# An Exploratory Study of Relationships between Workforce Characteristics and the Use of Collaboration and Social Networking Tools in a Global Technology Firm

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## Abstract

In today's complex global business environment, organizations are made up of diverse workforces (Boomers, Gen X, and Gen Y) that include both management and non-management personnel. Within these same organizations, a multitude of communications, collaboration, and social networking tools have been implemented to support operational effectiveness. Using survey research of over 300 U.S. based professionals in a global technology services firm, this study explores whether relationships exist between an individual's job role, gender, age group, project and their use of collaboration and social networking technologies. Additionally, the research examines whether individual attitudes toward the use of these technologies is influenced by these same factors. Statistically significant relationships between age and project, and the use of collaboration and social networking tools were found, while job role and age showed relationships with collaboration tool use and email usage. No significant relationships were found for gender.

**Keywords**: Collaboration, Social Networking, Information Technology, SharePoint, Gen Y, Gen X, Management

### 1. INTRODUCTION

For large technology service providers, communications and collaboration, both internally and externally, are vital for competition in a global marketplace. With diverse workforces that include individuals from multiple cultural backgrounds, projects, generations (Gen X, Gen Y, and Boomers), and job roles, companies are challenged to fully implement technologies and approaches that enhance the effectiveness of their teams. Also, with over 90% of content now estimated to be available in electronic form (Ingram, 2005), companies struggle to manage the related electronic content. In response to increasing business needs, organizations have implemented technologies such as SharePoint, Outlook, wikis, blogs, shared folders, and interactive messaging to improve their operations, meet compliance requirements, and enhance the sharing of knowledge.

With increasing workforce virtualization and the diversity of job roles and age groups in companies today, the implementation of communications and collaboration technologies in multiple industries has been beneficial; but problems remain with adoption and understanding. This study examines the adoption of collaboration and social networking technologies by 306 participants in a global professional services firm, and assesses whether technology usage and attitudes toward the technology are related to age group, gender, project, and job role. Gaining an understanding of the technologies in use by the company can provide insights for improving adoption, for targeting training or communications for specific

groups, and for identifying areas for further research.

Four research questions addressed by this study include:

R1. What major collaboration tools are used by the organization and what is the frequency of their use?

R2. How often are wikis, blogs and MySpace used by the IT professionals?

R3. Do relationships exist between age group, gender, project, and job role, and the actual usage of collaboration and social networking technologies?

R4. Do attitudes toward collaboration tool usage vary based on age group, gender, project, and job role?

## 2. ORGANIZATION BACKGROUND

The organization involved with the study provides technology and business services to companies in multiple countries. The research focused on 306 participants from three project teams that had operating locations in multiple geographies both within the U.S and globally. Only the U.S. based participants were included in the research. The organization had a strong culture, and had adopted SharePoint technology for collaboration for each of the teams in the study. SharePoint was being used to replace Lotus Notes as a primary collaboration tool. A number of additional collaboration technologies were in use and available to personnel in the company; including Microsoft Outlook (email), Interactive Messaging, shared folders, and a knowledge management system. Wiki and blog technologies were also made available to employees; however the company did not encourage or mandate their use. Each project had both management and non-management related job roles and had personnel from each of the age groups included in the study (i.e. Gen X, Gen Y, and Boomers). A summary of survey participants is provided in Table 1.

| | Count | % of Total |
|---|---|---|
| **Age Group** | 306 | |
| Gen Y | 122 | 40% |
| Gen X | 139 | 45% |
| Boomers | 45 | 15% |
| | | |
| **Gender** | 306 | |
| Male | 196 | 64% |
| Female | 110 | 36% |
| | | |
| **Project** | 306 | |
| Proj 1 | 103 | 34% |
| Proj 2 | 93 | 30% |
| Proj 3 | 110 | 36% |
| | | |
| **Role** | 304 | |
| Management | 126 | 41% |
| Non-Mgmt | 178 | 59% |

Table 1 Participant Summary

## 3. LITERATURE REVIEW

Social networking and collaboration technologies have been implemented in a number of organizations on a global basis to improve knowledge management capabilities, to enhance operational effectiveness, and to meet compliance needs. A working definition of these technologies and findings relating to their use are provided in this section. In addition, characteristics of workforces such as age groups, project assignments, gender, and job role are discussed to provide a context for the analysis and interpretation of results found later in this paper.

