

JOURNAL OF INFORMATION SYSTEMS APPLIED RESEARCH

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Mobile Telephone Usage, Attitude, and Behavior During Group Meetings

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Abstract

In the past few years smartphones have infiltrated the North American consumer markets. As the functionality and processor speed increase on these devices, they have started to be used in meetings in place of conventional mobile devices such as laptops. The aim of our research is to assess the perceptions and attitudes of mobile device user in organizational meetings. This paper presents results from an online survey conducted in the Southern Ontario region on smart mobile device perception and use during meetings. The major findings from 105 participants include that the majority of participants use a laptop during meetings regardless of who is present, and that laptops are most supported while iPhones are least supported. Participants also claim to have few difficulties with multitasking between tasks being carried out with the laptop and meeting tasks. A majority of participants would not accept or make phone calls or text messages during meetings unless there is an emergency.

Keywords: mobile telephony, mobile communication, mobile phone, smartphones, group meetings.

1. INTRODUCTION

The use of technology in meetings has existed for many years in the form of computer supported cooperative work (CSCW). Desktop computers and laptops have been used in meetings to improve group efficiency and effectiveness (Raisinghani, Ramarapu, & Simkin, 1998) by bringing together individuals across time and space. There is also increasing evidence that CSCW increases communication, and fosters collaboration and negotiation among group participants (Dennis, George, Jessup, Nunamaker, & Vogel, 1988). However, there is also increasing evidence that laptop use in meetings is negatively affecting the social dynamics of the group. Newman and Smith (2006) found that individuals tend to ask for the last few sentences to be repeated, or that they mishear information because they are attending to tasks on their laptop rather than listening to people speaking. With the availability of high speed connectivity and the advancement in

applications and functionality of mobile devices such as smartphones and laptops, new opportunities may be provided to replace desktop computing as the hardware of choice during meetings. However, there is also the potential to increase the level of distraction or annoyances depending on how they are used and who uses them (Benbunan-Fich & Truman, 2009). A recent survey (Pinchot, Paullet, Rota, 2011) revealed that almost two-thirds of meeting participants feel it is rude to answer a cellphone during a face-to-face meeting. Furthermore, they also discovered that as the age of the participants increases so does their likelihood of considering it rude to be interrupted by a phone call. Gergen (2002) suggested that a potential reason why people find mobile device use to be offensive during meetings is that these devices can transport the device user (and meeting attendee) to a virtual world and draw her attention away from her physical environment. Group members are physically present in the room but are not connected with

the present conversation. Instead, they are connected to a virtual conversation that they are having with someone on the other end of their cell phone, instant messenger or email.

Some research (e.g., Kleinman, 2007) has found that whether mobile technology are used during face-to-face meetings is acceptable or not is based on five factors; (1) office culture of being always available to communicate electronically; (2) some participants in meetings are not required to fully participate but rather to participate as needed, they used technology to pass time; (3) meeting participants require information that could be searched online; (4) when higher ranked employees are present, participants tend not to use technology; and (5) rules set out by the meeting chairperson on technology use during meeting. Other researchers (e.g., Stephens & Davis, 2009) point to organizational norms as dictating the rules for when mobile technology can be used during meetings. As there does not seem to be consensus on the factors that contribute to the acceptability of mobile technology in meetings, further investigation is required.

A smartphone is a wireless device with PC-like capabilities that has the capabilities of managing calendars, surfing the Internet, making and receiving phone calls, sending and receiving Short Message Services (text messages), and accessing email anywhere/anytime (Carroll & Heiser, 2010). Because of this functionality these devices have started to appear in places where laptops usually predominated, such as board rooms. Some owners of BlackBerrys have described the device as being "addictive" (Pearson, 2004) and "anti-social" (von Hahn, 2004). Middleton and Cukier (2006) revealed that some individuals found their smartphones to be a "leash" as they would check their BlackBerrys at all times throughout the day and evening. Some even reported that they would bring their BlackBerry to meetings and almost all respondents reported that they would attend meetings where others were more engaged with their smartphone's than the meeting topic at hand.

