

SMITH BLACKBERRY INITIATIVE

Research Summary

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Executive Summary

A research team from the Center for Human Capital, Innovation and Technology (HCIT) studied the effects of the Robert H. Smith School of Business Blackberry Initiative undertaken at the beginning of the Academic Year, 2004-2005. We collected data through the administration of a web-based survey during April-May, 2005 and awarded Mac Mini iPods to randomly selected participants at periodic points during the survey period in order to enhance the response rate. The final sample included 164 students, a response rate of 54%.

This research investigated the following issues at two points in time--late September 2004 approximately 4-6 weeks after taking possession of the BB, and late April-May, 2005, close to the end of the academic year, approximately 8 months after taking possession: 1) attitudes toward Smith's MBA Program and toward the Blackberry (BB) Initiative itself; 2) use patterns for different features of the BB, and for different purposes such as class-related activities, and for contacts within and outside the Smith School; 3) a comparison of changes in the determinants of students' tendency to fully explore and innovate in the use of their BB across time. Key findings from the study include:

- 1) **Attitudes Toward Smith School and the BB Initiative.** Although both 1st and 2nd year MBAs are generally positive in their attitudes toward the Smith School's MBA Program (94% satisfied), 1st year students generally react more positively toward the BB Initiative than do 2nd year students, both 4-6 weeks after receiving the BB and after eight months of possession.
- 2) **Perceived BB Benefits.** Nevertheless, both 1st and 2nd year students become more favorable across the academic year in their belief that the BB enhances: a) their confidence in using IT; b) their ability to exchange urgent information at a low cost; and c) their awareness of the benefits associated with BB use.
- 3) **Use Patterns for BB Features.** Students use the email, web surfing and calendar features of the BB most frequently and these uses increase somewhat across the time period.
- 4) **Different Uses of BB For Academic Purposes.** Considering academic purposes, the BB is predominantly used by students as a meeting coordinating and discussion device for team projects, and to a lesser degree as a tool for contacting professors, searching the web for class materials, and posting information on Blackboard. This trend seems to suggest that the BB may be more valuable for coordinating activities than for large scale knowledge sharing.
- 5) **Use of BB For Internal & External Smith Communication.** Both 1st and 2nd year students report using the BB extensively for contacting their social networks within the Smith School. While both student groups use the device less for contacting their social network outside the Smith School, 1st year students again report a higher reliance on the BB for contacts outside the Smith School, while the 2nd years are undecided about its value in this respect.
- 6) **Intention to Use BB in Future.** Two demographic differences emerged in students' intention to use the BB in their work in the future. Second year students report a significantly lower intention to use the BB in the future across the time period than do 1st year students. Interestingly, females initially report a strongly significant lower intention to use the BB in the future than do males. However, over time, females' intention to use the BB in the future increases such that it is only marginally significantly different from males' by the April/May measure.
- 7) **Determinants of Exploratory/Innovative BB Use.** Interestingly, the determinants of students' tendency to explore and innovate in their use of the BB seem to change in strength across the use period.

- a. In September, some 6-8 weeks after first receiving the BB, students' tendency to explore and innovate in their use of the BB was predicted by: 1) a personal trait to be exploratory in the use of technology; b) the extent to which they found experimenting with the BB to be highly enjoyable to the extent that they lost track of time when engaged in such activities; c) the degree to which they felt the BB was useful in helping them complete their assigned work; d) the extent to which they believed the blackberry was easy to use, requiring little cognitive effort ; and e) the degree to which they felt the BB use enhanced their social image.
- b. Toward the end of the academic year in late April/May when students had a greater opportunity to adjust to the BB, academic demands on them were likely greater and time tighter, the tendency to explore/innovate in BB use was more strongly determined by: a) how enjoyable students found this process; b) its perceived impact on their social image; c) how useful they found it for the completion of assigned tasks; and d) to a lesser extent, by their personal trait to be exploratory in using technology. Ease of use was no longer a significant determinant of this behavior.

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Introduction

The present document summarizes the findings from a research project which attempts to understand the adoption process of the BlackBerry (hereafter, BB) by the Smith's School full time MBA students. In particular, the study investigates the extent to which MBAs have utilized various features of the technology, the nature of their adoption, and the determinants of their level of adoption as well as their attitudes toward the Smith School's Blackberry Initiative and the Smith School itself.