### Social Networking

Multiple and varied definitions exist to describe "people to people" communications and collaboration using Web based technologies. Some suggest the term social networking, while others use the term Enterprise 2.0. This term is offered by the Association for Information and Image Management (Frappaolo and Keldsen, 2008), that defines it as "a system of Web-based technologies that provide rapid and agile collaboration, information sharing, emergence, and integration capabilities in the extended enterprise" (p. 11). This definition is related to the application of the social networking technologies in a business environment.

Wikis and blogs are typically cited as examples of technologies that are used to facilitate communications and collaboration either in a corporate or personal environment (Carlin, Lee and Lemons, 2008). Hasan and Pfaff (2006) define a wiki as "a web-based application that allows many participants to write collaboratively, where they can continue to add or edit the content of documents and dynamically determine relationships between sets of documents" (p. 41). In contrast, a blog is defined by Agarwal and Liu (2008) as "a website that displays, in reverse chronological order, the entries by one or more individuals, and usually has links to comments on specific postings" (p. 18). Both wikis and blogs are used in businesses and are also widely used in the consumer marketplace (Gibson, 2006; Carlin, Lee and Lemons, 2008). MySpace is another social networking technology that has been used extensively by individuals for sharing both personal and business information (Lenhart, 2009). Wikis, blogs, and MySpace have all been deployed on a global basis with millions of users (Hsu and Lin, 2008; Lenhart, 2009).

Research from Gareiss (2008) suggests that wiki use is higher for companies that have tele-working policies (57% versus 44% for those without a policy) and that blog usage is higher as well (41% versus 39% for those without a policy). Lastly, a Snyovate Marketing Survey (Anonymous, 2007) found that awareness and usage of blogs strongly correlates with age, and that younger people are more active bloggers.

Recent research by the PEW Internet & American Life Project (Lenhart, 2009) has found that one third (35%) of American adult Internet users has a profile on a social networking site such as MySpace. Further, the findings show that younger adults have higher usage rates than older adults.

**Collaboration**

Organizations use a number of technologies to support knowledge management, communications and collaboration for project related work. Major providers of these technologies include Microsoft with their Outlook product, IBM, Oracle, SAP, Interwoven, and Opentext (Totterdale, 2008). These products have been deployed in many industries to integrate and manage electronic content in many forms including documents, images, voice, email, and video.

Prior research, however, has found issues with the effective management of electronic content and with the full adoption of the tools to meet compliance needs (e.g. records management) (Jones and Teevan, 2007; Jones, 2008). Culture, technology limitations, concerns regarding security, legal constraints, perceived usefulness, and ease of use have all been identified as factors that can influence adoption (Davenport and Prusak, 1998; Jones, 2008). Another factor facing organizations is the shear volume of electronic content that must be categorized and managed to meet collaboration and communication needs. In one study, individuals reported receiving over 400 emails per day that had to be processed and filed (Totterdale, 2008).

**Workforce Characteristics**

In addition to understanding collaborative technologies and their use, this study also examines the diversity of workforce members, including Gen Ys, Gen Xs and Boomers. Both gender and characteristics of these age groups have been evaluated frequently in the literature and are discussed in summary form below.

With respect to Gen Y or the Millennials, this "cohort" is generally recognized to have been born in the late 1970's and is often referred to as the "digital natives" (Prensky, 2006) because they are technologically savvy and have grown up with technology (Yeaton, 2008, p. 69). Millennials are also known for their ability to multitask at work using various technologies (Wesner and Miller, 2008), have developed group skills, and are adept at collaboration (Yeaton, 2008; Hewlett, Sherbin and Sumberg, 2009). Gen Ys also have been found to use the latest social networking tools to connect with others in the workplace (Hewlett, Sherbin and Sumberg, 2009).

In contrast to Gen Ys, Gen Xs (early 1960's through late 1970's) consider "competence, on-going learning, informality and feedback as important" (Mullan, 2008, p. 17). Additionally, a research report from Catalyst in 2005 found that 78% of Gen X respondents viewed flexibility in the workplace as important and that many desired to have flexible work arrangements (Anonymous, 2005). Auby (2008) argues that there are many differences between Gen X and Gen Y in the workplace and suggests the need to limit in-

person meetings while encouraging alternative technologies for collaboration.