Whether these devices become accepted or rejected in the landscape of normal or appropriate meeting behaviour and the impact that they will have on attitudes and behaviour of meeting participants remains to be investigated in depth (Grandhi & Jones, 2010). In addition, perhaps new applications can be developed to

take advantage of these diverse and powerful systems to support the needs of people in meetings. In this paper we focus on mobile devices such as the BlackBerry, Apple's iPhone, and laptop's in general and their use and perception during meetings. We report the results of a recent survey conducted over a period of 30 days to assess the attitudes and practices of mobile device use during meetings for a variety of organizations, individual's rank in the organization and individual characteristics.

2. METHOD

A pilot study was conducted prior to the development of the online survey. The researchers videotaped two 1-hour meetings to capture five meeting participants and their interaction with their mobile devices. Based on the video analysis of this pilot data, an online survey was developed. Our online survey consisted of 40 questions to gather qualitative and quantitative data about the perception and attitudes of mobile technology use during meeting. For the purpose of this paper only the quantitative data are presented and discussed.

Research Questions

- 1) What are the attitudes towards having smart mobile technologies in face-to-face meeting settings in organizations?
- 2) How is smart mobile technology being employed and adopted for use in meetings?

Survey Instrument

An online survey was developed and distributed by email to the investigator's network of friends and work associates in the Southern Ontario region to gather background information on demographics, types of technology used during meetings, and perception of technology use in business meetings. The online survey was made available on the Internet from August 9, 2010 till September 3, 2010. During this period, 105 participants completed the survey.

The survey was composed of 40 questions organized into five sections. The first section contained eight questions to collect demographic information such as age, sex, and employment status. The second section contained 12 questions and asked participants about their technology use (e.g., how often they used a computer and for what activities). The third section contained 11 questions related to one

specific meeting that the participant recently attended (e.g., type of meeting, length of meeting and number of people attending). The fourth section contained seven questions that collected data about participant's attitudes towards technology use during meetings. Questions regarding when it was appropriate to use various technologies such as laptops and smartphones in meetings, as well as the different functionality of these devices were included in the survey (e.g., texting and making calls). The last section asked two questions about company attitudes and policies toward technology use.

Participants

One hundred and five participants (42 male, 62 female, one unanswered) completed the survey. The majority (55%) of individuals were in the 30-39 age range, the age breakdown of the participants is listed in Figure 1.

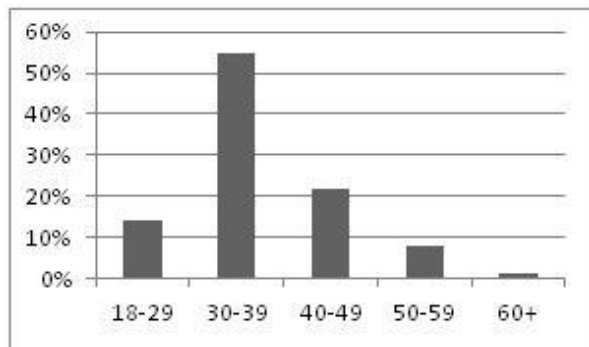


Figure 1. Age distribution of participants.

Ninety-two participants considered themselves as full time employees, six percent as part time, and five percent as other such as owner or student. Thirty-three participants worked in the service industry, 15 in the public sector, 11 in manufacturing, seven in high technology, five in retail, and 32 in other. Forty eight participants worked in a large company (750+ employees), 35 in a small company (2-99 employees), and 18 in a medium size company (100-749 employees). Thirty one participants worked three or fewer years in their current company, 26 participants between four and six years, 12 participants between seven and nine years, 12 participants between 10-12 years, three participants between 13-15 years, and 18 participants in more than 16+ years.

The majority (54 participants) were in non-management roles with the remaining participants being managers (22), presidents (11), supervisors (six), directors (three), vice presidents (four), and five unanswered (see Figure 2).