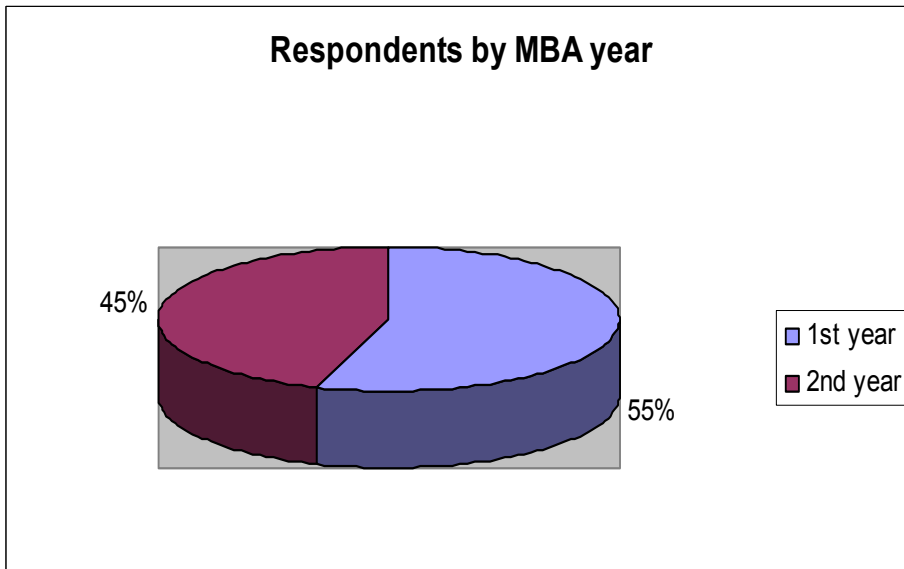
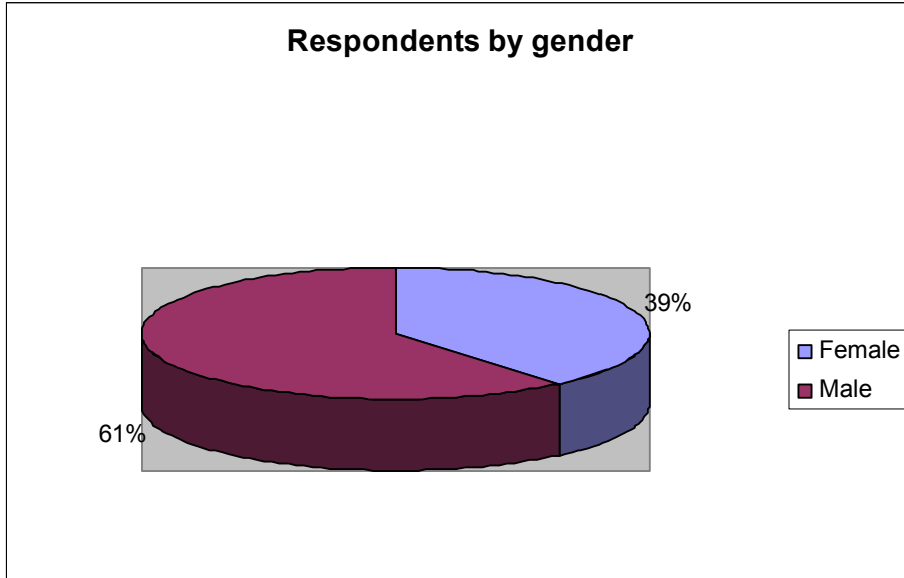
This report will highlight the findings deemed to be most interesting and/or important from the researchers' perspective. We collected data through a web-based survey, and asked students through survey instructions to address two points in time in most of their responses: September 2004 (a few weeks after the BBs were distributed to students), and late April 2005 (one month before the end of the classes). All in all we contacted 302 students to distribute the survey web address and 164 surveys were completed (response rate 54%).

In this document, we highlight the following issues:

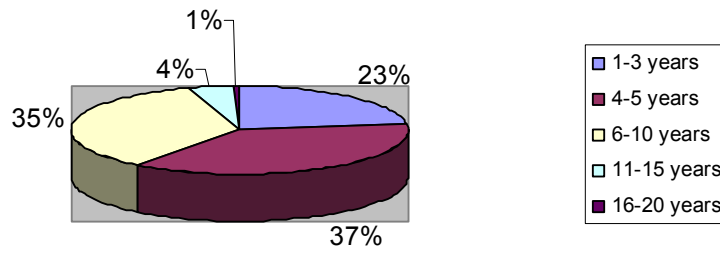
1. MBA students' attitudes toward the Smith School.
2. MBA students' attitudes toward the Smith School's Blackberry Initiative.
3. The extent to which MBA students utilized various features of the technology.
4. The purposes for which the students used their BB.
5. The benefits derived from the BB use.
6. The determinants of students' willingness to use the BB in different ways.

Sample profile

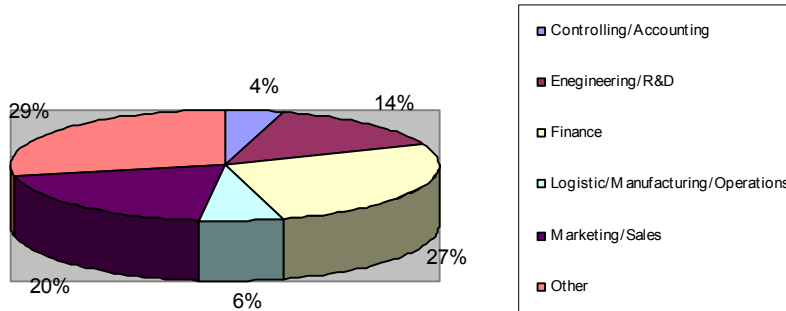
The following graphs point out the distribution of the sample with reference to the gender, MBA year, working experience and background.