Lastly, recent research suggests that the Boomer generation, born prior to the early 1960's, "reveal remarkable similarities in workplace preferences" with the Gen Y cohort (Hewlett, Sherbin and Sumber, 2009, p. 72). Collaboration, flexible work arrangements, and access to new experiences and challenges have all been cited as characteristics common to the two groups. Boomers, like GenYs, have also been exposed to rapidly changing technologies during their lifetimes which may influence their attitudes on technology adoption (Wesner and Miller, 2008).

In addition to the generational differences listed above, studies have considered the influence of *gender* on the use of social networking tools, as well as user attitudes that may influence technology adoption. Research conducted by the PEW Internet & American Life Project (Lenhart, 2009) found that gender was not related to the use of social networking solutions. Also, as part of their research involving the technology acceptance model (TAM), Venkatesh and Morris (2000) found that men's technology usage decisions were more strongly influenced by their perceptions of usefulness, while women's were more strongly influenced by ease of use.

## 4. RESEARCH METHODOLOGY

This paper was based on survey data obtained from a global professional services firm during a two week period in October and November of 2008. The objective of the study was to investigate if relationships existed between age group (i.e. Gen Y, Gen X, and Boomers), gender, project, job role (non-management vs. management), and the use of collaboration and social networking tools. In addition, the research was intended to determine if attitudes toward the use of collaboration technologies such as SharePoint, Lotus Notes, Clearcase/Clearquest, Interactive Messaging, Shared Folders and Email were also related to these same factors.

An established research strategy, surveys were used for data collection (Babbie, 2007). Given the geographic dispersion throughout the U.S of the individuals participating in the research, and the need to capture information both quickly and economically, the survey provided a mechanism for identifying the attributes of a large population from a smaller group (Babbie, 2007). The survey was cross sectional; where the data was collected at one point in time and was administered on-line through Zoomerang, an Internet survey tool.

Management of the professional services firm used in the study provided access to 1,985 participants from a population that exceeded 100,000. Since the email addresses of the participants were known, a single stage sampling procedure was used and 100% of the population was sent the link to the electronic survey instrument. The survey tool captured 785 responses, which reflected a 40% response rate for the research.

Although 1,985 individuals from six project teams responded to the survey, a convenience sample of 306 participants located in the U.S. was selected from this group to include only those personnel who were assigned to one of three projects that utilized collaboration tools. This subset of data was selected to eliminate any variability that might arise from geographic and cultural differences from non-U.S. participant responses.

The survey instrument was constructed in a three step process. In the first step, interviews were conducted with senior executives to gather information about the different technologies used to support collaboration in the organization and to gain an understanding of terminology used to describe the technology internally. From the interviews, the primary technologies identified were SharePoint, Outlook, Interactive Messaging (IM), Lotus Notes, ClearCase, and shared folders. Although other technologies were in use, these were believed to be the most frequently used and were therefore included in the survey in questions relating to tool usage. With respect to social networking technologies, the researcher elected to include survey options of wikis, blogs, and MySpace since they have been acknowledged by others as being widely used in the consumer marketplace (Lenhart, 2009). With respect to attitudes, participants were asked their level of agreement on the state-

ments shown in Figures 1 and 2 relating to perceived usefulness and ease of use. These statements were adapted from a survey instrument used by Bhattacherjee and Sanford (2006) and were similar to others used by Venkatesh, Morris, Davis and Davis (2003).

| Perceived Usefulness |
|---|
| Relating to my role in the organization, collaboration tools:<br><br>1. Increase my productivity<br>2. Improve my performance<br>3. Make me more effective<br>4. Are useful in my job |

Figure 1 Attitude Statements

| Ease of Use |
|---|
| The collaboration tools that I use make it easy for me to :<br><br>1. Quickly file/categorize content<br>2. Find/retrieve content that I entered<br>3. Find/retrieve content that others have entered |

Figure 2 Attitude Statements

After defining the collaboration tools in use, the second step in the development of the survey instrument was to define the response categories or scales to gather usage information from the participants. For tool usage, a five point scale consisting of "Not at All," "Seldom," "Occasionally," "Often" and "Frequently" was used to collect frequency information. Age groupings used in the survey included <26, 26-30, 31-36, 37-47, and 48 or more. Attitudes were measured using a Likert type scale of "Disagree, "Slightly Disagree", "Neutral", "Slightly Agree", and "Agree." Regarding the volume of email participants received on a daily basis, averages of <20, 21-50, 51-100, 101-200, and over 200 were listed as possible responses.

