxiety, fear, and nervousness that resonated among stories shared by non-participants, security department personnel, and some project team members required to contribute.
Those who participated recognized the sensitivity of health and competitive business information and were not concerned about inappropriate content development. These contributors described a corporate conscience that credited each employee’s ability to discern right from wrong when posting to the wiki. Participants were not worried about maliciousness knowing that the wiki maintained a complete history of activity and that one could otherwise suffer negative consequences. According to one individual contributor from the business, “I don’t worry about whether or not I’m doing the right thing on the wiki cause I know my name is attached to everything.” From an IT individual contributor:

A lot of people were concerned about leaking information and most of the, 99.9% of the documents we think we have to secure, don’t. How we configure our VPN’s and our firewalls, and intrusion detection. Ok, we’re not gonna put that just sitting out there.

Wiki leaders described the wiki as a giant corporate bulletin board, and felt risk averse to member, employee, and corporate information inappropriateness:

And I do realize that not all content should be out there. There are certain things that shouldn’t be out there for general consumption. But that’s no different than a bulletin board in the cafeteria. If I post my employee’s salaries on it, I’ve done something wrong.

Subjects associated with Assertion B participated in the wiki and were not concerned about confidentiality breaches of customer or company data, and/or inappropriate content development by themselves, or other employees. Collectively, these subjects shared a mutual belief that employees knew the difference between appropriate and inappropriate
information dissemination within the company (corporate conscience) that would be 
further trusted with wiki participation. Those who were concerned about confidentiality 
breaches in the wiki expressed emotional anxiety, fear, and nervousness about violation 
of privacy protection norms.

Assertion B Concept: Positive Affect

Subjects associated with Assertion B described positive affect when asked about their 
feelings. “I felt liberated with the freedom to share useful information (quickly) to the 
entire company,” “excited,” “surprised [pleasantly],” “enthusiastic about openness,” 
“joy,” “happy,” and “enthusiastic that that the company was using a 21st century 
technology within the corporate firewall.” “I thought it was a good idea. Excited to learn 
something new”! Three subjects felt the wiki brought enjoyment to their workday stating 
that “it was fun”! The researcher could sense enthusiasm and excitement in vocal tone, 
facial expressions, and eagerness to share during interviews.

Assertion B Conclusion

Subjects not required to use the wiki associated with Assertion B, participated in an 
egalitarian-oriented culture, prompted by grassroots efforts, perceived personal and/or 
corporate benefit, and were not concerned about inappropriate content development. 
These subjects experienced positive affect with respect to their wiki participation 
behaviors. Subjects in this group did not anticipate rewards, recognition, or punishment 
for their wiki participation behaviors. Subjects associated with Assertion B were 
motivated to participate to reduce personal stress, take pride in their work, improve
information quality and accessibility, improve search capabilities, reduce frustration of others, collaborate more effectively, and to create new knowledge.

Assertion C and Concept Detail

The following assertion emerged in the analysis:

**Assertion C:** Employees initially experiencing negative emotion *participate* in a wiki when managers share a positive attitude [about the wiki], and are given time to participate; emotions shift from negative to positive (mixed affect).

*Positive manager attitude, time autonomy, and mixed affect* were prevalent concepts emergent in the data that pertain to a group of subjects described below who participated in the wiki, and factors for some who chose not participate. The corresponding analysis for Assertion C is detailed in Appendix G, Participation: Added New Content (regardless of lurking or collaborative behavior) for those who participated, and Non-Participation: Did Not Lurk, Did Not Add Content, and Did Not Change Content for those who did not participate.

Analysis of the data revealed two groups substantiating wiki behavior described in Assertion C. One group, consisting of one female and two male subjects between the ages of 42 and 44, participated when their manager encouraged use of the wiki, were given time, and experienced a shift in feelings from negative to positive. In the second group, consisting of three females and one male between the ages of 40 and 55, would have participated if their manager encouraged its use and if time was available. The importance of management encouragement and time was also described by other subjects who participated.
Manager attitude, time autonomy, and emotion affected wiki behavior. Subjects not required to use the wiki (who were initially apprehensive and experienced negative feelings) participated when managers encouraged its’ use and allowed time for exploration [of the wiki] and participation. The gift of time amid work demands, positive manager attitude, and mixed affect [about the wiki] energized participation behaviors. Conversely, subjects with limited time autonomy, no manager endorsement, and who experienced negative affect, did not participate. A detailed description of each concept associated with Assertion C is provided in the following sections.

Assertion C Concept: Positive Management Attitude

Management attitude toward the wiki was evidenced as a factor affecting employees’ intent to participate. Two behavioral patterns emerged from management’s attitude toward the wiki: 1) when managers openly shared a positive attitude about the wiki, subjects were more likely to participate, 2) when managers were ambivalent, negative, or expressed no attitude about the wiki subjects were less likely to participate.

Participation behavior was reported by subjects associated with Assertion C when managers encouraged wiki content development, and promoted its use with employees. This was evident in several situations. In one situation, a manager did not contribute himself, but encouraged his employees to use the wiki. According to his subordinate, “He tells us when you put something out there, people are looking at it. So he thinks it’s great! He is encouraging. He is not a user himself.” In another situation, a manager empowered her employee to evaluate the wiki recognizing extra time would be needed to explore:
She saw the value in the fact that you can do so much with it. Getting any information on the Intranet was very time consuming, arduous. It was, ok, we’re going to empower you now. She really gave me the ball and said, ‘Learn what you can about this, see where it fits, see what we can use it for.’ My initial approach was, uh, what is this? And I think after I built my first page I totally bought into it.

In another situation, a manager who actively participated on the wiki, encouraged his employees to participate, but did not require it. “I’ve encouraged, taken in-focus projectors to meetings, made changes in wiki in real time with the team to get them to see how easy it is.” This manager was not oppressive about participation, acknowledging heavy subordinate workloads, “I could make them [participate] but I don’t think it’s the right thing to do.” His employee, not considered by himself to be an early adopter of technology, reported that “[my manager] suggested it might be a good way to support updating, doing/preparing a nice audit trail, and also to support something that could be shared across departments in our organization.” Over a two-year period, all seven employees eventually contributed to the wiki.

Initially during data collection, it was difficult to find employees willing to share their thoughts and feelings about why they did not participate. Even when invited, 10 employees, known not to participate, would not agree to an interview. It is not known why these employees were resistant as they did not consent to an interview. Eventually, four non-participating employees, two managers, one individual contributor, and one lead, were willing to share their thoughts and feelings openly. A major theme emerged among non-participants – a belief that management was not in support of the wiki.
If they [my management] came to me and said, ‘this is something we should use’, put a value on it, and...I’m there. I fail to see the value. The divisions I’ve worked in so far, don’t promote it. I have web development experience, and pretty savvy with that sort of thing. I think it’s just, the whole, no one has ever taken the time to say ‘Hey, this is how you do a wiki page, this is the value in it, and this is what it brings to our organization.’ If this step was taken corporately, I think I would use it.

In these cases, employees were not motivated to learn more on their own, did not see value, and claimed there was “no time.”

The significance of a manager’s influence was illustrated in one department whose management exhibited ambivalence and did not talk about the wiki with employees; yet one enthusiastic subordinate openly participated and advocated the wiki. In this case, the lone wiki steward was an overt wiki user, exhibiting a joyful and empowered attitude toward the wiki. This individual contributor exhibited wiki enthusiasm, provided demonstrations, talked openly about its ease of use, encouraged others, and offered guidance and support, individually and at team meetings. This individual contributor worked a busy schedule and was comfortable with general computing, though not a programmer. Despite this employee’s efforts, increased participation was negligible. This employee was frustrated, and confused by the lack of participation among peers and managers.

But there’s push back, even with management, FRUSTRATING, very frustrating. No you guys don’t understand, if you just take a little time in your day, try it out. Let’s put a small piece, try it. See how easy it is to use, easy to track and monitor, and it’s gonna free you up to do other things.
It followed that an enthusiastic wiki disciple who was an individual contributor (non-manager) did not provide the motivation necessary to increase participation among her co-workers.

As illustrated in these examples, management attitude played an important role in decisions to participate. When subjects were initially apprehensive they experienced negative feelings; management’s endorsement of the resulted in participation behavior. Subjects who chose not to participate suggested they would have if their manager had endorsed it. In another example, a non-manager overtly endorsing and supporting the wiki was not able to increase participation decisions.

Assertion C Concept: Time Autonomy

Time autonomy, while not an intuitive influence, emerged as a concept that affected wiki behaviors. Time, an external event that existed outside the workers’ sphere of control, appeared to energize wiki behavior, when available, amid routine demands of the job, internal and external constraints, and unanticipated events during a workday. The passage and availability of time stimulated employees to think about and make choices about how, when, and where they would apply discretionary effort. The dispersion of time, in conjunction with a desire (interest) to interact with the wiki, affected worker decisions to participate, or not. Time was expressed as a precious commodity with respect to intent to participate, given the informal nature of the wiki, that is, not a formally supported corporate tool or initiative.

The wiki domain in the study was described as lean, reflective of a weak global economy that attempted to do more-with-less. The major recession, which occurred in the
midst of the wiki introduction and expansion led to employment layoffs and early retirement incentives where the same amount of work was distributed among fewer people. One subject’s thoughts about how his feelings [about the wiki] changed over time:

I would say, the only change in feeling is honestly, has been a little bit of frustration. Just in that it hasn’t been embraced nearly as much as I think I initially thought it was going to. But I think to some extent that’s been related to outside issues in economic downturn leading to eventual job layoffs which led to the rest of us with essentially the amount of work that previously was set up for far more people.

Outsourcing of IT positions resulted in fewer employees working internally on projects. Layoffs, retirement, and outsourcing of IT personnel using and endorsing the wiki triggered a drop in wiki participation. At the end of 2008, there was “an early retirement for folks 55 years old and such.” Another Human Resources manager and wiki participant commented:

We outsourced a lot of our IT work, so we brought other vendors instead of own IT staff to do our configuration. They do it offshore and other places. So the number of IT people in the program, probably feel like an endangered species, I think. So, there are not enough of them, to influence the behavior of the rest of us. The number of resources working in the program has gone up, but the number of people that were wiki disciples, hasn’t.

Another subject commented that “time spent on the wiki was not considered a reportable accomplishment when resources were low” negatively impacting wiki participation.
When asked about organizational influences and wiki participation, subjects described feeling extremely busy, “overly taxed with day-to-day demands,” having to “deal with conflicting priorities,” “overloaded and overwhelmed” with work, “too busy to absorb anything new” or to “locate their password for wiki access.” Employees interested in the wiki expressed the need for time to play, time to learn the wiki, i.e. how to access, read, format pages, add content, assign tags, search for content, and generally maneuver the wiki. “There was no time to play, to learn the wiki.” When work demands were relaxed either by ebb of work flow or addition of resources, employees interested in the wiki were excited to read, garden, or add content given the gift of time.

On other occasions, managers specifically asked employees to investigate, contribute, or support the wiki where time was given to employees in exchange for their wiki effort. The gift of wiki time in these cases was casually appropriated, that is, not attributed to a budget or project. Employees asked by managers to explore the wiki complied and became wiki ambassadors or super-users.

Others felt they did not have time to learn or participate in the wiki. Employees complaining of extreme time constraints who did not participate also expressed negative feelings about the wiki such as irritation, anger, and frustration. These employees were comfortable with a suite of automated office computing tools and reported full schedules with production and/or management responsibilities, state and federal time-driven deadlines, information overload and redundancies, and the need to report true accomplishments. Employees lacking time flexibility, who expressed negative affect [about the wiki], did not participate.
For subjects associated with Assertion C, time was considered a commodity such that when available, it prompted participation behaviors for those with positive feelings about the wiki. Those with limited time autonomy accompanied by negative feelings [about the wiki] did not participate. It was unknown if time given to this group of non-participants, would result in wiki participation.