Respondents by working experience



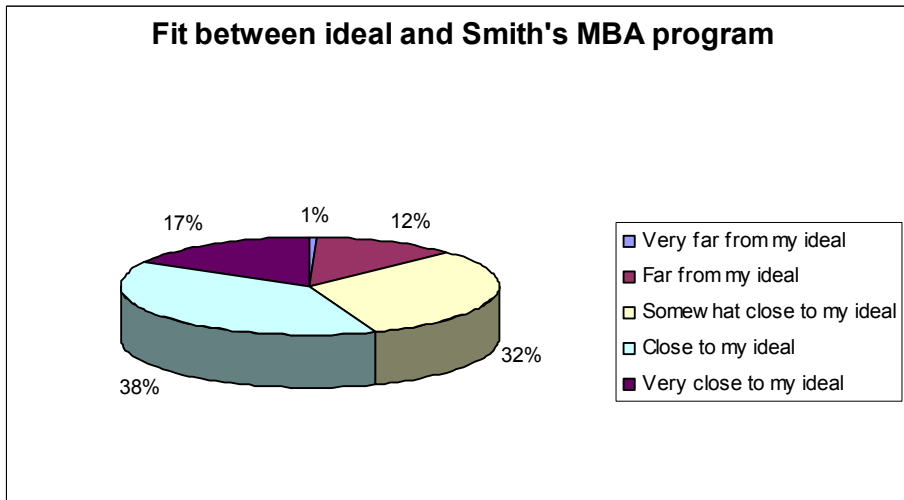
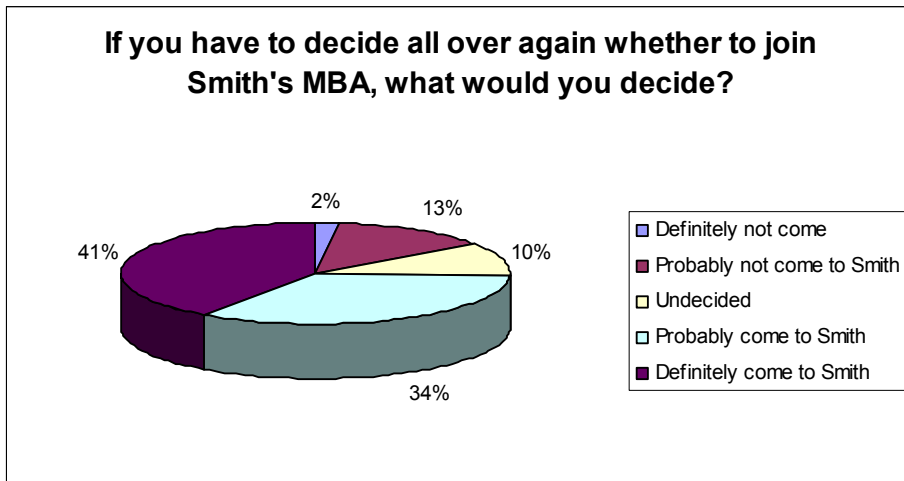
Respondents by background

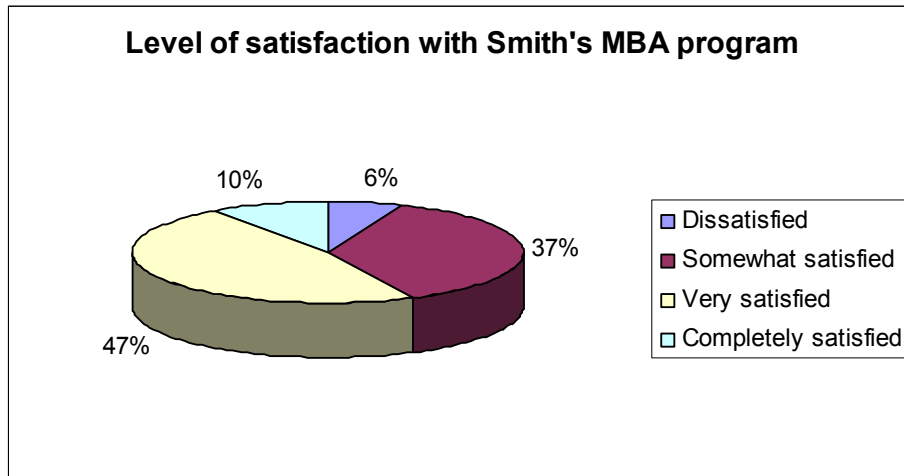


Attitudes toward the Smith School's MBA Program

The following graphs show the students' attitude toward the Smith MBA Program. In particular, this issue has been investigated looking at the willingness to join the Smith's MBA, the perceived level of fit between the ideal MBA program and the MBA offered by Smith's School, and the level of overall satisfaction toward the Smith's program.

The three graphs presented below refers to the whole sample and they underscore that most of the respondents present a positive attitude toward the Smith program itself, and in comparison with the ideal MBA program. We also tested the difference between the first and the second year students' attitude toward the School (not reported). Results have not shown any significant difference between the two groups, indicating a homogeneous and positive attitude toward the Smith School MBA Program.