The last step in preparing the instrument was to test it with a group of seven individuals to insure that the questions were understood, and that the electronic data collection worked properly. After making minor wording changes to the instrument as a result of participant feedback, the results were downloaded from Zoomerang and uploaded into SPSS to validate the data transfer.

After the survey instrument was finalized, a senior executive from each of the groups sent a request to all of their team members inviting them to participate in the research. A brief introduction to the research indicated that their involvement was voluntary. To improve the response rates to the survey, each executive also sent a follow-up email encouraging participation approximately one week after the initial survey invitation was sent.

Four independent variables (age group, gender, project, and job role) were evaluated separately against the dependent variables (collaboration technologies, social networking technologies, attitudes) in the analysis. Recoding of the variables was performed as shown in Figure 3 to facilitate the analysis of the data.

| Variable | Original Response | Recoded Response |
|---|---|---|
| Age Group | < 26<br>26-30<br>31-36<br>37-47<br>>=48 | Gen Y<br>Gen Y<br>Gen X<br>Gen X<br>Boomer |
| Job Role | Analyst<br>Programmer<br>Consultant<br>Specialist<br>Leader<br>Manager<br>Senior Mgr Executive | Non-Mgmt<br>Non-Mgmt<br>Non-Mgmt<br>Non-Mgmt<br>Non-Mgmt<br>Mgmt<br>Mgmt<br>Mgmt |
| Frequency of Use | Not At All<br>Seldom<br>Occasionally<br>Often<br>Frequently | Not At All<br>Infrequently<br>Infrequently<br>Frequently<br>Frequently |
| Attitude Scale | Disagree<br>Slightly Disagree<br>Neutral<br>Slightly Agree<br>Agree | Disagree<br>Disagree<br>Neutral<br>Agree<br>Agree |

Figure 3 Recoding of Variables

Upon closing the survey process, survey feedback was downloaded from Zoomerang and uploaded into SPSS for reporting and analysis. SPSS (V.15) was used to generate frequency distributions for the survey responses, and was also used to perform chi-square calculations to determine if statistical relationships existed between tool usage, attitudes, and key demographic variables.

## 5. RESULTS

From the 306 participant responses, the survey data indicated that there were 45 Boomers (15%), 139 Gen Xs (45%) and 122 Gen Y (40%). Additionally, 59% or 178 respondents were categorized as non-

management, while 41% or 126 were considered as management personnel for analysis purposes. Two respondents (.7%) were unable to be categorized regarding their management status since they reported job categories not recognized by the researcher.

### R1 Collaboration Tool Use

For each of the research questions, a summary of the key findings are summarized below. The first research question investigated the type and frequency of use for the major collaboration tools used by the three projects. The results from the survey, as shown in Table 2, indicated that SharePoint, shared folders, and interactive messaging (IM) were the three most frequently utilized collaboration tools (i.e. they had the lowest number of respondents indicating that they did not use the tool at all).

| Collaboration Tool | n=306 | Frequently | Infrequently | Not At All |
|---|---|---|---|---|
| Sharepoint | % Usage | 30 | 51 | 19 |
| Know ledge Mgmt | % Usage | 12 | 65 | 24 |
| Clearcase | % Usage | 10 | 19 | 71 |
| Lotus Notes | % Usage | 39 | 12 | 49 |
| Shared Folders | % Usage | 54 | 30 | 16 |
| Interactive Messaging | % Usage | 78 | 15 | 7 |
| | | | | |

Table 2 Collaboration Tool Usage

Usage of another collaboration tool, Microsoft Outlook, was assessed by examining the volume of email processed by individuals. Findings indicated that 39% (120) of the respondents received less than 50 emails a day, 27.5% (84) received between 51 and 100 emails a day, while 14.7% (45) received over 100 emails per day.