Assertion C Concept: Mixed Affect

Subjects who participated when given management encouragement and time experienced mixed emotions, over time. Initially these subjects described feeling “apprehensive,” “uncomfortable,” and “didn’t really buy into it.” After creating a page, these subjects recognized the value and simplicity of the technology. Their feelings [about the wiki] changed from negative to positive. Employees reported feeling “empowered,” “happy,” “excited,” “accomplished,” “comfortable,” and “good about providing information that was useful to someone else.”

Subjects who did not participate in the absence of manager encouragement and time experienced negative or ambivalent emotion. More than one subject reported feeling frustrated and angry, “I don’t have the time. I don’t have the energy for that.” One reported feeling “irritated that the wiki exists.” Another reported anxiety:

There was a lot of anxiety it [the wiki] elicits from you. Oh no, how am I gonna learn this? In a way it’s like [hesitation] don’t give me another thing to do. I think a lot of people in the corporation are hesitant to let their manager know they don’t know how to use the wiki or they don’t know what it’s for. Because it will either make them look
stupid, or I didn’t pay attention when I should have, or what’d I miss? You kind of shy away from acknowledging that to them.

One of these subjects was ambivalent about the wiki, “it’s just another tool. I didn’t have any motivation or driving factor [to add content].”

Feelings changed from negative to positive when subjects experienced the wiki. In the absence of a positive manager attitude and time, subjects did not participate and continued to experience negative feelings about the wiki.

**Assertion C Conclusion**

Subjects initially experiencing negative affect about the wiki participated when their manager exhibited a positive attitude [about the wiki] and allowed time for experimentation and participation. Other subjects experiencing negative affect did not participate in the absence of manager endorsement and time allowed for the wiki.

Subjects associated with Assertion C who did participate, were motivated to use the wiki to address information-related problems, learn more about what was happening in the organization, create corporate memory, and to interact out of curiosity and fun. Subjects associated with Assertion C who did not participate chose to avoid stress, spend their time satisfying other goals and work expectations, and to honor traditional norms.

**Assertion D and Concept Detail**

The following assertion emerged in the analysis:
**Assertion D:** In a traditional culture, where content is thought to be owned by authors (content ownership effect), employees experience anxiety and do not collaborate in a wiki.

*Traditional culture, content ownership effect, and anxiety* were prevalent concepts emergent in the data that pertain to a group of subjects described below, who did not collaborate in the wiki. The corresponding analysis is detailed in Appendix G, Non-Collaborative Participation: Did Not Engage in Discussions, Did Not Change Content, and Non-Participation: Did Not Lurk, Did Not Add Content, Did Not Change Content.

Assertion D resulted from accounts by those who did not modify content authored by others, and from those holding strong opinions about why others did not modify content. Analysis of the data revealed 12 subjects, seven female and five male ranging in age from 28 to 55, who did not modify content in the wiki directly. Other subjects who did modify content shared their thoughts about why others in the company were not comfortable modifying content created by others. Of those 12 subjects (who modified content), five were female and seven male; six collaborated content in the wiki (all male, four working in IT, two in liaison departments); two were self-proclaimed gardeners; four made minor edits, such as correcting spelling errors. Gardeners (refer to Appendix F) combed the wiki evaluating content currency and would “update other peoples stuff” to keep the wiki valued, corrected minor writing errors, and “put content into a better format to improve searches.”

The wiki was used in many business and information technology contexts for static information sharing, and collaborative content development in a few contexts. Wiki leaders and ambassadors informally encouraged corporate community members to author
or change content, read messages, follow arguments, and post responses to increase the presence, quality, and accessibility of corporate knowledge.

According to wiki champions, content subject to change was considered a corporate asset, that is, information about projects, operations, and strategy thought to be the property of the organization. Examples of corporate assets include meeting minutes, department inventories, customer service actions, development of processes, and corporate glossaries. Other types of content such as certified corporate policies, white (opinion) papers, and established wiki page titles, were not considered open to change.

A distinct pattern emerged indicating that collaborative changes to content were not made due to a sense of ownership, the emotion of anxiety, and traditional cultural norms. A detailed description of each concept associated with Assertion D is provided in the following sections.

Assertion D Concept: Content Ownership Effect

A strong sense of “ownership” was reflected in nearly every interview, negatively affecting collaborative content development. In the words of one participant, “someone else owns those words, I shouldn't touch them.” This spirit of ownership was reported by all subjects who were aware that modification of content was a characteristic of the wiki. The orientation of technology and document management further created a sense of ownership that permeated employee attitude. The terms “own” and “ownership” were used 57 and 15 times respectively, in interview data.

A theme emerged among those who recognized when modifications were needed but would not change content, according to one wiki leader, “I see some collaboration but
ownership [of content] overrides it.” The following quotes further illustrate the ownership effect that resonated in many subject interviews. One wiki gardener stated, “I think people feel a sense of ‘if I write something, I own it, and somebody else shouldn’t go and change it’.” One business and IT liaison participant, frustrated by the push back from employees regarding collaborative content development, stated “I think it’s mostly ownership, I really think it is, I think people don’t want people touching their stuff. Don’t mess with somebody else’s stuff.” “Because culturally here there are um, we have a culture of ownership, and this is my world, don’t dabble in my world.”

Subjects would rather collaborate through traditional communication channels than to change content directly. One wiki ambassador commented on his observations about modifying content in the wiki,

The majority of what I saw was relatively open discussion [about content discussed outside the wiki] maybe some e-mail discussion. I don’t know if there was any concern or nervousness in terms of using the comment function built into the wiki itself, or there’s, ya know, felt more comfortable with traditional ways of addressing those passions or conflicts whether face-to-face or e-mail revisions.

One younger wiki ambassador commented about his own apprehension to editing someone else’s work, “I was nervous because a wiki tends to be relatively informal and the corporate environment seems rigid and formal. So I too was nervous [about changing content created by someone else].” A business lead and wiki supporter commented, “They’re [employees] afraid of people having access to be able to change things.” One lead viewed the collaborative aspects of the wiki as a liability, “so we decided to use wiki knowing about limitations; the main one being that anyone can change a page.”
The orientation of technology and document asset management contributed to the content ownership effect shaping a barrier of resistance. Acclimation to hard copy documentation, shared folder systems, Microsoft Word, and mainframe computing were reported to promote a silo effect promulgating a culture of ownership. “Everything on paper,” e.g., binders stuffed with documentation located in specific departmental offices was a paradigm held fast by longer-term employees. Facilitating document management on shared drives created a natural cadence of possession, “you create it, you own it.” People became accustomed to updating their own silo of documents.

A difference in attitude was further acknowledged among those working in mainframe versus distributed computing environments. Employees working in mainframe computing fostered a client/server (mine/yours) mentality. Whereas employees working in UNIX and distributed environments gained experience with open source tools, collaboration techniques, and content sharing that facilitated an Enterprise 2.0 mindset. From his lifetime experiences in IT, one subject commented about his concern for the wiki to “grow legs and become a tool that folks depend on”:

When you have folks who have mainframe programming experience, have very different view of things than folks that come from UNIX and distributed computing environment, and what we tend to have here is more of the former. On the distributed, UNIX, there’s a lot more familiarity with open source tools, collaboration techniques and things like that. There’s been the ability, some of these social media’s, chatting, has been around for a while before mainstreamed around here. It was just apprehension, is our company ready for that?
Ownership of content was a theme that inhibited open content development in the wiki. For some, resistance to changing content authored by another user resulted from a belief that content should not be changed directly by non-authors. Discussing wiki pages through traditional communication methods was more comfortable for subjects associated with Assertion D than to change content directly.

**Assertion D Concept: Anxiety**

*Fear, anxiety, and nervousness* were terms used to describe feelings about changing wiki content originally created and posted by someone else. Some participants in this population used these expressions to describe their own feelings, while others shared the feelings reported to them by their co-workers. Those not engaging in content changes did not perceive the value that was worth the risk of personal consequences for others, and for themselves. Consequences included: risks to personal reputation, performance assessments, and relationships with peers and managers, along with risks to corporate information quality and appropriateness. In other cases, the consequences triggering anxiety could not be articulated.

Anxiety (Ohman, 2000) and the fear of interpersonal events (Arrindell, et al., 1991) aligned with the emotion of fear associated with changing content in this research. There were no reported stimuli causing the perception of negative consequences with respect to wiki content changes. In fact, the situational context was quite reversed. Employees associated with Assertion D were invited, and encouraged, to modify wiki content. The threat looming for these individuals aligned with the fear of interpersonal events associated with infringement of personal, social, and corporate norms. It was the
interpretation of this researcher that allegiance to established norms and the threat of interpersonal events caused wiki users to avoid changing content created by, and conceptually owned by someone else.

The following conditions created anxiety as reported by subjects in the study:

- **Historical** nature of ownership in the organization: “you create it, you own it.”
- The thought of actually changing someone else's content.
- **Anyone** can change content within the organization.
- **Fear** that information could be inaccurate with so many hands in the pot.
- People not changing content when they should.
- The thought that someone could change, or has changed, their content.
- **Concern** that people will abuse the freedom to change content.
- Feeling that it is rude to be changing someone else's work.
- Afraid of making incorrect changes.
- **Absence of a control mechanism** (process) to control content changes.
- Afraid of offending someone.
- Afraid of being intrusive, discourteous, and presumptuous.
- **Feeling** the wiki is unnatural in a corporate environment.
- The **formal nature of the corporate environment** and informal nature of the wiki.
- Afraid of the technology.
- **Concern** that intended meaning will get lost.
As indicated above, some conditions caused anxiety due to fear of wiki technology, however the predominant conditions triggering feelings of anxiety were associated with changing wiki page content that originated by another employee. The anxiety associated with violation of established norms lingered from a time when wiki technology, egalitarian, and collaborative wiki culture did not exist. Employees in this context were encouraged to make content changes, guided by wiki rules of etiquette and, yet, resistance to changing content persisted. Implicit norms, those unwritten personal, social, and corporate rules that guide behavior, clearly inhibited collaborative changes to wiki page content.

Assertion D Concept: Traditional Culture

Allegiance to established personal, social, and corporate norms, collectively characterized as traditional culture, interfered with collaborative content development in the wiki. Subjects associated with Assertion D considered that modifying content originating by another employee was inappropriate behavior in a traditional corporate context. Subjects fearful of violating personal, social, and corporate norms avoided collaborative content development.

Personal Norms

For those disinclined, their own expectations of personal conduct outweighed the risk associated with altering the content created by others. Changing someone else’s words was considered rude, presumptuous, intrusive, and discourteous, i.e., violating personal standards of behavior. The normative expectation was to respect the written word created
by another and negotiate through proper channels when an apparent need for changes arose. These thoughts and feelings were reported based on personal expectations of conduct.

_Social Norms_

While personal norms manifested a standard of behavior held in the individual’s conscience, social norms in this discussion were implicit expectations of behavior in a work group community. There was a strong sense that content created by an individual belonged to that individual, rather than belonging to the organization. This pervasively held belief bolstered a group norm of _content ownership_. Participants expressed fear or concern about making incorrect changes, stating that intended meaning could be lost, information could be wrong (with so many hands in the pot), people would abuse the freedom to make changes, and there was the threat of insulting or offending someone by changing “their” published material.

Wikites (refer to Appendix F) reported experiencing pushback when encouraging others to make content changes. This created frustration on the part of those promoting and recognizing the value of collaborative content development. Wikites experienced negative reactions from employees:

- “Don’t dabble in my world.”
- “You shouldn’t be telling people what I should be telling them.”
- “You shouldn’t be doing this.”
- “You shouldn’t be in there [the wiki].”
- “It [appropriate corporate information] shouldn’t be out there.”
• “Receiving phone calls and e-mail that content should be changed and refusing to update it themselves, when they should be.”