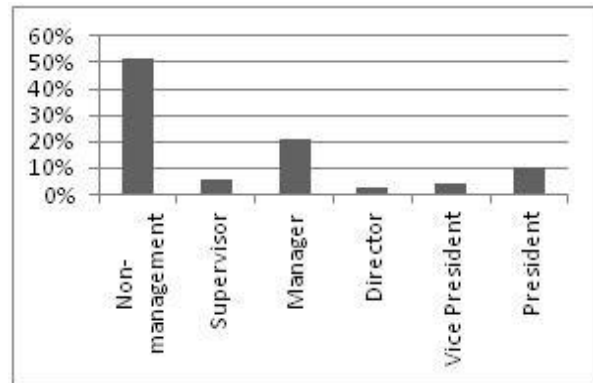


Figure 2. Employee position distribution.

Two participants worked in the accounting department in their organization, 23 in sales/marketing, three in legal, 16 in operations, 11 in research & development, and 41 in other such as banking and education. Twenty five participants attended face-to-face meetings infrequently, 27 once a week, twenty eight 2-4 times a week, eleven 5-8 times a week, and thirteen 9 or more times a week. The majority of participants (57%) considered themselves as advanced cell phone users using their cell phone five or more times a day with a combination of phone calls, text messaging, and mobile Internet surfing. Five percent were beginner cell phone users, using their cell phones once or twice a week. Thirty-four percent were intermediate users and four percent did not use a cell phone. Ninety-seven percent reported using a computer daily, two percent every few days, and one percent never. The most commonly reported computer applications were email, office productivity such as word processing and spreadsheet, surfing the Internet, and watching videos online.

3. RESULTS & DISCUSSION

This paper is focused on attitudes towards the use of "smart" mobile systems including laptops, Blackberrys and iPhones. A chi-square analysis was conducted on all questions related to multitasking, participant's attitudes towards mobile device usage during meetings, and

participant's company's opinion on mobile technology use and company policy regarding mobile technology use during meetings. Significant chi-square results are reported in Table 1 ($p < 0.05$).

Multitasking

In general, fifty-eight percent (61 out of 105 participants) believe that they can multitask with no problem (working on two or more tasks, not necessarily with a mobile device). While 21.9% (23 out of 105) claimed that they can work on their laptop and listen in on the meeting at the same time. Twenty percent (21 out of 105 participants) reported being able to do only one task at a time (see Figure 3).

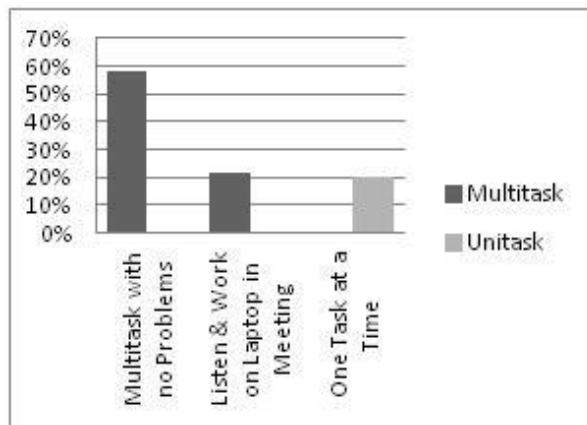


Figure 3. Multitasking during meeting.

This data suggested that more than half of the participants (58%) believe that they would be able to work on their laptop and pay attention to the meeting simultaneously. It would thus appear that multitasking was not only a common activity during meetings but that participants believed they were able to be productive and work on two or more tasks at a time. Kaufman-Scarborough & Lindquist (1999) found similar results from their research into multitasking. They concluded that individuals who multitask were able to control interruptions more efficiently than people who did not multitask.

Kleinman (2009) suggests that there could be certain types of meetings, such as demonstration or project meetings, that would have a greater chance for individuals to multitask. We did not ask participants to specify whether there were specific types of meetings in which they were more able to multitask but wanted to gather a general sense of a

participants understanding of their own multitasking behaviour. It would seem then that multitasking was a commonly adopted activity in general.