### R2 Social Networking Tool Use

In addition to determining the usage of internal collaboration tools in R1, the second research question (R2) investigated the usage of social networking tools by professionals in the organization. Individuals using these tools could have used them personally or within the organization. Findings from the survey are summarized in Table 3. Of the three social networking tools, wikis and blogs were used by 38% of the respondents, while MySpace was used by 22% of the respondents.

| Social Netw orking Tool | n=306 | Frequently | Infrequently | Not At All | Usage |
|---|---|---|---|---|---|
| Wikis | % Usage | 11 | 27 | 62 | 38 |
| Blogs | % Usage | 8 | 30 | 62 | 38 |
| Myspace | % Usage | 5 | 17 | 78 | 22 |

Table 3 Social Networking Tool Usage

### R3 Relationships between Workforce Characteristics and Tool Usage

The next step in the analysis process was to evaluate whether any statistically relevant relationships existed between the independent variables age group, gender, project, and job role, with the dependent variables "usage of collaboration tools" and "usage of social networking software". Each is addressed separately below.

With the exception of the knowledge management tool, Gen Ys demonstrated a higher level of usage than the other *age groups* for all of the collaboration tools. However, statistically significant relationships only existed for the knowledge management tool ($x^2$=15.212, df=4, p=.004), the ClearCase tool ($x^2$=13.147, df=4, p=.011) and Lotus Notes ($x^2$=13.868, df=4, p=.008). The Boomers recorded the lowest usage on all tools except for Lotus Notes. Conversely, 53% of Gen X and 47% of Boomers received over 50 emails per day while only 27% of Gen Y received that many.

A significant statistical relationship also existed between age group and email volume ($x^2$=25.812, df=8, p=.004), with Gen X having the highest usage and the Boomers the second highest. With respect to the social networking tools, Gen Y had the highest usage of all of the groups, with the Boomers having the lowest usage. Additional details relating to social networking usage by age group is shown in Appendix A. Statistical relationships for the social networking tools and age groups are listed in Table 4.

| Tool | $x^2$ | df | p |
|---|---|---|---|
| Wikis | 15.921 | 4 | 0.003 |
| Blogs | 5.031 | 4 | 0.284 |
| MySpace | 14.188 | 4 | 0.007 |

Table 4 Social Networking Relationships

Although Gen Y respondents indicated a high level of usage of the collaboration and social networking tools, relationships between *job*

*role and usage* were also found. With the exception of shared folders, management was more likely than non-management to use the collaboration tools. Conversely, management was less likely to use wikis and blogs than the non-management respondents, but more likely to use MySpace. The differences in usage between the groups were statistically significant for SharePoint ($x^2$=11.694, df=2, p=.003), knowledge management ($x^2$=14.391, df=2, p=.001), lotus notes ($x^2$=6.039, df=2, p=.049) and shared folders ($x^2$=8.54, df=2, p=.014). A summary of collaboration and social network usage by job role is shown in Appendix B. Finally, management had a significantly higher level of email usage (greater than 50 per day) than the non-management group (66% versus 26%).

In contrast to age groups and job role, no relationships were found between *gender* and the use of any of the tools. However, as might be expected, significant relationships did exist between a participants *project* assignment and the use of certain collaboration tools. Notably, as seen in Appendix C, project 1 showed much lower levels of usage for SharePoint and Lotus Notes than the other two projects.

Finally, although there was a significant relationship between MySpace and project assignment, no relationships existed for wiki and blog usage. Also, no relationships were found between project and email usage.

**R4 Relationships Between Workforce Characteristics and Attitudes**

The last area of investigation was to determine if any relationships existed between workforce characteristics (age group, gender, job role and project assignment) and attitudes toward the use of the collaboration tools.

With respect to age groups, Gen Y respondents agreed more often than Gen X and Boomer respondents about the usefulness of the tools and their ease of use. Although the Boomers indicated a lower level of agreement on usefulness than the Gen X group, they indicated a higher level of perceived ease of use. A summary of attitudes by age group is shown in Appendix A.

In contrast to the age group findings, *gender* was not found to be related to attitudes regarding perceived ease of use or perceived usefulness of the collaboration tools. Project assignment, however, did indicate a statistically significant relationship with perceived usefulness-productivity ($x^2$=9.791, df=4, p=.044) and with ease of use- find/retrieve content ($x^2$=16.98, df=4, p=.009). A summary of project related statistics is shown in Appendix C.