These negative responses are examples of the work communities’ attempts to sustain a social norm. The content ownership effect discouraged wikites, and in some cases, reduced their motivation to participate.

*Corporate Culture and Behavioral Norms*

A deeply rooted corporate culture cast a broad shadow on liberties to alter someone else’s content in the wiki. Wiki champions consistently expressed concern about the limiting nature of the corporate culture while resistant wiki collaborators held fast to historical conditions of process formalism, authority and control, technology orientation, and a highly sensitive health insurance domain. These conditions created an implicit set of corporate (culture) norms within the corporation that heavily negated the potential for open wiki content development.

The corporate culture was characterized as process-oriented, i.e., indoctrinated in creating and following process. Anti-wikites complained about the lack of process, while some wikites attempted to build processes around wiki behavior. The corporate culture was characterized as closed to spontaneous sharing and not ready for open collaboration. A normative expectation to *work within a process* pervaded the organization.

The culture was enmeshed in an *authority and control* normative paradigm where the flow of business activities was expected to move through *formal* channels. This was exhibited in the expressed need for a wiki governance structure to control “the 20-acre farm that was once a personal garden,” for someone to be *in control* [of the wiki], and for
an approval process to control content changes. Employees regularly complained about wiki content being out-of-date or inaccurate, seeking approval from an authority figure rather than making corrections to the wiki themselves. Some participants felt that egalitarian culture was not natural within the corporate boundary. These oppositional reactions to wiki culture suggested that workers were more comfortable with a traditional authority-driven and control-oriented work environment.

The culture was described as conservative, not aiming to be a technology leader rather a fast follower, a wait and see norm in the face of uncertainty. All participants expressed concern that the company was historically slow to take on new technology and not a wiki-ready culture. According to one manager, “a few years ago you needed a document from God to use instant messaging.” The backgrounds of business partners further added to technology latency. For example, medical professionals, e.g., medical directors, were known to be technologically disinclined, with no natural curiosity [about technology]. According to one manager,

So, it’s amazing, I think ya know on a day-to-day basis you use a computer, so in my mind, I can’t imagine that they [approximately 380 nurses and medical directors] don’t have a little bit of natural curiosity, or have stronger technical skills than they do. They really don’t! You have a few nurses that are considered the technical ones. They really seem to enjoy technology and want to learn new things, but on the whole, I don’t find there’s too many that interested in technology. So they’re not likely to go out and look at the wiki.

Subjects associated with Assertion D were not comfortable with the open, egalitarian culture that was in stark contrast to traditional command and control corporate norms.
The wiki presented a risk to a formalized, process-oriented organization, where authority, control, and information protection were threatened. Subjects were not comfortable changing content created by others that would violate traditional corporate work practices.

**Assertion D Conclusion**

Cultural pillars of content ownership and traditional culture, along with feelings of anxiety inhibited collaborative content development in the wiki. Subjects did not collaborate in the wiki using discussion pages and did not change content authored by someone else. In addition to anxiety, subjects in this group experienced negative feelings of fear, anger, frustration, nervousness, and loyalty to personal, social, and corporate norms. Employees described the need for process, authority, control, and security assurances. Motivational goals to honor traditional norms, avoid stress, avoid negative consequences, protect customer and corporate information, and to avoid interpersonal events were reported by subjects associated with Assertion D.

**Assertions Summary**

The findings detailed four assertions revealed in the analysis of interview and journal data, including expressed emotion (visually observed and audibly recognized in vocal tone). Each assertion was formulated based on prevalence of theoretical concepts in the data, and relationships among contextual influences, behavioral goals, and emotional aspects of content development. Concepts in each assertion, along with the subject archetype for each assertion were described. Varying depth of engagement was evidenced
in wiki participation behavior varying from no engagement to collaborative content engagement.

**Findings: Motivation Types and Wiki Behavior**

Through interviews and personal journals, subjects described their experiences, thoughts, and feelings about wiki participation. Subjects openly shared stories and described feelings associated with their experiences in the corporate context. From a motivation viewpoint, subjects could express why they engaged in the wiki (refer to Appendix G). Subjects did not indicate whether these reasons were extrinsic, intrinsic, altruistic, or egoistic. Further analysis was conducted to identify types of motivation that would fully address research questions three and six (refer the Chapter 1, Research Questions).

Chapter 2 provides descriptions of each motivation theory employed in this analysis. The WBC matrix (refer to Appendix G, Cell Definitions and Motivation Interpretation Process) provides an explanation of how each theory was applied to the data. Extrinsic motivation types were identified by applying the Self-Determination Theory (Deci & Ryan, 1985) to interpret the data (refer to Chapter 2, Self-Determination Theory). Intrinsic desires were identified by applying the Sensitivity Theory (Reiss, 2000) to interpret the data (refer to Chapter 2, Theory of 16 Basic Desires). Altruistic and egoistic motivation types were identified by applying common definitions provided in the literature (refer to Chapter 2, Prosocial Behavior: Altruism and Egoism). The motivation findings were evaluated to address research questions about contextual influences, emotions, participation decisions, and their relationship to motivation.
Extrinsic Motivation and Wiki Behavior

According to Reeve (2005), “most activity is not purely intrinsic motivation given personal priorities, social demands, and requests of others” (p. 155). This appeared to be consistent with the enterprise context in this research therefore, Deci and Ryan’s (1985) Self Determination Theory (SDT) was used to identify types of extrinsic motivation. Literature describing the SDT provided definitions that enabled the researcher to distinguish types of extrinsic motivation along a continuum of external regulation (refer to Chapter 2, Self-Determination Theory). The WBC matrix (refer to Appendix G) details the analysis of extrinsic motivation in terms of perceived locus of causality: external regulation (purely external), identified regulation (somewhat external), introjected regulation (somewhat internal), and integrated regulation (internal). Subjects’ circumstances, contextual influences, goals, and self-reported feelings about wiki behaviors were analyzed to determine the level of extrinsic motivation.

Contextual influences were associated with extrinsic motivation along the SDT continuum ranging from most external control (extrinsic regulation) to the most internal autonomy (integrated regulation). Contextual influences were found to be extrinsic motivators that resulted in both participation and non-participation behaviors. For example, employees in the study were motivated to contribute when the wiki solved a problem for the company, and motivated to avoid participation when there was a threat of a poor performance review.

Most subjects expressed felt-freedom to participate, and those who participated were not inspired by anticipation of rewards or recognition, beyond base compensation.
Organizational influences were classified as extrinsic motivators when control and competence information were evident in the data, and desired outcome was not expressed as pure joy derived from interacting with the wiki itself. Examples of extrinsic motivation along the continuum and corresponding wiki behaviors follow.

- Required reporting of project work and pending performance assessments were identified as external regulation (compliance) motivation that resulted in participation behavior.
- Personal drives to avoid stress and honor traditional norms were identified as introjected regulation (self-control) that resulted in non-participation behavior.
- Personal desires for up-to-date information, to learn more about the happenings of the organization, and solving business problems were identified as identified regulation (personal importance, conscious valuing) that resulted in participation behavior.
- Personal drives for improved corporate communication, creation of new knowledge, and to avoid loss of corporate knowledge were identified as integrated regulation (congruence with self-values and beliefs) that resulted in participation behavior.

Extrinsic motivation was evidenced along a continuum ranging from purely extrinsic (externally controlled) to highly autonomous (personal volition and internalized value).

The antecedent or contextual conditions associated with extrinsic motivation included employment responsibilities, egalitarian and traditional cultures, grassroots influences, management attitude, privacy-oriented context, corporate conscience, and content ownership effect. Several other organizational influences were found in the data but not
considered categorical. For example, writing criticisms, positive and negative peer attitudes (subjective norm), ease of use, and reprimands for inappropriate content were mentioned by some but not considered as pervasive in the research.

Positive emotions were associated with extrinsic motivation to participate, whereas negative emotions were associated with extrinsic motivation to avoid participation. For external regulation, both positive and negative feelings were associated with participation behaviors. Purely external regulation was associated with feelings of joy, interest, excitement, ambivalence, frustration, and nervousness about subjects’ wiki participation behavior. Identified, introjected, and integrated regulation were associated with positive emotions when subjects participated in the wiki and negative emotions when subjects did not collaborate, or participate at all, in the wiki.

This discussion focused on organizational influences, emotions, and types of extrinsic motivation associated with participation and non-participation behavior in the wiki. The SDT was used to distinguish extrinsic motivation types ranging in scale from high control to high autonomy. Greater levels of autonomy were more prevalent as a motivator energizing and directing both participation and non-participation wiki behaviors.

_Intrinsic Motivation and Wiki Behavior_

The Theory of 16 Basic Desires, or sensitivity theory (Reiss, 2000), provided a means to interpret the intensity of intrinsic motivation affecting wiki behavior. The sensitivity theory asserts that intrinsic motivation is, in large part, innate (Reiss) and varies in intensity. According to Reiss, everyone experienced some level of intrinsic desires varying according to an individual’s genetics, experiences, and cultural influences.
The WBC matrix includes contextual influences, motivation type, goals, and self-reported feelings for wiki behaviors that were considered highly autonomous and intrinsic. The mere existence of the wiki in the corporation, along with collaborative technology, was found to prompt intrinsic motivation toward participation and non-participation behaviors. The following sections describe intrinsic motivation for both participation and non-participation behavior in the wiki.

_Intrinsic Desires and Participation Behavior_

The intensity of intrinsic motivation when applying the sensitivity theory (Reiss, 2000) was an indicator of wiki participation behavior. Intense desires for power, independence, idealism, and curiosity resulted in wiki participation behavior; a summary of each desire follows.

**Power**

Wiki leaders were challenged by implementing wiki technology and rolling it out to the corporation as a grassroots initiative—a challenge given a traditional culture of control and formalism. They derived satisfaction and joy influencing others and watching the wiki grow in value to the organization. At times, their leadership was authoritarian, a characteristic of the desire for power (Reiss, 2000), by requiring wiki usage in projects and instantiating wiki pages for targeted initiatives. Wiki ambassadors were excited to advocate for the wiki and to provide informal training. Managers, leads, and individual contributors (business and IT) described a sense of empowerment to read and contribute; this was especially the case for lower ranking employees who expressed a greater sense
of self-value through wiki participation. Contributors felt competent when their material was referenced by others, leaving a sense of accomplishment in subject matter knowledge and technology mastery. Leadership desires were further evident in self-appointed wiki gardeners, modifying and reformatting content to improve wiki quality.

Curiosity

Curiosity was evidenced in anecdotal reports of curiosity about the wiki, the desire to learn it, independently, and joy in learning how to use it. These employees typically classified themselves as early adopters and delighted at the opportunity to innovate. Managers, leads, and individual contributors (business and IT) expressed feelings of joy, happiness, excitement, and enthusiasm just to explore [the wiki]; they were pleasantly surprised that the company had a wiki. Some described the wiki as a form of play, and a means to exercise learning. Others were energized by the content itself, i.e., to acquire new knowledge about the company, and about other employees through profile pages. Truth seekers desired high quality information, believing that errors got in the way of doing a good job, and described need for information accuracy.

Independence

Independence was evident in feelings of joy, happiness, and greater personal value derived from the freedom to add, change, and collaborate using the wiki. Managers, leads, and individual contributors (business and IT) expressed feelings of great liberation given the facility to publish information immediately, not having to endure bureaucratic red tape to get information out to employees. These individuals expressed frustration with
routine formalisms and delays in publishing to the corporate web site. Wiki leaders felt irritated by those oppressively concerned about misuse, confidentiality breaches, and maliciousness; they were confident that employees would post appropriately. Several employees expressed the desire to stay current with technology, keep technical skills current, and to avoid falling into technological ruts, i.e., maintain a level of technology independence.