Mobile Use Etiquette

With respect to when it was acceptable to use mobile devices, there were some surprising results. The majority of participants somewhat agreed that it was reasonable to use a laptop in a meeting ($M = 2.34$, $SD = 1.26$) with 75.2% of participants agreeing or somewhat agreeing and 23.8% disagreeing (1 = agreed and 5 = disagreed on a 5-point Likert scale). However, a majority of participants somewhat disagreed that BlackBerrys ($M = 3.46$, $SD = 1.38$) and iPhones ($M = 3.88$, $SD = 1.34$) should be used in meetings with 62.1% and 68.4% disagreeing respectively (see Figure 4). These results match with a recent smaller survey (Pinchot et al., 2011) that found that 63% of 88 undergraduate and graduate university students found it rude to use a cell phone in a meeting. In our study, it seemed that people believed that laptops were acceptable in meetings but that iPhones or BlackBerrys were not, with iPhones being least favorable.

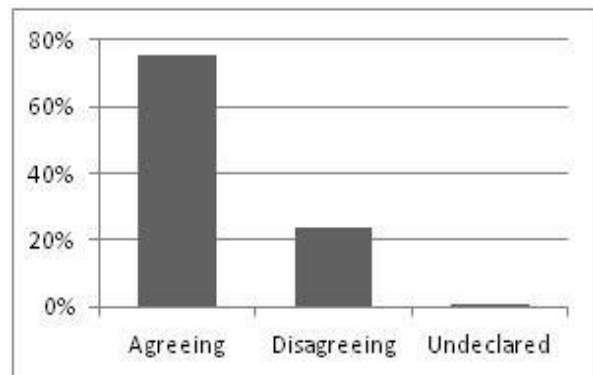


Figure 4. Acceptability rate of laptop usage during meetings.

What is surprising about this result is the variation in the responses for laptops versus smartphones. From a functionality point of view, both types of devices are similar (e.g., real-time text communication, note taking capabilities and surfing the Internet). However, smartphones can send/receive voice calls easily and perhaps this functionality is more commonly associated with the existence of these devices even though they may not be used for that purpose in a meeting.

Five years ago laptops were reported as being disruptive and unacceptable in meetings (Newman & Smith, 2006) and it seems, today, that this attitude has changed. From the data presented in our paper it seems that there was a similar attitude for smartphone use in meetings. Middleton & Cukier (2006) report that employees were expected to be connected through email at all times including during meetings, which was included in smartphone functionality. Presently, it may be more culturally acceptable to access email through laptops than through smartphones. However, the acceptance levels of technology in the meeting environment may be changing and smartphones may become more acceptable as their other functionality becomes more valuable in addressing meeting objectives. For example the city council of Barstow California (Jonas, 2011) and Lynchburg, Virginia (Petska, 2011) recently purchased new iPads in an attempt to reduce paper being used during meetings.

Laptop Use in Meetings

If we examine in more detail, meeting types and specific tasks in meetings where mobile devices are or are not accepted, it seems that participants would use a laptop in a meeting for work related tasks regardless of who else is in attendance (see Figure 5 for a comparison). For example, it is accepted to use a laptop in a meeting when the president of the company is present (100% of the 58 participants who answered agreed), when visitors are present (98.2% or 56 of the 57 participants who answered agreed), when superiors are present (100% of the 62 participants who answered agreed), when co-workers are present (94.7% or 72 of the 76 participants who answered agreed), and lastly when subordinates are present (91.9% or 68 of the 74 participants who answered agreed). For personal tasks, the results are considerably different. Most participants would not use their laptop for personal tasks regardless of who was in attendance at the meeting. Only 8.1% or 6 participants (out of 74 who answered) would use their laptop for personal use when subordinates are present and only 5.3% or 4 participants (out of 76 who answered) would use their laptop for personal use when co-workers are present. Only 1.8% (or 1 participant out of 57 who answered) would conduct personal work on their laptop when visitors are present in the meeting. No one would use their laptop for personal use

when the president of the company or their superior is present in the meeting.