A final analysis was performed to assess whether relationships existed between job role and the participant's attitude toward perceived usefulness and ease of use of the collaboration tools. Although no statistically significant relationships were found, a higher percentage of management respondents agreed that the tools were useful and that they were easy to use as shown in Table 5.

| Perceived Usefulness | n=304 | Non-Mgmt | Mgmt |
|---|---|---|---|
| Increase my productivity | % Agree | 74 | **77** |
| Improve my performance | % Agree | 65 | **68** |
| Make me more effective | % Agree | 70 | **77** |
| Are useful in my job | % Agree | 80 | **83** |

| Ease of Use | n=304 | Non-Mgmt | Mgmt |
|---|---|---|---|
| Quickly file/categorize content | % Agree | 62 | 63 |
| Find retrieve content that I entered | % Agree | 65 | 69 |
| Find/retrieve content others entered | % Agree | 63 | 67 |

Table 5 Job Role Responses

## 6. CONCLUSIONS

Through a survey of 306 U.S. based information technology professionals, this research study has quantified their usage of certain collaboration and social networking tools. Further, the study has found that significant relationships exist between the usage of these tools, attitudes about the tools, certain age groups, projects, and job roles. No relationships were found regarding gender. Table 6 provides a summary of the key relationships found in the research. Each box in the table indicates that a statistically significant relationship exists. The number seen in a box indicates that multiple relationships existed for a category. For example, the number 2 next to social networking represents the fact that the use of two tools, wikis and blogs, was related to age group.

| | Age Group | Gender | Role | Project |
|---|---|---|---|---|
| Collaboration Tools | 3 | | 4 | 5 |
| Social Networking | 2 | | | |
| Perceived Usefulness | x | | | |
| Ease of Use | x | | | |
| Email Volume | | | | |
| x- approaching significance | | Significant at p <.05 | | |

Table 6 Relationship Summary

As was expected from the literature, Gen Ys, or the digital natives, had the highest percentage use of the three groups for all but one of the collaboration technologies in use (i.e. Lotus Notes) in the organization. Similarly, Gen Ys had significantly higher levels of usage of the three social networking tools identified in the research. These findings are consistent with research that suggested that Gen Ys are technology savvy and are collaborative by nature (Yeaton, 2008). In contrast to their usage of many of the collaboration tools, Gen Ys received significantly less email than the Gen X and Boomer participants, reflecting either differences in job roles or communication styles. In contrast to the Boomers and Gen Xs, Gen Y expressed attitudes that the tools were easier to use and were more useful to them than the other age groups. This may help explain higher usage levels by the Gen Y group. The one tool that was not used as frequently by the Gen Ys was the lotus notes technology, which was an older technology in use at the company that was being phased out.

The relationships found between project and collaboration tool usage are likely a reflection of group practices that have been adopted in the organization. However, questions remain regarding the adoption of the technology in the company since in all cases; the tools were only used by a certain percentage of the respondents. In addition, the research found that email received is more directly related to age group and role than it is to project.

With respect to job role in the organization, management personnel were statistically more likely to use many of the collaboration tools, but had similar usage levels with non-management personnel for the social networking tools. Management's broader usage of the collaboration tools, and a higher level of email activity, may reflect a greater need for communications by those in management roles. Since management and non-management respondents had similar perceptions of ease of use and tool usefulness, additional factors must be considered to explain differences in their usage.

Prior research from Gareiss (2008), found that in teleworking companies, 44% of the employees used wikis and 39% used blogs. These finding were confirmed in this study where both wiki and blog usage was 38%. Similar to Lenhart's (2009) findings, this study also confirmed that younger individuals (Gen Y) were more likely than older individuals to use social networking tools at statistically significant levels.

In summary, the findings of this study serve to highlight differences in the use of collaboration tools, social networking tools and email between age groups, projects and organizational job roles. These findings can be used by organizations to identify areas for improving technology adoption, to improve awareness regarding differences in communication approaches, and to consider the need for enhanced training and communications.

**Limitations**

Although a large number of participants completed the survey, limitations involving this research must be considered. Since the research was conducted at a single company, it is not possible to generalize the results to a larger population. Also, although participants recorded their usage, actual volume information was not gathered for anything other than email activity. Lastly, it is likely that other variables such as culture, trust, geography, project team, and work activity, may have an influence on an individual's response.

With these limitations, opportunities exist for further research. Expanding the number of companies and countries in the analysis would help to confirm the findings from this study and to gain new insights. Additionally, exploring the impact of security/privacy concerns, and legal systems on an individual's usage may be helpful in interpreting usage differences between groups. Lastly, research directed at gaining a more detailed understanding of how social networking tools are used to support business and personal needs, can be used to develop new ap-

proaches for improving the adoption of the technology.