**Idealism**

Managers, leads, and individual contributors (business and IT) shared feelings of joy, happiness, excitement, greater personal value, and passion through their expressed desire to create a better company. Leaders broke rules to get the wiki started, deviated from control and authority to create an egalitarian culture, and changed the ownership mindset to help people realize they were part of a larger organism. Wiki advocates wanted to make a difference by sharing ideas and co-creating corporate assets [in the wiki], correcting inaccuracies (even when feeling nervousness), documenting their knowledge (despite other demands), and influencing others to contribute (knowing about resistance).

*Intrinsic Desires and Non-Participation Behavior*

The intensity of intrinsic motivation when applying the sensitivity theory (Reiss, 2000) was an indicator of non-participation behavior in the wiki. Intense desires for control, honor, and tranquility resulted in non-participation behaviors in the wiki. The WBC matrix provides all concepts in the intrinsic motivation analysis; a summary of each desire follows.
Order

Managers, leads, and individual contributors (business and IT) reported feelings of anxiety, fear, and frustration caused by the wiki disruption of order and control, to which they were accustomed. Subjects not participating were frustrated, angry, and concerned that the wiki was not rolled out as a formal corporate initiative, did not follow traditional protocol of process, and threatened traditional personal, social, and corporate norms. Non-participants who tried the wiki (when forced) were frustrated when information could not be found and became defiant against future use. These subjects, from business and IT departments, also experienced anxiety that anyone could post, read, or change anything, at any time. Some perceived that a lack of planning on the part of leaders affected their desire to make time [for the wiki]. Non-collaborators felt that tone in writing could be misunderstood, emotions would be too strong to debate, and nothing would get done using wiki discussion pages. A key theme for non-participants, and participants, was the desire (or cultural conditioning) to collaborate using traditional methods such as face-to-face conversations, e-mail, e-chat, and group meetings. The need to bandwagon on the tradition of slow technology adoption was also evident.

Honor

Non-participants expressed a strong sense of duty to traditional personal, social, and corporate norms expressing feelings of anxiety, fear, and frustration when faced with an egalitarian cultural movement. Managers, leads, and individual contributors (business and IT) expressed the need to work within a traditional governance structure with controls,
monitors, and authority. Employees felt a strong sense of ownership, in general, and non-participants were fearful of offending others by changing their work. Non-participants felt a strong duty to customers, and the company, by protecting privacy and proprietary secrets.

**Tranquility**

The aforementioned expressions of anxiety, fear, and frustration illustrated the need for tranquility among non-participants. The desire to avoid negative consequences from writing and changing content on the wiki was expressed by managers, leads, and individual contributors (business and IT). Non-participants were concerned about offending others, unfavorable performance evaluations, and exposing perceived personal inadequacies. The wiki was perceived as a surveillance medium that would expose individual weaknesses in technology and business acumen, along with lack of attention to detail. Seeking more peace in the workday, non-participants chose to avoid wiki participation.

In summary, subjects not participating in the wiki experienced strong intrinsic desires for control, honor, and tranquility. These subjects experienced anxiety, fear, and frustration caused by the disruption of order, the desire to honor traditional norms, and the desire to avoid negative consequences.

*Prosocial Behavior: Altruism, Egoism, and Wiki Behavior*

Altruism and egoism were generally defined as voluntary and consciously made decisions to help others. Altruism motivated behavior to benefit someone else, with no
expected reward. Egoism motivated behavior to help someone else, with an expectation of personal benefit. By definition, individuals working for a company exchanged skills and knowledge for pay, under monetary employment agreements. Definitions for altruism and egoism within a corporate context were therefore needed to distinguish prosocial wiki behaviors where compensation was a variable in the employment equation.

Altruism in the workplace was therefore defined in this research as a behavior that benefited the company, or others, through discretionary effort without anticipation of personal benefit such as increased compensation, bonus, or recognition. Egoism in the workplace was defined as a behavior that benefited the company, or others, through discretionary effort in anticipation of a personal benefit that went beyond contractual employment compensation, bonus, and benefit agreements. Egoistic behavior further included discretionary effort intended to reduce personal stress.

Altruistic behavior was exhibited by wiki leaders in management positions. Wiki leaders who held management positions took personal risks to instantiate the wiki in violation, at times, of company rules and normative practices. Motives driving these decisions were strongly held beliefs, regardless of personal consequences, that the wiki would benefit employees and customers through the delivery of accurate and immediate information, and co-creation of content that would increase corporate knowledge.

Egoistic behavior was exhibited by self-appointed gardeners. Self-appointed wiki gardeners, who were leads and individual contributors, made a mission out of wiki modifications that energized and directed their discretionary time. These gardeners were motivated to improve wiki content quality to reduce frustration of others, improve information quality for others, and increase wiki usage to benefit the company. There was
no anticipation of advancement, additional pay, or other compensation in these cases. Egoist behaviors were exhibited by gardeners and other wiki contributors editing content created by others to reduce their own feelings of frustration when incorrect information was discovered, and to improve search capabilities so they could find needed information.

In summary, wiki participation behaviors were generally considered *part of the job* where the wiki was viewed as *just another tool* the company was using, according to accounts given by managers, leads, and individual contributors. Altruistic and egoistic behaviors were exhibited by wiki leaders and self-appointed wiki gardeners.

*Motivation Summary*

An analysis of motivation type was presented to address research questions surrounding motivation and the relationship to contextual influences, emotion, and wiki behavior. Extrinsic, intrinsic, altruistic, and egoistic motivation were found to energize and direct participatory and non-participatory wiki behaviors. Higher levels of autonomy were shown to have a greater impact on wiki behavior decisions than did purely extrinsic motivation. Decisions to participate were not incented by rewards or recognition beyond typical employment expectations. Required participation served as the purely extrinsic motivator that was necessary for jump-starting some participants, resulted in negative feelings and damaged long-term participation for others, and was not needed for those who would have participated anyway. Higher levels of autonomy were associated with more sophisticated use of the wiki. Motives considered highly autonomous included
extrinsic motives with very low external control and purely intrinsic motivation.
Altruistic and egoistic motivation was also evidenced in these findings.

*Findings Summary*

The findings described four assertions along with a motivation analysis that explained wiki behavior in a corporation. Different wiki behavior decisions were evidenced by prevalent concepts in the data that were common to groups of subjects. Negative emotions were associated with wiki avoidance behaviors. Positive emotions were associated with participation behavior. Motivation types were distinguished as extrinsic, intrinsic, altruistic, or egoistic and associated with contextual influences, emotions, and wiki behaviors.
Chapter 5

Conclusions, Implications, Recommendations, and Summary

Conclusions

The following conclusions provide answers to research questions introduced in Chapter 1. Conclusions are presented below in the order they were introduced (refer to Chapter 1, Research Questions).

Conclusion 1: Emotions and Organizational Norms Influenced Decisions to Participate

Emotions were evidenced in the interplay among organizational influences and wiki participation behavior. Volitional participation behaviors were associated with positive affect associated with reading, adding, and collaborating in the wiki. Non-participation behaviors were associated with negative affect associated with allegiance to traditional corporate culture.

Positive and negative emotions interacted with norms that influenced wiki behavior decisions. Strong feelings of anxiety, nervousness, and fear associated with violation of traditional personal, social, and cultural norms resulted in decisions not to collaborate, or to change content created by someone else in the wiki. Subjects avoided stress, accompanied by little reasoning, by honoring face-to-face, and other traditional communication methods, rather than using discussion pages for collaboration. Similarly, the content ownership norm broadly influenced decisions to avoid changing content
created by others. Conversely, strong positive emotions in favor of the wiki prompted wiki leaders to break traditional norms by instigating egalitarian practices and promoting the wiki. In this sense, traditional norms were proactively challenged to realize advantages of the wiki.

**Conclusion 2: Participation Decisions Influenced by Emotions (Feelings)**

The findings illustrated that when participation was a choice, positive emotions influenced participation behaviors, and negative emotions influenced non-participation behaviors. In cases where employees were not required to participate, stress associated with perceived chaos [in the wiki], violation of traditional norms, and fear of interpersonal events appeared to influence heavily decisions to avoid adding or changing content. Conversely, feelings of extreme joy, happiness, empowerment, and excitement, appeared to influence heavily decisions to read, add content, and collaborative content development. When employees were required to participate, emotion did not appear to influence participation decisions; employees participated with a reported mix of emotions experienced. There was an indication that negative emotions were associated with required use of the wiki that may impact long-term motivation to participate voluntarily.

**Conclusion 3: Emotion and Cognition Played Varying Roles in Motivation**

Time and the threat of negative consequences were considered costs associated with wiki participation. Perceived value to individuals and the company was considered the measure of benefit described by subjects. When wiki participation was optional for employees, positive affect and perceived value, motivated decisions to participate. These
decisions were jointly influenced by emotion and cognitive contemplation. For enthusiastic participants, strong feelings of joy, empowerment, and freedom appeared to motivate wiki participation more than judgments about time or negative consequences. For non-participation decisions, time outweighed perceived value and was considered too precious a commodity to share with the wiki. For other non-participants, the fear of negative consequences associated with breaking traditional norms outweighed any perceived benefit of authoring or changing content, reading messages, following an argument, or posting responses. Some were fearful of revealing their lack of knowledge [about the wiki] and did not participate.

Conclusion 4: Different Organizational Influences Directed Different Behaviors

When a manager, project, or team required the use of the wiki, employees participated. The egalitarian culture, along with grassroots influences, that emerged from the wiki implementation resulted in participation behaviors for employees with positive affect toward the wiki. Participation was harder for those comfortable with traditional norms. Strong allegiance to traditional authority and control decreased voluntary participation. Grassroots influences helped to persuade some employees to participate, but not others. Managers sharing a positive attitude about the wiki with their employees heavily impacted decisions to participate. Risks associated with openness of the wiki amidst privacy concerns impacted early decision not to participate. Participants believed in a corporate conscience and were not worried about inappropriate or malicious wiki participation behaviors. When managers endorsed the wiki, employees participated with mixed affect; initially negative, and then positive after creating wiki pages.
Conclusion 5: Egalitarian and Traditionalist Emotions in Conflict

Rooted traditional norms interfered with the establishment of open interpersonal mindsets necessary for participation and collaboration [in the wiki]. The emotional desire for order, honor, and tranquility associated with the practice of following formalized corporate rules by order of process were in direct conflict with emotions of power, curiosity, independence, and idealism evidenced by of those who participated voluntarily. Traditionalists perceived the wiki as chaotic and disruptive; egalitarians excused organizational permissions, controls, and authority to participate. Opposing feelings and motivational traits among the traditionalists and egalitarians created inter-organizational conflict. Egalitarians were frustrated by the lack of participation, page maintenance, and collaboration that would make the company a better place. Traditionalists were frustrated and angry that the wiki existed, and were fearful of potential risks for themselves, others, and the company.

Conclusion 6: Extrinsic, Intrinsic, Altruistic, and Egoistic Motives Direct Participation

Extrinsic and intrinsic motivation energized and directed participation and non-participation wiki behaviors. Extrinsic motivation varied from highly controlled (extrinsic) to autonomous (intrinsic) motivation to participate, or not to participate. Wiki participation was not motivated by extrinsic rewards. For some, forcing participation resulted in long-term motivation to avoid the wiki. Higher levels of autonomy resulted in more substantial levels of engagement in the wiki, such as establishment of new pages, collaborative content development, and wiki gardening (refer to Appendix F).
Altruistic motivation directed leaders and self-appointed gardeners to help others and make the company better for employees, customers, and the company while assuming personal risk and without anticipation of rewards. Egoistic motivation directed self-appointed wiki gardeners to modify content created by others to reduce frustration of others, with an expectation of reduced personal stress.