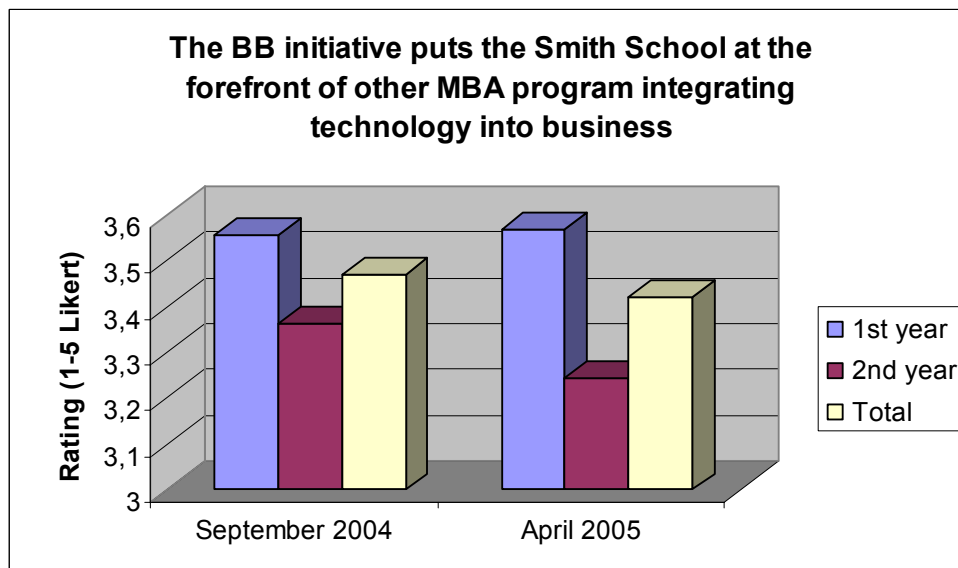




Attitude toward the BlackBerry Initiative

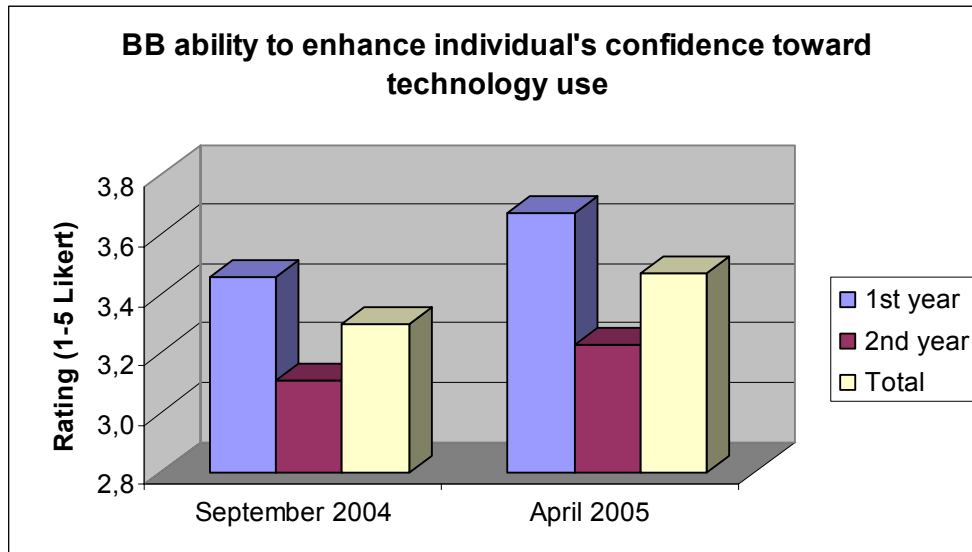
Unless otherwise noted, respondents answers are based on a 1 to 5 scale, with 1=strongly disagree; 2=disagree; 3=undecided; 4=agree; and 5= strongly agree.

The graph below shows student responses to the statement that the BB Initiative puts Smith School at the forefront of other MBA programs because of its ability to integrate the technological aspects with the needs of the business environment. The difference between September 2004 and April 2005 is not significant, considering the sample as whole ($p = .406$). We also tested the significance of the changes in second year students' attitudes over time but we found it was not significantly different. Note also that although the attitudes of second year students is lower on average than those of first year students and decreases overtime, the second years' overall attitude toward BB initiative is nevertheless positive and above the "3" anchor indicating indifference on the survey scale.