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## Appendix A Age Group Statistics

| Collaboration Tool | n= 306 | Gen Y | Gen X | Boomers | $x^2$ | df | p |
|---|---|---|---|---|---|---|---|
| Sharepoint | Use % | 84 | 80 | 76 | 5.549 | 4 | 0.235 |
| Knowledge Management | Use % | 72 | 83 | 69 | 15.212 | 4 | 0.004 |
| Clearcase/Clearquest | Use % | 39 | 25 | 16 | 13.147 | 4 | 0.011 |
| Lotus Notes | Use % | 53 | 45 | 62 | 13.868 | 4 | 0.008 |
| Shared Folders | Use % | 86 | 83 | 80 | 6.081 | 4 | 0.193 |
| Interative Messaging (IM) | Use % | 96 | 92 | 87 | 5.978 | 4 | 0.201 |
| | | | | | | | |
| **Social Networking Tool** | **n=306** | **Gen Y** | **Gen X** | **Boomers** | $x^2$ | **df** | **p** |
| Wikis | Use % | 51 | 32 | 22 | 15.921 | 4 | 0.003 |
| Blogs | Use % | 42 | 37 | 26 | 5.031 | 4 | 0.284 |
| MySpace | Use % | 30 | 19 | 9 | 14.188 | 4 | 0.007 |
| | | | | | | | |
| **Perceived Usefulness** | **n=306** | **Gen Y** | **Gen X** | **Boomers** | $x^2$ | **df** | **p** |
| Increase my productivity | % Agree | 84 | 71 | 67 | 9.41 | 4 | 0.052 |
| Improve my performance | % Agree | 73 | 61 | 60 | 5.19 | 4 | 0.269 |
| Make me more effective | % Agree | 75 | 72 | 69 | 1.754 | 4 | 0.781 |
| Are useful in my job | % Agree | 86 | 81 | 69 | 6.61 | 4 | 0.158 |
| | | | | | | | |
| | | | | | | | |
| **Ease of Use** | **n=306** | **Gen Y** | **Gen X** | **Boomers** | $x^2$ | **df** | **p** |
| Quickly file/categorize cor | % Agree | 70 | 56 | 62 | 12.486 | 6 | 0.052 |
| Find retrieve content that I | % Agree | 72 | 61 | 69 | 12.262 | 6 | 0.056 |
| Find/retrieve content other | % Agree | 71 | 60 | 62 | 8.461 | 6 | 0.206 |
| | | | | | | | |
| **Email Usage** | **n=306** | **Gen Y** | **Gen X** | **Boomers** | $x^2$ | **df** | **p** |
| >200 | % | 3 | 3 | 7 | 25.812 | 8 | 0.001 |
| 101-200 | % | 6 | 17 | 7 | | | |
| 51-100 | % | 19 | 33 | 33 | | | |
| 21-50 | % | 45 | 35 | 36 | | | |
| <=20 | % | 27 | 12 | 17 | | | |

## Appendix B Job Role Statistics

| Collaboration Tool | n=304 | Non-Mgmt | Mgmt | $x^2$ | df | p |
|---|---|---|---|---|---|---|
| Sharepoint | %Frequently | 75 | **91** | 11.694 | 2 | 0.003 |
| Knowledge Management | %Frequently | 68 | **87** | 14.391 | 2 | 0.001 |
| Clearcase/Clearquest | %Frequently | 27 | **32** | 2.615 | 2 | 0.271 |
| Lotus Notes | %Frequently | 46 | **58** | 6.039 | 2 | 0.049 |
| Shared Folders | %Frequently | 85 | 82 | 8.54 | 2 | 0.014 |
| Interative Messaging (IM) | %Frequently | 92 | **94** | 0.673 | 2 | 0.714 |

| Social Networking Tool | n=304 | Non-Mgmt | Mgmt | $x^2$ | df | p |
|---|---|---|---|---|---|---|
| Wikis | %Frequently | 42 | 35 | 3.826 | 2 | 0.148 |
| Blogs | %Frequently | 39 | 36 | 0.409 | 2 | 0.815 |
| MySpace | %Frequently | 21 | 24 | 0.77 | 2 | 0.68 |