It would seem that there is an important distinction between the acceptability of laptop use for work versus personal activities during meetings particularly when superiors are present. This may be due to the perceived repercussions of using work time and resources to conduct personal business (Kleinman, 2007).

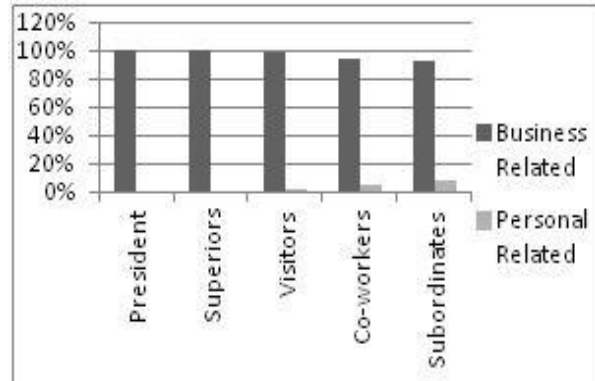


Figure 5. Use of laptop's for personal and business use in meetings when different groups of individuals are present.

Twenty-four percent (25 out of 105 participants) said that they would use a laptop during any meeting only for work that was considered "important work that cannot wait". Only one percent said that they would use their laptop during a meeting for important personal tasks that could not wait. Twenty-five percent (26 out of 105 participants) also reported that they would use a laptop for work use when their participation in the meeting was not immediately necessary such as to discuss the topic at hand. Only 4.8% (5 out of 105 participants) reported that they would use their laptop for personal use in this situation.

It appears that only about 25% of participants from the survey would use their laptops during a meeting when they are not needed to actively participate in the meeting, or to do work that is of higher priority than the meeting topic. This could imply that participants might use their laptops when a higher priority issue arises or when they have free time during the meeting to do work that is not related to the topic(s) at hand in the meeting. Kleinman (2007) suggests meeting participants are expected to use their laptops for meeting related tasks. However, it would seem that at least 25% would be doing

other work-related tasks not relevant to the meeting for some of the meeting time. In our survey, we do not explore how this practice/behaviour is implemented and the frequency and duration of non-meeting related work during meetings. Specific meetings should be observed to understand the implications of this type of behavior on meeting/individual productivity and effectiveness.

Mobile Phone Activity

When asked about making or accepting phone calls during meetings (see Figure 6), 70.5% (74 out of 105) and 71.4% (75 out of 105) respectively said that they would not make or receive work related and personal related phone calls during meetings. Nineteen percent (20 out of 105) would make a work related phone call about a task that could not wait and 2.9% (3 out of 105) would make or accept a personal call during a meeting about a task that could not wait. From this data we can theorize that individuals might consider it rude or impolite to be on the phone during a meeting. However, it seems that it could be acceptable for work related or personal emergencies.

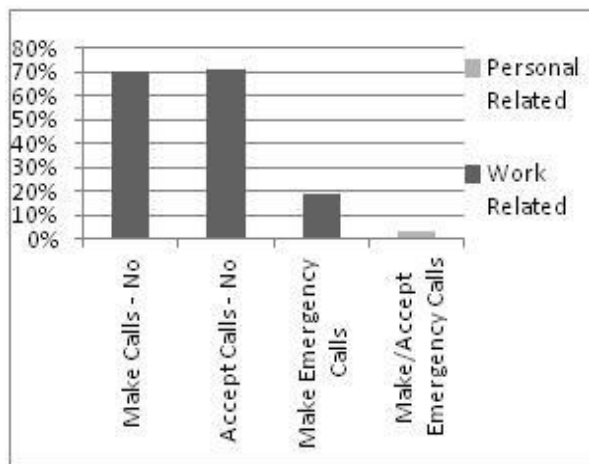


Figure 6. Phone calls during meetings. Participants were also asked to evaluate the use of text messaging during meetings (see Figure 7). Sixty eight percent (71 out of 105 participants) reported that they did not text message work related information and 62.9% (66 out of 105 participants) did not text for personal reasons. However, 17.1% (18 out of 105 participants) said that they did text work related information when they had important work that could not wait, while 4.8% (5 out of 105 participants) text messaged personally

related information that could not wait during meetings.