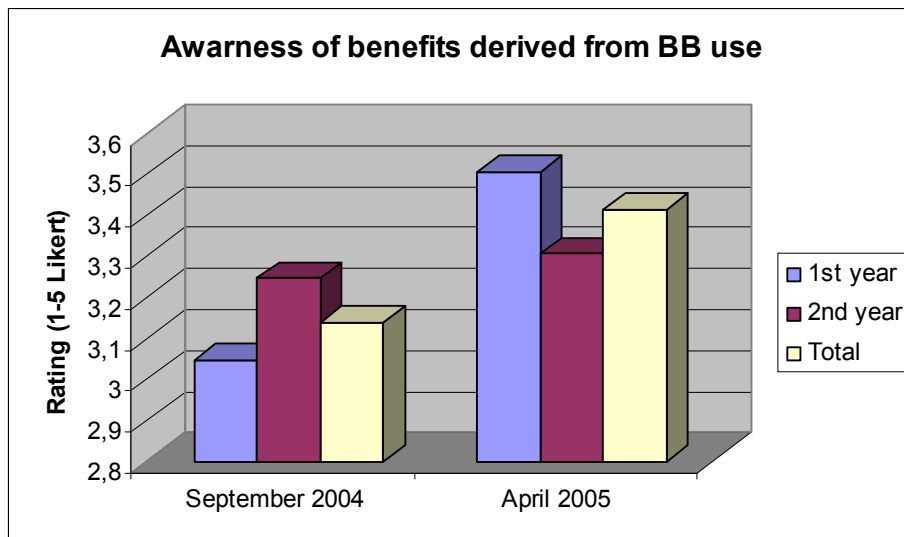


Effects of BB use

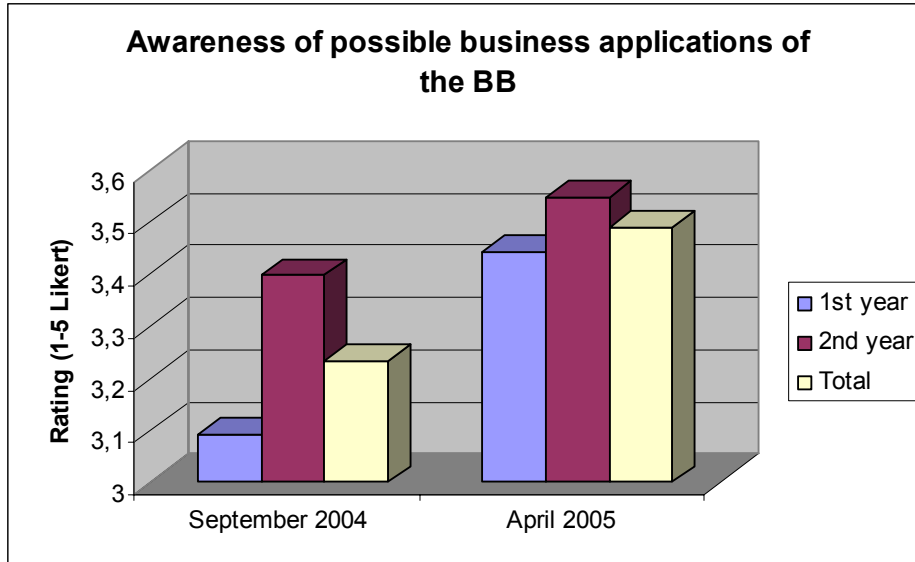
The below reported graph points out that BB helps users to become more confident toward technology. Interestingly, there is a significant increase in individuals' perception of BB benefits across the two measurement periods ($p < .001$).



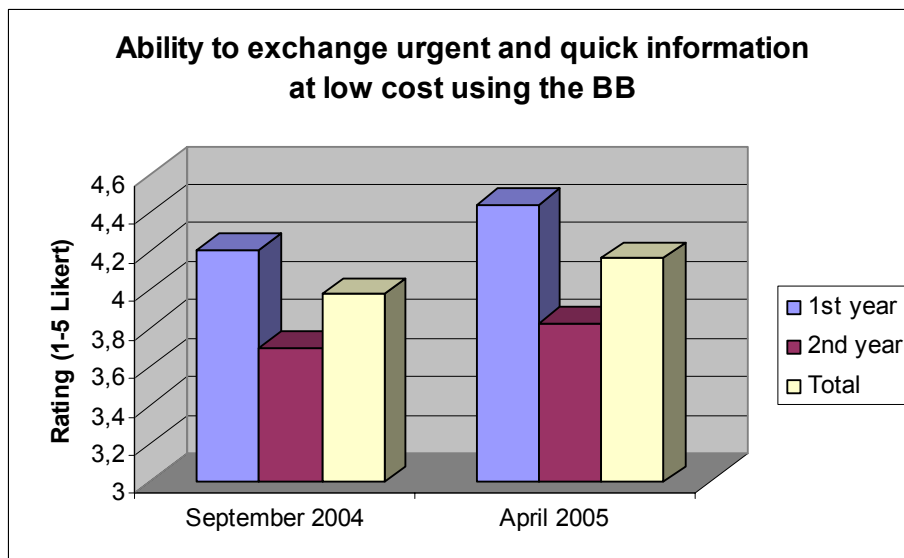
The following graph demonstrates that individuals' awareness of benefits derived by BB use have increased overtime. The difference between September 2004 and April 2005 is highly significant ($p < .001$). This result plays an important role in explaining the ability of individuals to innovate in BB use. Therefore, it is possible that students' increased awareness of the benefits of BB may subsequently trigger the development of new business application for the BB.



As a consequence of the results showed by the previous graph, it is possible to point out that the belief for possible business applications of the BB has increased significantly between September 2004 and April 2005 ($p < .001$). Therefore, besides the possible uses showed during the training in September 2004, individuals have developed the awareness through a direct experience of using the BB.