| Perceived Usefulness | n=304 | Non-Mgmt | Mgmt | $x^2$ | df | p |
|---|---|---|---|---|---|---|
| Increase my productivity | % Agree | 74 | **77** | 0.329 | 2 | 0.848 |
| Improve my performance | % Agree | 65 | **68** | 0.375 | 2 | 0.829 |
| Make me more effective | % Agree | 70 | **77** | 2.495 | 2 | 0.287 |
| Are useful in my job | % Agree | 80 | **83** | 1.054 | 2 | 0.59 |

| Ease of Use | n=304 | Non-Mgmt | Mgmt | $x^2$ | df | p |
|---|---|---|---|---|---|---|
| Quickly file/categorize content | % Agree | 62 | 63 | 3.295 | 3 | 0.348 |
| Find retrieve content that I enter | % Agree | 65 | 69 | 6.579 | 3 | 0.087 |
| Find/retrieve content others ente | % Agree | 63 | 67 | 2.512 | 3 | 0.473 |

| Email Usage | n=304 | Non-Mgmt | Mgmt | $x^2$ | df | p |
|---|---|---|---|---|---|---|
| >200 | % | 2 | 6 | 59.644 | 4 | 0.001 |
| 101-200 | % | 5 | 20 | | | |
| 51-100 | % | 18 | 40 | | | |
| 21-50 | % | 47 | 29 | | | |
| <=20 | % | 28 | 5 | | | |

## Appendix C Project Statistics

| **Collaboration Tool** | n=306 | Proj 1 | Proj 2 | Proj 3 | $x^2$ | df | p |
|---|---|---|---|---|---|---|---|
| Sharepoint | Use% | 61 | 92 | 91 | **49.5** | **4** | **0.001** |
| Knowledge Management | Use% | 80 | 73 | 76 | 7.182 | 4 | 0.127 |
| Clearcase/Clearquest | Use% | 10 | 13 | 61 | **92.153** | **4** | **0.001** |
| Lotus Notes | Use% | 1 | 82 | 70 | **156.933** | **4** | **0.001** |
| Shared Folders | Use% | 84 | 85 | 83 | **18.743** | **4** | **0.001** |
| Interactive Messaging | Use% | 86 | 98 | 93 | **23.655** | **4** | **0.001** |
| | | | | | | | |
| **Social Networking Tool** | n=306 | Proj 1 | Proj 2 | Proj 3 | $x^2$ | df | p |
| Wiki | Use% | 35 | 35 | 43 | 2.662 | 4 | 0.616 |
| Blog | Use% | 37 | 38 | 38 | 1.899 | 4 | 0.754 |
| MySpace | Use% | 19 | 14 | 32 | **15.83** | **4** | **0.003** |
| | | | | | | | |
| **Perceived Usefulness** | **n=306** | Proj 1 | Proj 2 | Proj 3 | $x^2$ | df | p |
| Increase my productivity | % Agree | 72 | 68 | 85 | 9.791 | 4 | 0.044 |
| Improve my performance | % Agree | 61 | 63 | 72 | 3.546 | 4 | 0.471 |
| Make me more effective | % Agree | 71 | 70 | 77 | 4.173 | 4 | 0.383 |
| Are useful in my job | % Agree | 78 | 79 | 87 | 5.027 | 4 | 0.285 |
| | | | | | | | |
| **Ease of Use** | **n=306** | Proj 1 | Proj 2 | Proj 3 | $x^2$ | df | p |
| Quickly file/categorize content | % Agree | 56 | 66 | 66 | 9.79 | 6 | 0.134 |
| Find retrieve content that I entered | % Agree | 59 | 72 | 69 | 16.98 | 6 | 0.009 |
| Find/retrieve content others entere | % Agree | 55 | 71 | 68 | 11.782 | 6 | 0.067 |
| | | | | | | | |
| **Email Usage Received** | **n=306** | Proj 1 | Proj 2 | Proj 3 | $x^2$ | df | p |
| >200 | % | 4 | 4 | 3 | 4.719 | **8** | **0.787** |
| 101-200 | % | 11 | 11 | 12 | | | |
| 51-100 | % | 21 | 33 | 28 | | | |
| 21-50 | % | 45 | 36 | 37 | | | |
| <20 | % | 19 | 16 | 20 | | | |