**Implications**

Findings in the research serve to increase the predictability of success for information system divisions implementing wiki technology in business. Factors that impede willingness to participate have been addressed, along with those that instigated participation behaviors. Addressing these factors will increase the overall benefit of wiki technology in corporate contexts. The findings advance knowledge of wiki behavior for information systems in business contexts. The following implications represent a beginning to advance the field of information systems.

*Implication 1: Wiki Success Depends on Reducing Personal, Social, and Professional Anxiety*

This research showed that wiki technology performs differently in corporations than customary technologies used to solve business problems and to improve productivity. Wikis facilitated social and professional interaction necessary for corporate knowledge creation and management. Wiki technology was a catalyst for open and visible interaction among humans in a complex mix of organizational influences, personal, social, and corporate norms, feelings, thoughts, and motivation, found to be
uncomfortable for many employees. Open, organization-wide publishing exposed perceived individual vulnerabilities and perceived risks, that many believed might affect performance assessments and corporate relationships. The research implied that employees experiencing personal, social, and professional anxiety impeded contribution and collaboration development activities.

**Implication 2: Wiki Success Depends on Balancing Egalitarian and Traditional Culture**

This research showed that wiki technology performs differently with egalitarian culture emergent among established traditional norms. Wiki success in this research was attributed to freedom to participate, unbound by corporate controls and authorities. For some, when open content development challenged traditional corporate governance structures wiki participation was negatively affected. This research implied that egalitarian structures increased participation and collaborative behaviors that were poised within traditional control and authority.

**Implication 3: Wiki Success Depends on Extrinsic and Intrinsic Motivation**

This research showed that wiki technology performs differently in corporations where participation can be required and/or intrinsically directed. Wiki participation resulted in wiki participation behavior when managers and projects required wiki usage, but damaged future participation motives, for some. Motivation that scaled intrinsically, resulted in positive feelings [about the wiki], benefitting from more creative, effective, and technologically sophisticated participation behaviors. The research implied that
organizations have the opportunity to leverage emotional enthusiasm and increase employee desire to participate by inducing various types of motivation.

**Implication 4: Wiki Success Depends on the Corporate Contextual Profile**

This research showed that wiki technology performs differently depending upon characteristics inherent in corporate contexts. Treatment of time, management attitude toward the wiki, community attitude toward computing, and information sensitivity affected wiki participation behaviors. The research implied that factors in the organization’s context affected contemplated wiki participation decisions.

**Future Research**

Four assertions were proposed in this research using an interpretive grounded theory methodology. These proposed assertions create an opportunity for researchers to formalize hypotheses and apply quantitative methods to verify findings. Future research can further evaluate the relationships between variables. For example, do emotions affect behaviors directly or is emotion a moderating variable?

**Recommendations**

Several key challenges and success factors were revealed in the study that should be addressed by information systems practitioners and in business to increase positive emotion, decrease negative emotion, and increase motivation to participate in a wiki. For information systems, traditional corporate cultures, fear of inappropriate content development, disorganized and outdated content, along with limited text manipulation,
negatively affected decisions to participate. For business, cultural change, management
centrism, employee motivation, and allocation of resources are needed to bolster an enabling wiki environment. The following recommendations address these factors, which affected employee emotion, motivation, and decision-making in wiki participation.

Recommendations: Information Systems

Organizations implementing wikis must be prepared to balance traditional governance controls with egalitarian enablers necessary for open authoring and collaborative content development. Traditional authority, order, and control mindsets of both managers and employees, suggest that formalisms are needed to monitor content currency, accuracy, and appropriateness, that can still maintain a sense of freedom to participate openly.

Manager endorsements, shown to increase participation rates, are more likely if these monitors are provided, along with visibility of corporate value. For example, an organic-like wiki board of governance, consisting of one or more wiki champion(s), administrator(s), gardener(s), advocate(s), manager(s), and beneficiaries, could provide a presence of order, control, and value. A wiki knowledge worker (champion), versed in wiki technologies and wiki culture, is needed to help implement and manage the wiki implementation to increase its effectiveness.

Information security initiatives should provide assurances that proprietary and customer information assets are protected without additional user overhead, including a plan to address inappropriate posting of content, should it occur. Given the open wiki paradigm, a hallmark of collaborative content development, a balance is needed between openness and information protection. For example, password protection should be
aligned with existing user authentication schemes. Additional wiki access requirements, such as unique login codes, should not be required that incur additional overhead for employees. Information assurance efforts need to reduce fear among employees of inappropriate or malicious wiki behavior, without damaging motivation to participate.

Wiki technology should address information structure, organization, and search capabilities that address the corporate need for order, and the ability to find information quickly and easily. For example, improved template features for new page development and page formatting, intuitive page naming conventions, common text editing features such as spelling and grammar checkers, the ability to export wiki documents, and improved search capabilities will improve wiki functionality and the ability to find information when needed. The perception of chaos, the inability to find information, and basic text manipulation disadvantaged the perceived value of the wiki in the study.

**Recommendations: Business**

Since wiki usage in organizations is effective in open domains, changes are needed for businesses that operate within a traditional authority and control cultures. Egalitarian structures are needed to facilitate open participation, and should be in balance with necessary corporate controls and formalisms. Wiki content should be viewed as a corporate asset that is not owned by individuals, but rather cultivated by groups of employees. In addition, management should seek ways to increase individual autonomy that inspires intrinsic motivation to participate.

Managers should find ways to encourage employees to participate in wikis but not be oppressive about its use. Trust should be granted to employees assuming appropriate
participation, and address abusive or unsuitable behavior when it arises, similar to other corporate tools. Employees should feel empowered to participate, and not feel threatened or fearful of negative consequences. Managers should also recognize that time is needed to explore, learn, read, author, and collaborate on the wiki. Time, amid other work priorities should be appropriated to enable further participation. Since wiki is a collaborative tool, employees need to understand what it means to collaborate, and how to collaborate.

Business and information systems leaders should continue to identify tangible value to wiki instances, and make known the value proposition to the business. Wikis could be treated as an organic knowledge creation and management tool that advances the company without the need for formal justification, in similar fashion to e-mail systems considered as a necessary communication tool. Finally, budgeting of corporate funding and human resources is needed to support fully wiki implementations.

**Research Summary**

The purpose of this research was to study the role of emotion and corporate wiki participation behaviors. Since research in this area is limited, the contextual details of wikis in an organizational setting made it difficult to separate the context from the main effects. Therefore, qualitative grounded theory methodology was applied. The results showed that corporate influences not present in open wiki domains affected wiki behavior. Emotions, along with cognitive contemplation, affected motivation to participate.
Wiki behavior referred to the interaction between an employee and the wiki. Employees who added, modified, or used the wiki to discuss content were considered *contributors*. Those who read the wiki regularly but did not contribute were considered *lurkers*. Contributors and lurkers were collectively considered *participants*. Those who did not read or were infrequent readers of the wiki, did not author content, or did not participate in wiki discussions were considered *non-participants*. Actions performed by designated wiki editors and administrators were not considered.

Charmaz’ (2006) constructivist grounded theory methodology guided this interpretive research. Interviews were conducted with employees from multiple departments, both business and technology. They worked in various locations; held various roles, responsibilities, and rank; and had knowledge of the wiki. Collection and analysis of interview and journal data transpired over a twelve-month period, with attention given to a balanced subject profile. Data collection terminated when theoretical saturation was realized. Analysis of interview and journal data resulted in 543 categorized codes, 82 non-categorized codes, and 36 memos. Four assertions emerged through continuous comparative analysis.

The analysis of emotion and motivation that energized and directed wiki behavior was included in this research. The Positive Affect Negative Affect (PANAS-X) Scale (Watson, et al., 1988) was employed to classify reported feeling states as either positive or negative. Deci and Ryan’s (1985) self-determination theory (SDT), including the cognitive evaluation theory (CET) and organismic integration theory (OIT) sub-theories, was used to interpret motivation type, and extrinsic motivation level from the data. The
sensitivity theory (Reiss, 2000) was used to interpret intrinsic desires motivating wiki behavior.

The evaluation showed that the goals of the research were satisfied. The interplay among organizational influences, thoughts, feelings, and motives was found to direct different wiki participation decisions. As a result, four assertions and an analysis of wiki participation motivation were presented that explained emotional and motivational foundations in corporate wikis.

When participation was a choice, positive feelings were associated with participation behaviors; negative feelings were associated with non-participation behaviors. When participation was a requirement, some subjects experienced positive emotions, whereas, others experienced negative emotions that damaged long-term participation motivation. Grassroots influences as opposed to corporate dictum prompted participation behaviors for some employees, but not others. Positive management attitude [about the wiki], when applied, broadly influenced decisions to participate. Traditional norms interfered with participation decisions for some, whereas cultural openness promulgated by wiki leaders, facilitated participation decisions for others. Employees perceiving wiki value exchanged their time and committed knowledge to the wiki.

Employees were not motivated by rewards or recognition. Volitional decisions to participate were motivated with less control and higher autonomy. Some wiki behaviors were considered voluntary and resulted in altruistic and egoistic wiki behaviors. Employees fearful of confidentiality breaches did not participate, while others confident in a corporate conscience did participate, and were not concerned about inappropriate participation.
Organizational factors, not present in open wiki domains, served as obstacles and enablers to corporate wiki participation. Employment agreements, peer and manager relationships, evaluation mechanisms, personal and professional goals, threats of interpersonal events, and intrinsic desires created a mix of emotions and cognitions that directed motivation towards various wiki behavior decisions.
Appendix A: Theories in Behavioral Research

This researcher approached the problem from three areas of motivational research.

**Psychology** theories seek to explain motivations prompting human behavior.

**Information Systems (IS) Adoption** theories seek to explain individual motivations to adopt computer information systems (all are adapted from theories in psychology). **Wiki**

**Motivation** theories seek to explain adoption of wiki technology.

<table>
<thead>
<tr>
<th>Theory Name and Purpose</th>
<th>Purpose</th>
<th>Causal Relations Among Concepts</th>
<th>Application</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Psychology Theories</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tension-Reduction Model (a variance on traditional and archaic views of motivation) (Batson, Fultz, &amp; Schoenrade, 1987).</td>
<td>To illustrate</td>
<td>1) <strong>Feelings</strong> of sympathy, compassion, soft heart, tenderness exhibit <strong>Emotion (empathy): feelings</strong> of alarm, upset, perturbed, disturbed exhibit <strong>Emotion (distress)</strong>. Feels (IV) -&gt; Emotion (DV)</td>
<td>Six different studies were conducted over time. Each study simulated a person in need ranging from a graduate student needing research subjects, to dealing with a person in need, following a tragic automobile accident, to relieving someone receiving electric shocks. The results positively confirmed the assertions.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2) <strong>Emotion (empathy)</strong> evokes an altruistic motive to reduce another’s stress; <strong>Emotion (distress)</strong> evokes an egoistic motive to reduce one’s own stress.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>[Note: this theory is important to this research as it illustrates that emotions are associated with motives to action.]</td>
<td></td>
</tr>
</tbody>
</table>