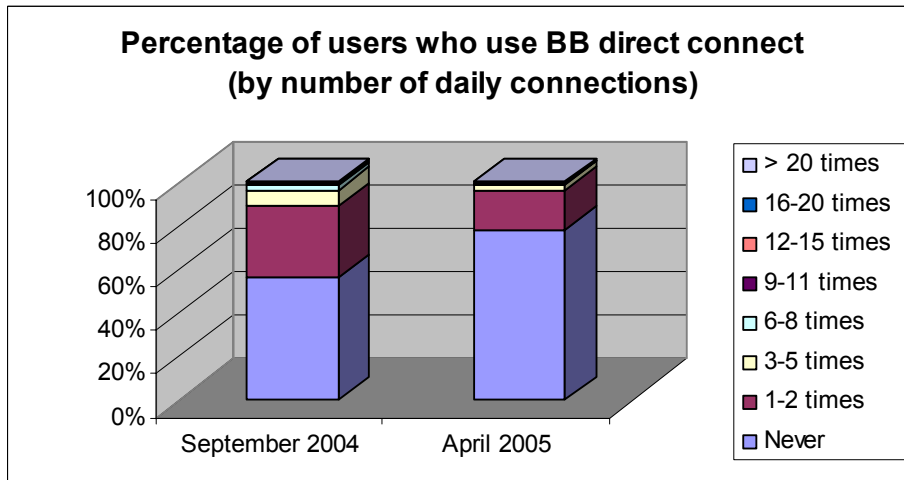
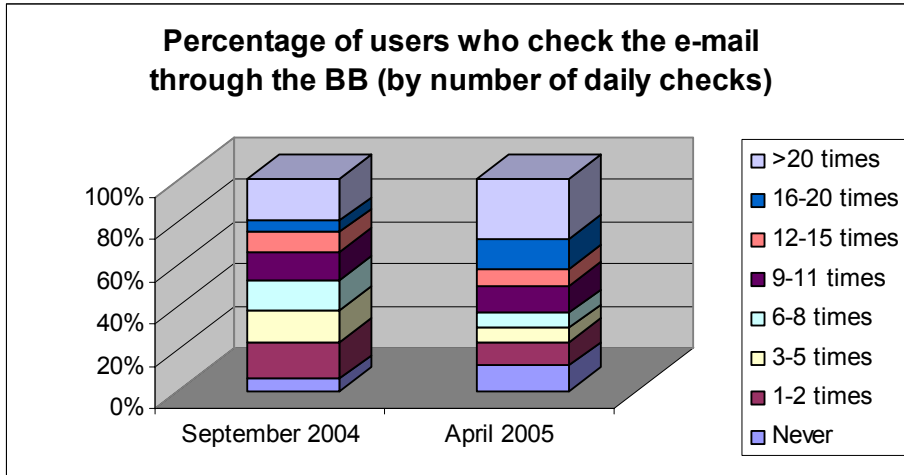


The ability of the BB to enhance the awareness of information technology benefits and use could be related to the perception that BB allows to exchange quick information at low cost (as showed in the following graph). The individual perception of this aspect has been immediately noticed by users in September 2004 (the average rating has been 3,9 on a 5 points scale). Despite this high starting point, this perception has increased overtime. Indeed, there is a positive and significant difference between September 2004 and April 2005 ($p < .001$).

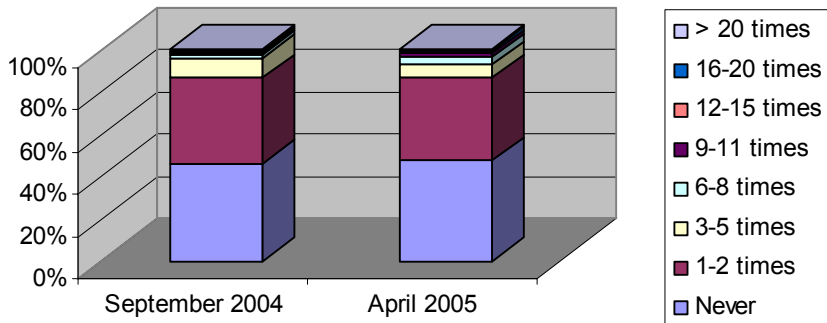


Use of different BB features

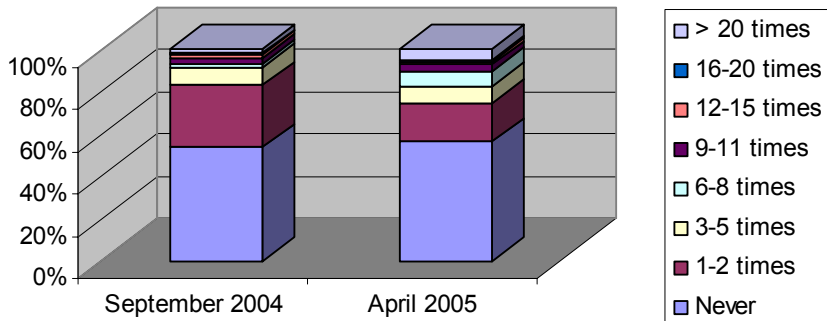
The following graphs point out the frequency of use for different features of the BB. In particular, we investigated how many times (per day), individuals check the e-mail, use the direct connection (walkie-talkie), surf on the Internet, track their calendar, and make phone calls. It is interesting to note an increase in the use frequency of the e-mail from September 2004 to April 2005.