What this data reveals is that participants do not text during meetings unless there is an emergency especially one that is work related. There could be a number of reasons why this attitude is prevalent. It could indicate that people consider texting during meetings as an inappropriate or discourteous activity, that the company policy discourages text messaging or that it re-

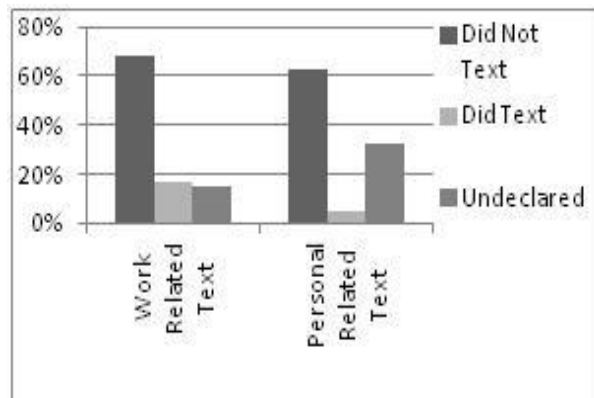


Table 7. Texting during meetings.

quires too much attention. Further research examining actual meeting behaviour is required to determine these reasons.

Company Policy about Technology Use

When asked about company policies/practices regarding the use of laptops, BlackBerrys, and iPhones. Eighty-four percent (M = 1.50, SD = 0.977) of participants claimed that their company was somewhat or very supportive (1 = very supportive and 5 = not supportive at all on a 5-point Likert Scale) of laptop use within the company. However, 5.1% of participants reported that their company was not very supportive or not supportive at all of their use with the remaining 10.2% having a neutral opinion. For BlackBerrys, 64.9% (M = 2.16, SD = 1.37) claimed that their company was somewhat or very supportive and 15.9% were not very supportive or not supportive at all with the remaining 19.1% being neutral. The support of the iPhones was even lower with 45.5% (M = 3.18, SD = 1.521) of participants reporting that their company was not very supportive or not supportive at all of their use.

It would then seem that iPhones are the least supported device by participants and by company policy for use in meetings even though functionally they are very similar to BlackBerrys. Perhaps the iPhone is perceived as an entertainment system for playing games, surfing the Internet, running "apps" or listening to music rather than for serious business activities (Ragon, 2009). The BlackBerry may be viewed as a device that enables users to be more efficient and effective in business and by extension in business meetings (MacCormick & Dery, 2008, Middleton, 2008). Whether or not the iPhone will ever enjoy this same position is uncertain, however, it seems that the iPad or other types of touch-tablets may become more acceptable in meetings (Jonas, 2011; Petska, 2011).

Descriptive Analysis

In order to carry out a valid crosstab analysis, some of the categories of the demographic section had to be removed or consolidated due to small numbers of participants in some categories. Three of five possible categories for age (18-29, 30-39, and 40-49) were used for the analysis while the remaining two categories (50-59 and 60+) were not used (e.g. there were only eight participants in the 50-59 and one in the 60+ category). The participant's positions were consolidated into management, (those reporting in the categories of supervisor, manager, director, vice president, and president) and non-management due to the low numbers in the management categories (e.g., there were only 3 participants in the director category and 4 participants in the vice president category).

A crosstabs analysis was conducted on the question involving acceptability of using the different mobile devices, age, sex, and consolidated categories of position within the company to examine whether there was a relationship to specific demographic characteristics. There was no significant Spearman correlation between age ($N=94$, $r=0.055$), sex ($N=102$, $r=0.037$), nor position in company ($N=98$, $r=0.114$) and when is it alright to use mobile devices during meetings; $p>0.05$ for all reported correlations respectively. Although, our samples sizes were relatively small, it would seem that age, sex and position in company were not important factors in attitudes towards mobile device use in meetings.