\(^4\) IV = Independent variable. DV = Dependent variable.
<table>
<thead>
<tr>
<th>Theory Name and Purpose</th>
<th>Purpose</th>
<th>Causal Relations Among Concepts</th>
<th>Application</th>
</tr>
</thead>
<tbody>
<tr>
<td>Theory of Reasoned Action (TRA) (Ajzen &amp; Fishbein, 1980)</td>
<td>To predict adoption of computer system technology.</td>
<td><strong>Attitude</strong> toward a behavior (IV) + <strong>Subjective norm</strong> (IV) towards a behavior determines <strong>Intent to Behave</strong> (DV)</td>
<td>Many studies have been conducted testing this model in various domains including Information Systems research in the past 20 years. Agent-based modeling used to evaluate information system adoption (Muduganti, Sogani, &amp; Hexmoor, 2005).</td>
</tr>
<tr>
<td>IS Adoption Theories</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Theory of Planned Behavior (TPB) (Morris &amp; Venketesh, 2000)</td>
<td>To predict adoption of computer system technology; an extension of TRA.</td>
<td><strong>Attitude</strong> toward a behavior (IV) + <strong>Subjective norm</strong> (IV) + <strong>Perceived ability to perform</strong> (IV) towards a behavior + age (MV) determines <strong>Intent to Behave</strong> (use IS) (DV)</td>
<td>Windows-based storage and retrieval system in the workplace.</td>
</tr>
<tr>
<td>Technology Acceptance Model (TAM) (Davis, 1989)</td>
<td>To predict adoption of computer system technology.</td>
<td><strong>Perceived usefulness</strong> (IV) + <strong>Perceived ease of use</strong> (IV) determines <strong>Intent to Behave</strong> (use IS)(DV)</td>
<td>IBM employees plus 40 graduate students using PROFS email and XEDIT text editor.</td>
</tr>
<tr>
<td>Variation of TAM differentiating extrinsic and intrinsic motivation (Davis, Bagozzi, &amp; Warshaw, 1992)</td>
<td>To predict adoption of computer system technology.</td>
<td><strong>Perceived usefulness</strong> (IV) + <strong>Enjoyment</strong> (IV) determines <strong>Intent to Behave</strong> (use IS)(DV)</td>
<td>MBA students using a word processor or business graphics software.</td>
</tr>
<tr>
<td>Extension of TAM adding gender (Gefen &amp; Straub, 1997; Venkatesh &amp; Morris, 2000)</td>
<td>To predict adoption of computer system technology.</td>
<td><strong>Perceived usefulness</strong> (IV) + <strong>Perceived ease of use</strong> (IV) + gender determines <strong>Intent to Behave</strong> (use IS)(DV)</td>
<td>445 individuals working in five organizations using similar information storage and retrieval systems (Venkatesh &amp; Morris, 2000). 392 e-mail users in North America, Asia, and Europe (Gefen &amp; Straub, 1997).</td>
</tr>
<tr>
<td>Wiki Motivation Theories</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>--------------------------</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| Exploratory research examining individual and collaborative motivation of Wikipedians (Wagner & Prasarnphanich, 2007). | To learn more about why Wikipedians contribute, and to explore Wikipedia motivation as distinct from open source motivation. | No major concepts. | E-mail survey completed by 140 Wikipedians asking:  
1) Why do you contribute to Wikipedia?  
2) In what ways do you find your contributions beneficial?  
3) Do you expect that contributing to Wikipedia will lead others to contribute?  
Results suggest that a new model of collaboration cooperation exists with Wikipedians and motives are unique from open source. Findings are considered “exploratory and preliminary”; the study “barely scratches the surface of open, collaborative content collaboration” (p. 9). |
| Exploratory research examining Wikipedian motivation from social context (empirical), previous research (conceptual) and technology (technological features) investigations (Kuznetsov, 2006). | To learn something about why Wikipedians participate using Value Sensitive Design (empirical, conceptual, technological investigation). | No major concepts. | Empirical data of two open source surveys and informal polling of New York University students were used in the investigation. |
| To learn more about why Wikipedians participate using the Volunteerism model (Nov, 2007). | To learn more about why Wikipedians participate using Clary, et al.’s (1998) Voluntarism model. | The former major concepts were all IVs considered that were used to evaluate motivations behind Wikipedian participation. | Survey instrument given to 151 Wikipedians. |
Appendix B: Sample PANAS-X Manual


Sample PANAS-X Protocol Illustrating “Past Few Weeks” Time Instructions

This scale consists of a number of words and phrases that describe different feelings and emotions. Read each item and then mark the appropriate answer in the space next to that word. Indicate to what extent you have felt this way during the past few weeks. Use the following scale to record your answers:

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>very slightly or not at all</td>
<td>a little</td>
<td>moderately</td>
<td>quite a bit</td>
<td>Extremely</td>
</tr>
<tr>
<td>____cheerful</td>
<td>____sad</td>
<td>____active</td>
<td>____angry at self</td>
<td>____enthusiastic</td>
</tr>
<tr>
<td>____disgusted</td>
<td>____calm</td>
<td>____guilty</td>
<td>____downhearted</td>
<td>____sheepish</td>
</tr>
<tr>
<td>____attentive</td>
<td>____afraid</td>
<td>____joyful</td>
<td>____blameworthy</td>
<td>____determined</td>
</tr>
<tr>
<td>____bashful</td>
<td>____tired</td>
<td>____nervous</td>
<td>____blamed</td>
<td>____frightened</td>
</tr>
<tr>
<td>____sluggish</td>
<td>____amazed</td>
<td>____lonely</td>
<td>____loathing</td>
<td>____astonished</td>
</tr>
<tr>
<td>____daring</td>
<td>____shaky</td>
<td>____sleepy</td>
<td>____loathed</td>
<td>____interested</td>
</tr>
<tr>
<td>____surprised</td>
<td>____happy</td>
<td>____excited</td>
<td>____loving</td>
<td>____determined</td>
</tr>
<tr>
<td>____strong</td>
<td>____timid</td>
<td>____hostile</td>
<td>____loved</td>
<td>____astonished</td>
</tr>
<tr>
<td>____scornful</td>
<td>____alone</td>
<td>____proud</td>
<td>____loved</td>
<td>____interested</td>
</tr>
<tr>
<td>____relaxed</td>
<td>____alert</td>
<td>____jittery</td>
<td>____loving</td>
<td>____loathing</td>
</tr>
<tr>
<td>____irritable</td>
<td>____alert</td>
<td>____lively</td>
<td>____confident</td>
<td>____astonished</td>
</tr>
<tr>
<td>____delighted</td>
<td>____upset</td>
<td>____ashamed</td>
<td>____energetic</td>
<td>____interested</td>
</tr>
<tr>
<td>____inspired</td>
<td>____angry</td>
<td>____at ease</td>
<td>____concentrating</td>
<td>____decided</td>
</tr>
<tr>
<td>____fearless</td>
<td>____bold</td>
<td>____scared</td>
<td>____energetic</td>
<td>____inspired</td>
</tr>
<tr>
<td>____disgusted with self</td>
<td>____blue</td>
<td>____drowsy</td>
<td>____dissatisfied with self</td>
<td>____isolated</td>
</tr>
</tbody>
</table>
Appendix C: Memo-Feelings of Ownership

A strong sense of “ownership” is reflected in nearly every interview. The definition of “ownership” in the words of one subject: “someone else owns those words, I shouldn’t touch them.” The ubiquitous feeling of ownership in the enterprise inhibits non-originators from changing content created by someone else. This spirit is held by those who participate and by those who don’t participate in the wiki. There are a number of employees who add content but don't change someone else’s writing, but may negotiate changes using traditional modes of communication.

The wiki is being used for many different purposes, some ideally suited for open collaboration, some clearly not where changing another employee's writing is inappropriate. Several wikites suggest that the wiki is not intended for everything and is being used for things that it shouldn't. This causes much frustration on the part of informed wikites.

The senior wikite mindset encourages and expects that content equating to a “corporate asset” should indeed be open to editing, enhancements, and discussion by employees. Examples of 'corporate assets' include meeting minutes, departmental inventory, customer service actions, development of processes, and corporate glossaries that serve to increase content value. Other types of content such as certified corporate policies, white (opinion papers), established wiki page titles, are not considered open to change by others, except for perhaps minor spelling errors.

At a simplistic level, some content is not open for change and generally is not being modified by the wiki population. On the other hand, corporate assets that should be open
to collaborative development are greeted with strong resistance. That resistance, refusal, reluctance, and hesitation is the focus of the research.

With conviction, an experienced wiki advocate and informal wiki trainer of many employees (young man at 26) explained that many business people expressed a lot of anxiety at the idea of editing someone else’s work. They felt it was intrusive and presumptuous to be changing work that was created by the owner or expert. To this wikite, IT was getting the bigger picture about the wiki, but many business people were not. A wikite who overcame discomfort about changing content originally resisted making content changes because she felt that she might be stepping on someone else’s toes or making incorrect changes. She overcame her anxiety when she began making changes and did not experience negative consequences.

It appeared that negative consequences had something important to do with changing content. One wikite who experienced negative consequences expressed increasing disinterest and frustration that the wiki was not being embraced by others; participation fall-off resulted in this case. This wikite also expressed extreme frustration that others weren’t changing content “BUT SHOULD BE.” There was great frustration in his words, tone, and facial expressions knowing that things [content] could be better but people are not participating.

Generational comfort (or discomfort) with technology appears to be one contributing factor, but the notion of fear to change someone else's words is also strongly evident. The majority of participants not making content changes use corporate computing technologies and don't appear intimidated by technology. These employees were clearly not self-proclaimed early adopters of technology. Learning about the wiki virally through
grass roots efforts was not enough to inspire/motivate some to learn more. Grassroots wiki advocacy is not enough for those who are not early adopters. As interviews progressed with non-users, they learned more about wikis through the line of questioning and clearly became intrigued. The interview prompted intrigue and interest with claims of wanting to learn more, or trying the wiki again, or asking me to teach them.

Two big wiki users, P and Q, claim they don't mind if someone changes their work in one breath, then in another claim they are frustrated when someone changes their work. They both felt that their way (writing, format, content) was the best way and irked that others would disrupt that level of correctness.
Appendix D: Initial Codes for Feelings of Ownership