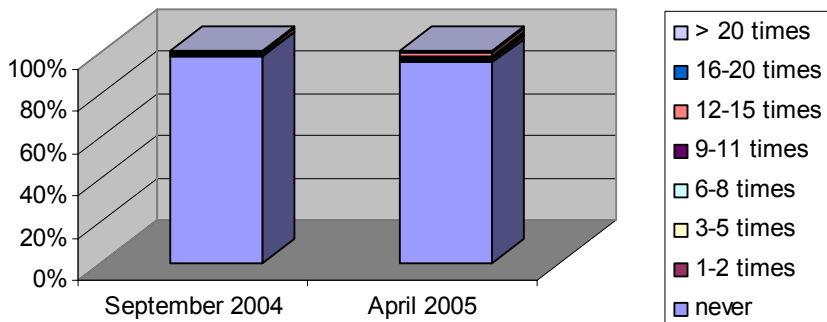
**Percentage of users using the BB for web surfing
(by number of daily web connections)**



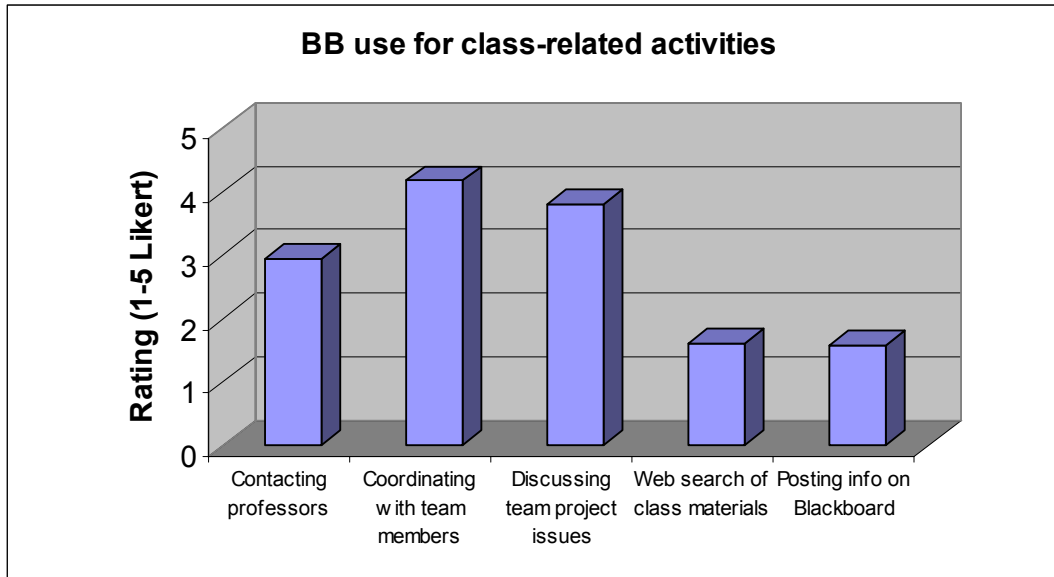
**Percentage of users who track their calendar
through the BB (by number of times per day)**



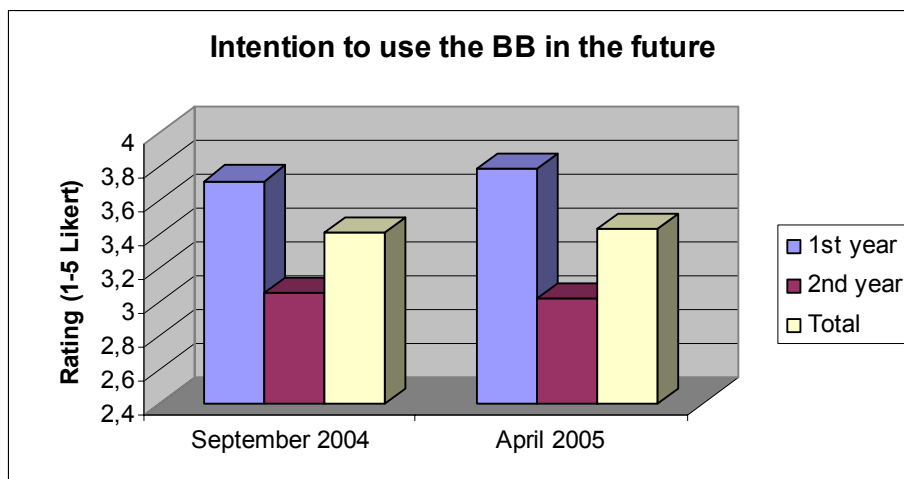
**Percentage of users who make phone calls
through the BB (by number of daily calls)**