While individuals and companies may generally support the use of smart mobile technology during meetings, there may not be support for specific activities such as texting or taking/making phone calls. Regardless, the landscape of acceptable mobile technologies is changing rapidly. Further research examining specific company policy with actual practice in that company may provide further insight into the impact of policy on actual behaviour.

The results from this investigation seem to indicate that the use of these smartphones in meetings might be gaining in popularity. The attitudes might be changing about smartphone usage, so meeting participants can take advantage and use these devices in their favor to (1) search for meeting related information on the Internet during meetings, (2) to take notes regarding the meeting, and (3) to ask meeting related questions through text messaging with others outside the meeting. Furthermore, this research also provides supporting evidence to Pinchot et al., (2011) current research where they found answering phone calls during a meeting was considered rude. A larger sample size would warrant further investigation on this topic.

Limitations

Even though our goal was to use chi square analysis and cross tab analysis for all questions and categories, we did encounter some issues related to the uneven distribution of participants in specific categories. For the cross tab analysis of participant's position, we had to combine several different groups (e.g. manager, director, vice-president, and president) into one category "manager" due to uneven distribution of data. For the participant age we had a similar limitation. There was insufficient data in the 50-59 and 60+ age category to include these groups in our analysis. Participants in these two groups could be specifically targeted in order to produce a more even sample.

In general the sample size was small. Future research should expand the participant groups to include a broader demographic and deploy the survey more broadly allowing for more complex statistical analyses to be used. We also recommend that the use of personal smartphones and other mobile device usage in organization meetings be compared with organizationally-owned mobile devices to determine whether there are differences in use,

attitude, behaviour and policy interpretation between these groups.

4. CONCLUSION

This study analyzed individual's attitudes and perceptions of mobile technology use during meetings. The data suggest that having and using some types of mobile technologies for business meetings was acceptable and supported by individuals and company policy regardless of who attended meetings. A majority of participants reported being able to multitask during meetings with few issues and that specifically using a laptop was considered acceptable. However, using smartphone technology such as BlackBerrys and iPhones, particularly for making/receiving non-emergency calls was less tolerable. This data provides some evidence of the changing attitudes, expectations and practices of employing different mobile technologies in face-to-face meetings.

Future research is warranted to explore many of the unanswered questions that arose in our work. For instance, more work is required to understand the discrepancies we found between Blackberry and iPhone acceptability given that their business-oriented functionality is so similar. More detail regarding how mobile device practice in meetings and company policy are linked. Future research could also involve creating and evaluating specialized applications that could address some of the issues in this paper as well as support efficient and effective mobile device use in business meeting environments.

5. ACKNOWLEDGMENTS

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Editor's Note:

This paper was selected for inclusion in the journal as a CONISAR 2012 Meritorious Paper. The acceptance rate is typically 15% for this category of paper based on blind reviews from six or more peers including three or more former best papers authors who did not submit a paper in 2012.

Appendix

Questions	<i>N</i>	χ^2	<i>M</i>	<i>SD</i>
1. How do you see yourself being most productive? Possible answers ranged from being able to multitask with no problem (rating of 1) to only being able to do one thing at a time (rating of 3).	105	29.03	1.62	0.80
2. When is it alright to use the following mobile devices during meetings? Possible answers were provided on a 5-point Likert scale where 1 was always and 5 was never.				
Laptops	102	70.84	2.34	1.26
BlackBerrys	99	35.19	3.46	1.38
iPhones	98	71.69	3.88	1.34
3. What is your company's opinion on the following usage of mobile technology devices within the company? Possible answers ranged from very supportive (rating of 1), to not supportive at all (rating of 5) on a 5-point Likert scale.				
Laptops	98	178.43	1.50	0.98
BlackBerrys	94	48.48	2.16	1.37
iPhones	87	10.53	3.18	1.52
4. What type of policies does the company you work for have regarding use of mobile technologies such as laptops and cell phones during meetings? Possible answers ranged from very supportive (rating of 1) to not supportive at all (rating of 5).	100	65.50	3.47	1.41

Table 1. Opinions of Mobile Phones