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Avoiding ownership</td>
</tr>
<tr>
<td>2.</td>
<td>Changing content</td>
</tr>
<tr>
<td>3.</td>
<td>Change content as long as it’s for the pages my group is responsible for</td>
</tr>
<tr>
<td>4.</td>
<td>Correcting content when something wrong</td>
</tr>
<tr>
<td>5.</td>
<td>Not ok to change white or opinion paper should change a corporate asset about the company</td>
</tr>
<tr>
<td>6.</td>
<td>Feeling more comfortable making changes over time when no negative consequences</td>
</tr>
<tr>
<td>7.</td>
<td>Feeling ‘safe’ about making content changes</td>
</tr>
<tr>
<td>8.</td>
<td>Getting the bigger picture</td>
</tr>
<tr>
<td>9.</td>
<td>I don’t mind people changing my pages</td>
</tr>
<tr>
<td>10.</td>
<td>Making changes only if someone specifically asks me to</td>
</tr>
<tr>
<td>11.</td>
<td>Nervousness went away with tone of other people</td>
</tr>
<tr>
<td>12.</td>
<td>Noticing that experts will change pages</td>
</tr>
<tr>
<td>13.</td>
<td>Other groups using it to make change content</td>
</tr>
<tr>
<td>14.</td>
<td>Overcoming discomfort of changing pages</td>
</tr>
<tr>
<td>15.</td>
<td>Changing of content not appropriate for our needs</td>
</tr>
<tr>
<td>16.</td>
<td>Feeling ok that someone changes my content</td>
</tr>
<tr>
<td>17.</td>
<td>I could read whatever I wanted to read about</td>
</tr>
<tr>
<td>18.</td>
<td>I question when somebody makes a change</td>
</tr>
<tr>
<td>19.</td>
<td>Not caring when people change my pages</td>
</tr>
<tr>
<td>20.</td>
<td>Not engaging in content changes</td>
</tr>
<tr>
<td>21.</td>
<td>Changing content viewed as a limitation [for a content management tool]</td>
</tr>
<tr>
<td>22.</td>
<td>Comfortable making format changes but would not change content without coordinating with author</td>
</tr>
<tr>
<td>23.</td>
<td>Contribute new but don’t change existing content</td>
</tr>
<tr>
<td>24.</td>
<td>Coordinating with author rather than changing pages</td>
</tr>
<tr>
<td>25.</td>
<td>Experiencing fear (afraid, nervous, anxiety) that content could be changed</td>
</tr>
<tr>
<td>26.</td>
<td>Changing content could alter intended meaning</td>
</tr>
<tr>
<td>27.</td>
<td>Don’t know how to change content but wouldn’t be comfortable with that</td>
</tr>
<tr>
<td>28.</td>
<td>Employees feeling anxiety about changing content</td>
</tr>
<tr>
<td>29.</td>
<td>Feeling it’s not natural in corporation to change content</td>
</tr>
<tr>
<td>30.</td>
<td>Others don’t feel ‘comfortable’ making changes</td>
</tr>
<tr>
<td>31.</td>
<td>Others fearing content could be changed</td>
</tr>
<tr>
<td>32.</td>
<td>Thinking it’s rude to change someone else’s writing</td>
</tr>
<tr>
<td>33.</td>
<td>Experiencing negative consequences</td>
</tr>
<tr>
<td>34.</td>
<td>Experiencing a lot of push back</td>
</tr>
<tr>
<td>35.</td>
<td>Internet abuse in the company</td>
</tr>
<tr>
<td>36.</td>
<td>Nervousness went away with tone of other people</td>
</tr>
<tr>
<td>37.</td>
<td>Non-wiki users are questioning if you sure you should be there [in the wiki]</td>
</tr>
<tr>
<td>38.</td>
<td>People complaining that content needs to be updated</td>
</tr>
<tr>
<td>39.</td>
<td>This is my world don’t dabble in it</td>
</tr>
<tr>
<td>40.</td>
<td>Not getting the bigger picture</td>
</tr>
<tr>
<td>41.</td>
<td>Feeling negativity culturally because of the idea that people can change things</td>
</tr>
<tr>
<td>42.</td>
<td>Not technically savvy enough to make updates</td>
</tr>
<tr>
<td>43.</td>
<td>Resisting the openness to edit someone else’s ‘stuff’</td>
</tr>
<tr>
<td>44.</td>
<td>Software development folks resisting updating others’ wiki page</td>
</tr>
<tr>
<td>45.</td>
<td>Owning content</td>
</tr>
<tr>
<td>46.</td>
<td>Calling people and asking them to explain why they changed my page</td>
</tr>
<tr>
<td>47.</td>
<td>Don’t like it when someone adds irrelevant content to my pages</td>
</tr>
<tr>
<td></td>
<td></td>
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<tr>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>48.</td>
<td>Fearing that people will change content</td>
</tr>
<tr>
<td>49.</td>
<td>Feeling it is intrusive and presumptuous to edit someone else’s work</td>
</tr>
<tr>
<td>50.</td>
<td>Feeling irked when somebody wants to rename my pages</td>
</tr>
<tr>
<td>51.</td>
<td>Having a mindset for how you want things done</td>
</tr>
<tr>
<td>52.</td>
<td>Non-wiki users are questioning if you sure you should be there [in the wiki]</td>
</tr>
<tr>
<td>53.</td>
<td>Not comfortable changing content that belongs to someone else</td>
</tr>
<tr>
<td>54.</td>
<td>Observing Silo effect [file storage and retrieval orientation] creates sense of ownership</td>
</tr>
<tr>
<td>55.</td>
<td>Others don't want me to change their content</td>
</tr>
<tr>
<td>56.</td>
<td>Owning page names</td>
</tr>
<tr>
<td>57.</td>
<td>People wanting to own the pages they create</td>
</tr>
<tr>
<td>58.</td>
<td>Resisting due to cultural sense of content ownership</td>
</tr>
<tr>
<td>59.</td>
<td>Shouldn't be telling people things that 'I' should be telling them</td>
</tr>
<tr>
<td>60.</td>
<td>Would question if someone changed my pages</td>
</tr>
<tr>
<td>61.</td>
<td>Seeing some collaboration but ‘ownership’ overrides it</td>
</tr>
</tbody>
</table>
Appendix E: Subject Profile & Study Summary

**Subject Profile**

**Total Interviews:** 24

**Sex:** Male (12); Female (12)

**Age Groups:**
- 26-30 (2); 31-35 (2); 36-40 (4); 41-45 (8); 46-50 (2); 51-55 (6)

**Line-of-Business:**
- 12 Different Departments: Business (9);
- Information Technology (11); Liaison: Business & IT (4)

**Rank:** Individual Contributors (10); Leads (5); Managers (9)

**Participation Behavior:** Participants (20); Non-Participants (4)

- Added Content: Female (9), Male (9)
- Read Only: Female (1), Male (2)
- Collaborate / Comments: Male (6)
- Change Content: Female (5), Male (7) (6 collaborators, 2 gardeners, 4 minor editing, e.g., spelling errors)
- Did Not Contribute: Female (3), Male (3)
- Did Not Read: Female (2), Male (1)

**Study Summary**

**Subject Metadata:**
- 12 Attributes: Subject identifier, age, line of business, department, gender, location, rank, role, participation behavior: add content, make changes, read, collaborate using comments.

**Total Memos:** 40

**Total Codes:** Categorized Codes (543); Non-Categorized Codes (82)
Appendix F: In Vivo and Other Study Term Definitions

Participant’s employment rank, role, and line-of-business were tracked in the study. Employees identified their rank as individual contributor, lead, or manager. An employee’s rank equated to their level of management responsibilities in the corporate hierarchy. An individual contributor did not manage other employees and was considered a subordinate in the corporate hierarchy. A lead was considered a discipline expert coordinating activities for a given business function, but did not manage subordinates. A manager supervising and writing performance evaluation’s for other managers was considered a senior manager. A manager supervising and writing performance evaluation’s for subordinate employees was considered a manager. An employee role equated to their current job title. The line-of-business an employee worked in was a business unit, IT unit, or liaison between the business and IT unit(s) (liaison).

Wiki behavior was defined as interaction that occurs between an employee and the wiki. People who add, modify, and discuss content were considered contributors. Those who read the wiki regularly were considered lurkers. Contributors and lurkers were collectively considered participants. Actions performed by designated wiki editors and administrators were not considered in this definition. Those who did not read or were infrequent readers of the wiki, did not author content, or did not participate in wiki discussions were considered non-participants.

Wiki leaders were influential in pioneering establishment of the wiki. Three wiki leaders were identified in the study, all male, ranging in age from 45 – 50 who worked in the IT department. One wiki leader, a new hire as an individual contributor, was credited
with instantiating and commandeering the initial presence of the wiki. His experience with wikis in education, along with his knowledge of wiki culture (grassroots and egalitarian), convinced others that the wiki would benefit the corporation. Many subjects attributed the success of Excellupedia to this wiki leader: “He was AWESOME! He was the driving force behind Excellupedia”; “the person who made that [the wiki] happen, starting informally and avoiding corporate governance violating principles of a wiki.”

Two other wiki leaders in the study, one senior manager and one manager, embraced the wiki philosophy and influenced the establishment of the wiki as an enterprise resource, not without resistance. The senior manager and the individual contributor were considered champions of Excellupedia. “From a championing perspective he [the senior manager] was able to identify the niche areas where this [the wiki] can be really effective and then able to market successes. His influence helped out a lot.” “With his [individual contributor] approach and his diligence and his persistence, we got to where he said we might be able to get to [in two years].”

Wiki ambassadors were selected by managers or wiki leaders, or self-appointed wiki advocates who promoted the wiki to others. Wiki ambassadors were both male and female, ranging in age from 26 – 53 and working in IT or business positions. Most wiki ambassadors in the study did not hold management positions though some managers were known to encourage wiki use by their employees. Among many influences, ambassadors “tried to get other teams to post information [on the wiki],” demonstrated the wiki, “produced nice documentation,” “tried to get them [peers] involved,” and “coached people and encouraged them to “just do it.” As stated by one subject, “They [IT] sent an ambassador from IT to different departments to try to get them to use it.”
Wiki gardeners were employees who volunteered to monitor the wiki and make changes to content. Wiki gardeners periodically reviewed, modified, and/or archived outdated content, made formatting changes for presentation consistency, and corrected spelling and/or grammar errors in wiki pages.

Super-users were wiki advocates and avid wiki users who extensively explored and exercised wiki capabilities to the fullest extent, e.g., built widgets, implemented tagging ontology. Super users were generally known as “how-to-resources” where employees would go to seek help in understanding the wiki. “There are people who stepped up as super users and you can go to them for mentoring.” Super-users were known for their expertise, e.g., “most of the people that I encourage to use the wiki come to me ‘cause they want to use the wiki. I don’t go out and look for people to use the wiki but if somebody wants to use the wiki someone will say ‘go and see [subject name] and she’ll help get you started’.” Super users in the study were both male and female ranging in age from 26-52.

The term anti-wikite was used prevalently during interviews by wiki advocates (wikites) to describe wiki detractors. According to wiki champions, an anti-wikite was “someone who doesn’t see or understand the value of a wiki, is opposed to freedom of information sharing, is afraid that it will be misused, or views the wiki as something that contains a lot of corporate information, which is the whole idea.” These in vivo terms were used in describing the following norms.

Emotions generalized as positive affect or negative affect in the results were based upon emotion classifications described in the PANAS-X scales (Watson & Clark, 1994). According to the PANAS-X scales (Watson & Clark), terms such as enthusiastic, happy,
joyful, excited, enthusiastic, proud, and determined were adjectives used to identify self-reported positive feelings about the wiki. Terms such as fear, nervous, angry, guilty, shaky, irritable, and sad were adjectives used to identify self-reported negative feelings about the wiki. These classifications were useful in understanding generalized emotion states and their relationship to wiki behaviors.
Appendix G: Wiki Behavior Concept Matrix

Cell Definitions and Motivation Interpretation Process

<table>
<thead>
<tr>
<th>Contextual Influences</th>
<th>Motivation Type</th>
<th>Goals</th>
<th>Feelings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contextual Influences are elements in the domain that emerged as prevalent concepts in the data, i.e., something that was happening in the context; also considered “external events” coinciding with the Self-Determination Theory (SDT) (Deci &amp; Ryan, 1985).</td>
<td>Motivation Type identifies control and competence factors along with Goals (in the adjacent column) to specify extrinsic and intrinsic motivation. The motivation types found are finally specified along with the Goals they are associated with in the adjacent Goal column. The cognitive evaluation theory (CET), a sub-theory of the SDT, assumes that all external events have both a controlling and informational aspect. The theory presumes that all people have psychological needs for 1) autonomy 2) competence (Deci &amp; Ryan, 1985; Ryan &amp; Deci, 2000a, 2000b). The SDT assumes that controlling aspects of external events are believed to affect the need for autonomy. The competence information aspect is believed to affect the need for competence. The data analysis in this column began with interpretations of controlling and informational, or competence modalities that coincided with the corresponding contextual influence, in accordance with the CET. Given some level of extrinsic control and competence indicators, the researcher concluded that the motivation type was extrinsic falling somewhere in the continuum of the motivation according to the organismic integration theory (OIT), a sub-theory of the SDT (Ryan &amp; Deci, 2000a, 2000b; Reeve, 2005). Based on thorough descriptions of each intrinsic desire provided in Reiss’s (2000) 16 Basic Desires book, the types of Intrinsic desires were also evaluated and identified from interview data. Each Goal is a reason given by subjects for “why” they participated in the wiki. These reasons are then associated with the type of motivation associated with the goal. Motivational goals were interpreted given definitions of extrinsic motivation and identifiable characteristics in the extrinsic motivation spectrum according to the OIT (Deci &amp; Ryan, 1985; Ryan &amp; Deci, 2000a, 2000b; Reeve, 2005). Egoism and altruism were further identified according to characteristics common to Myers (2002), Bar-Tal (1976), Batson, et al. (1987), Mastain (2006) and Penner (1995).</td>
<td>Each Goal is a reason given by subjects for “why” they participated in the wiki. These reasons are then associated with the type of motivation associated with the goal. Motivational goals were interpreted given definitions of extrinsic motivation and identifiable characteristics in the extrinsic motivation spectrum according to the OIT (Deci &amp; Ryan, 1985; Ryan &amp; Deci, 2000a, 2000b; Reeve, 2005). Egoism and altruism were further identified according to characteristics common to Myers (2002), Bar-Tal (1976), Batson, et al. (1987), Mastain (2006) and Penner (1995).</td>
<td>Feelings are emotion states that were documented from interview data. The Positive Affect Negative Affect (PANAS-X) (Watson &amp; Clark, 1994) emotion adjective list was used to identify emotion synonyms that categorize emotion words as either positive or negative.</td>
</tr>
</tbody>
</table>
## Participation Behaviors

*Participation: Added New Content (regardless of lurking or collaborative behavior)*

<table>
<thead>
<tr>
<th>Contextual Influences</th>
<th>Motivation Type</th>
<th>Goals</th>
<th>Feelings</th>
</tr>
</thead>
</table>
| Employment responsibilities + required use of wiki. | **Extrinsic (Deci & Ryan)**  
*Control:* Wiki as a surveillance mechanism, performance objectives.  
*Competency:* Positive performance evaluations, evaluated on providing correct information (customer service), positive feedback from others. | *(Extrinsic Motivation Goals)*  
*External Regulation Goal:* To meet employment expectations, for favorable assessments of work, for commensurate compensation; to do a good job, be thought of positively by others. | Feels good, excited, ambivalent, frustrated that wiki use is required, frustrated it isn’t used more, fear of technology, nervous about openness. |
| Project work managed in the wiki. | **Extrinsic (Deci & Ryan)**  
*Control:* Performance objectives, project deadlines, team spirit, wiki as a surveillance mechanism.  
*Competency:* Positive evaluations, task achievement, team member feedback. | *(Extrinsic Motivation Goals)*  
*External Regulation Goal:* To satisfy performance expectations. | Ambivalent (part of being on a project), frustrated required to use it, happy to use it, interested, excited. |
| Egalitarian culture + grassroots influence + perceived value. | **Extrinsic (Deci & Ryan)**  
*Control:* Persuasion, work, workflow status.  
*Competency:* Positive feedback and support from others, sharing of ideas, work progress and problem resolution. | *(Extrinsic Motivation Goals)*  
*Identified Regulation Goal:* To solve business problems.  
*Integrated Regulation Goal:* To improve corporate communications, share information, and collaborate with others. | Liberating, a sense of freedom, excited, empowered to view openly and contribute, enthusiastic. |
| A culture bound by strict privacy rules that is sensitive to information sharing + corporate conscience. | **Extrinsic (Deci & Ryan)**  
*Control:* Recorded history of wiki activities, corporate conscience.  
*Competency:* Positive feedback from others, no security issues.  
Intrinsic (Reiss)  
*Power,* Independence, Curiosity, Idealism. | *(Extrinsic Motivation Goals)*  
*Introjected Regulation Goal:* To share information without causing risk to customers or competitive advantage. | High degree of confidence that sensitive information will not be posted. Risk averse (ask for forgiveness rather than permission). Frustration that security is a concern. |
| Demanding work schedule with time autonomy + positive management attitude [about the wiki where wiki use is a choice]. | **Extrinsic (Deci & Ryan)**  
*Control:* Time, work responsibilities and challenges, wiki as a surveillance mechanism, and threat of poor performance assessments.  
*Competency:* Positive management and peer feedback, problems solved.  
Intrinsic (Reiss)  
*Power,* Independence, Idealism, Curiosity. | *(Extrinsic Motivation Goals)*  
*External Regulation Goal:* To use the wiki to address work problems.  
*Identified Regulation Goal:* To learn more about what is happening in the organization.  
*Integrated Regulation Goal:* To create corporate memory.  
*(Intrinsic Motivation Goal)*  
*Intrinsic:* To interact with the wiki out of curiosity and just for fun. | Interest, frustration, uncomfortable, happy, excited, comfortable, frustrated there is not more time to play (learn), read, and write, sad when there isn’t time to read, happy when there is time, frustrated it’s not mandated. |
**Collaborative Participation: Lurked, Added Content, Engaged in Discussions, Changed Content**

<table>
<thead>
<tr>
<th>Contextual Influences</th>
<th>Motivation Type</th>
<th>Goals (E indicates egoism, A indicates altruism)</th>
<th>Feelings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knowledge of the wiki understanding that content (corporate assets) is open to change by others.</td>
<td>Extrinsic (Deci &amp; Ryan) Control: Inaccurate or outdated information, wiki as a surveillance mechanism, invitations (autonomy) to make changes, autonomous wiki behavior exhibited by others. Competence: Positive feedback from others, no negative consequences, improved information quality. Intrinsic (Reiss) Order, Independence, Idealism, Approval, Curiosity.</td>
<td>(Extrinsic Motivation Goals) Introjected Regulation Goal: To take pride in the work performed (knowing I did a great job); to reduce personal stress. Identified Regulation Goal: To improve information quality; to standardize wiki pages to improve search capabilities for self (E); for up-to-date information. Integrated Regulation Goal: To solidify ideas; to reduce frustration of others (A); to increase wiki usage to benefit the company (A); standardize wiki pages to improve search capabilities for others (A); for organization to benefit from immediate, accessible, and accurate information (A).</td>
<td>Feels good, feel joy in making changes knowing someone else will benefit, gratifying, feel a sense of freedom to change content, feel comfortable (as long as content belongs to working group).</td>
</tr>
<tr>
<td>Knowledge that the “discussion function” exists to collaborate about wiki content.</td>
<td>Extrinsic (Deci &amp; Ryan) Control: Discussion pages, invitation to collaborate and make changes, wiki as a surveillance mechanism, collaborative mindset exhibited by others. Competence: Feedback from others. Intrinsic (Reiss) Independence, Curiosity, Power, Idealism.</td>
<td>(Extrinsic Motivation Goal) Identified Regulation Goal: To collaborate [in wiki] other than daily internal and in-person battles. Integrated Regulation Goal: To create new knowledge (2+2&gt;4) (A); to co-create so others can do a better job; to collaborate; to improve information quality (A). (Intrinsic Motivation Goal) Goal: To learn new ways to collaborate with others.</td>
<td>Positive mindset towards collaboration (collaboration is second-nature) feels good, great, passionate, comfortable, like to collaborate, freedom to collaborate.</td>
</tr>
<tr>
<td>Negative attitude among peers.</td>
<td>Extrinsic (Deci &amp; Ryan) Control: Focus on wiki value. Competence: Wiki success rate and achievement of business objectives. Intrinsic (Reiss) Idealism.</td>
<td>(Extrinsic Motivation Goal) Integrated Regulation Goal: To do what is right, to help employees and customers--regardless of negative personal consequences (A); make a better company even if rules need to be broken (A).</td>
<td>Frustration (naysayers spreading the word quickly)</td>
</tr>
</tbody>
</table>
New technology, i.e., “the wiki,” becomes available (whose openness and value is known).

<table>
<thead>
<tr>
<th>(Assertion B)</th>
<th>Extrinsic (Deci &amp; Ryan)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Control: Invitations (autonomy) to participate, autonomous wiki behavior exhibited by others.</td>
</tr>
<tr>
<td></td>
<td>Competence: Feedback from others.</td>
</tr>
<tr>
<td></td>
<td>Intrinsic (Reiss)</td>
</tr>
<tr>
<td></td>
<td>Curiosity, Independence, Status, Power, Idealism.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>(Extrinsic Motivation Goals)</th>
<th>Identified Regulation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Goal: Need for up-to-date information.</td>
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</table>

<table>
<thead>
<tr>
<th>(Integrated Regulation)</th>
<th>Goal: To make a difference (to employees and customers), avoid loss of corporate knowledge.</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Intrinsic Motivation Goal)</td>
<td>Goal: To learn and experience something new (early adopters motivated by natural curiosity); to be challenged; to learn something that is easy-to-use; to use innovative ways to get work done; to avoid falling into a rut; to exercise knowledge, skills, and abilities.</td>
</tr>
</tbody>
</table>

| Joy, good, happy, excitement, greater personal value, fun, surprised (the company has one), passion, excited, nervously, technically competent, enthusiastic, freedom, power, empowered. |
**Non-Collaborative Participation: Did Not Engage in Discussions, Did Not Change Content**

<table>
<thead>
<tr>
<th>Contextual Influences</th>
<th>Motivation Type</th>
<th>Goals</th>
<th>Feelings</th>
</tr>
</thead>
</table>
| Traditional culture + concept of ownership. | Extrinsic (Deci & Ryan)  
Control: Culture (ownership effect) – personal, social, cultural norms; wiki rules of etiquette, record of changes (wiki history, anticipated negative consequences).  
Competence: Negative feedback (peer and managerial), negative performance evaluations.  
Intrinsic (Reiss)  
Honor, Order, Tranquility. | (Extrinsic Motivation Goal)  
Introjected Regulation  
Goal: To honor traditional personal, social, and corporate norms; to collaborate using traditional modes of communication and NOT the wiki; to avoid interpersonal events. | Anxiety, fear, fearful that tone in writing could be misunderstood commenting via the wiki. Emotions would be too strong to debate on wiki, e.g., key corporate definitions. Feeling that nothing would get done [collaborating on wiki]. Anxiety associated with non-conformance to traditional process protocol, loyal to established norms (comfortable with formal governance), anger that content was changed. |

**Non-Participation Behaviors**

**Non-Participation: Did Not Lurk, Did Not Add Content, Did Not Change Content**

<table>
<thead>
<tr>
<th>Contextual Influences</th>
<th>Motivation Type</th>
<th>Intrinsic Goals</th>
<th>Feelings</th>
</tr>
</thead>
</table>
| Demanding work schedule with time autonomy + management does not endorse the wiki + pervasive negative attitudes among peers [about the wiki where wiki use is a choice]. | Extrinsic (Deci & Ryan)  
Control: Time, deadlines, and responsibilities, peer influence.  
Competence: Performance evaluations, and negative feedback (peers and managers).  
Intrinsic (Reiss)  
Order, Honor, Tranquility. | (Extrinsic Motivation Goals)  
Introjected Regulation  
Goal: To avoid stress; to spend time satisfying current goals and expectations; honor traditional corporate norms. | Anxiety, frustration that the wiki exists, frustrated when information can’t be found, frustrated not rolled out as a formal corporate initiative, fear of the unknown. |
A culture bound by strict privacy rules that is sensitive to information privacy.

| (Assertion D) | Extrinsic (Deci & Ryan) Control: Privacy training, recorded history of wiki activities security standards & regulations, security department complaints and charges. Competence: Performance feedback (formal and informal) by peers and managers. | Intrinsic (Reiss) Order, Honor, Tranquility. | (Extrinsic Motivation Goals) Introjected Regulation Goal: To avoid stress; to protect customer and corporate information; to avoid negative consequences. | Anxiety, fear, nervous (leaking information to competitors and sharing private health information), frustrated there is an uncontrolled security risk out there. |
| Security login requirements to access the wiki. | Extrinsic (Deci & Ryan) Control: Requirement to maintain (create and remember) and to enter user-id & password Competence: Gain access, or not; feedback from wiki administrators. | | (Extrinsic Motivation Goals) Introjected Regulation Goal: To avoid stress. Identified Regulation Goal: a secure environment but don’t want to take the time or effort to login; to defy authority (don’t want to be told what to do). | Frustrated (that we have to log in). |
Reference List