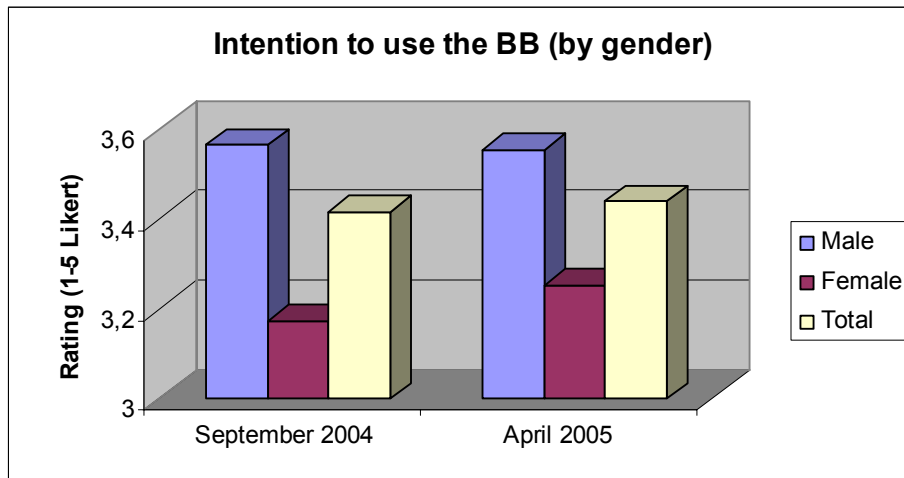
The following graph shows the different uses of the BB for different type of class-related activities. Respondents are more likely to use the BB as a tool for coordinating activities within their project teams. Moreover, they are less likely to use the BB as a tool to communicate with individuals of the out-group (professors). The results associated with the use of BB for posting material and web search, suggest that overall, the BB may be used more frequently to coordinate activities rather than for knowledge sharing.



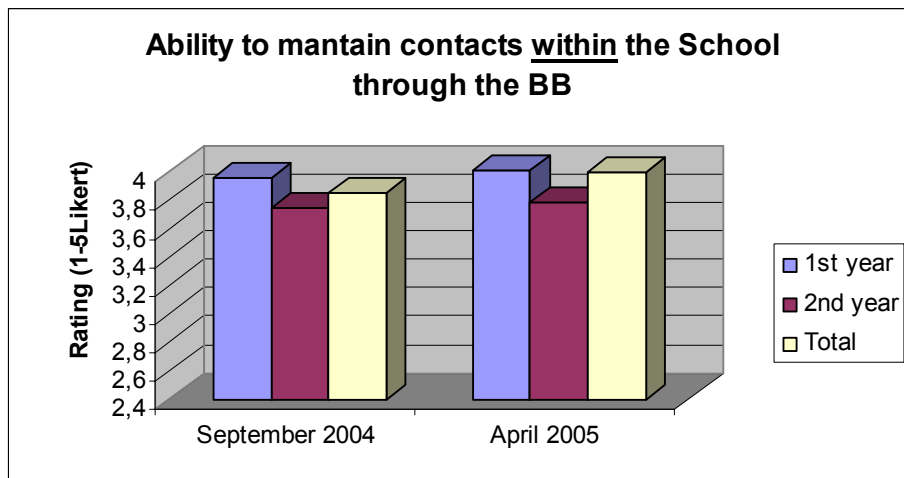
The graph shows that students' intention to use the BB in the future does not change significantly over the time period. Again, however, there is a strong and significant difference between individuals belonging to the first and second year of the MBA ($p < .001$). The following graph shows that first year students strongly intend to continue using the BB, while the second year students remain, on average, "undecided".



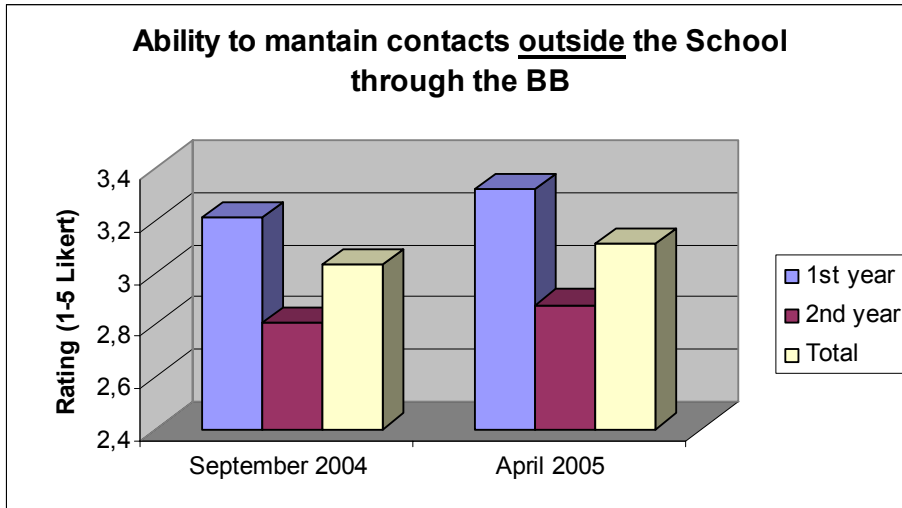
Moreover, next graph demonstrates the existence of a gender difference in the intention to use the BB. At the beginning of adoption process (September 2004), males showed a higher willingness to use the BB in the future than do females ($p < .05$). However, this difference decreases overtime as females intention to use the BB in the future increases and is only borderline significant for the April/May measure ($p < .10$)



According to the results showed in the following graph, the BB is considered a very effective and powerful tool to maintain network contacts within the school. This perception, strong from the beginning remained almost constant overtime.



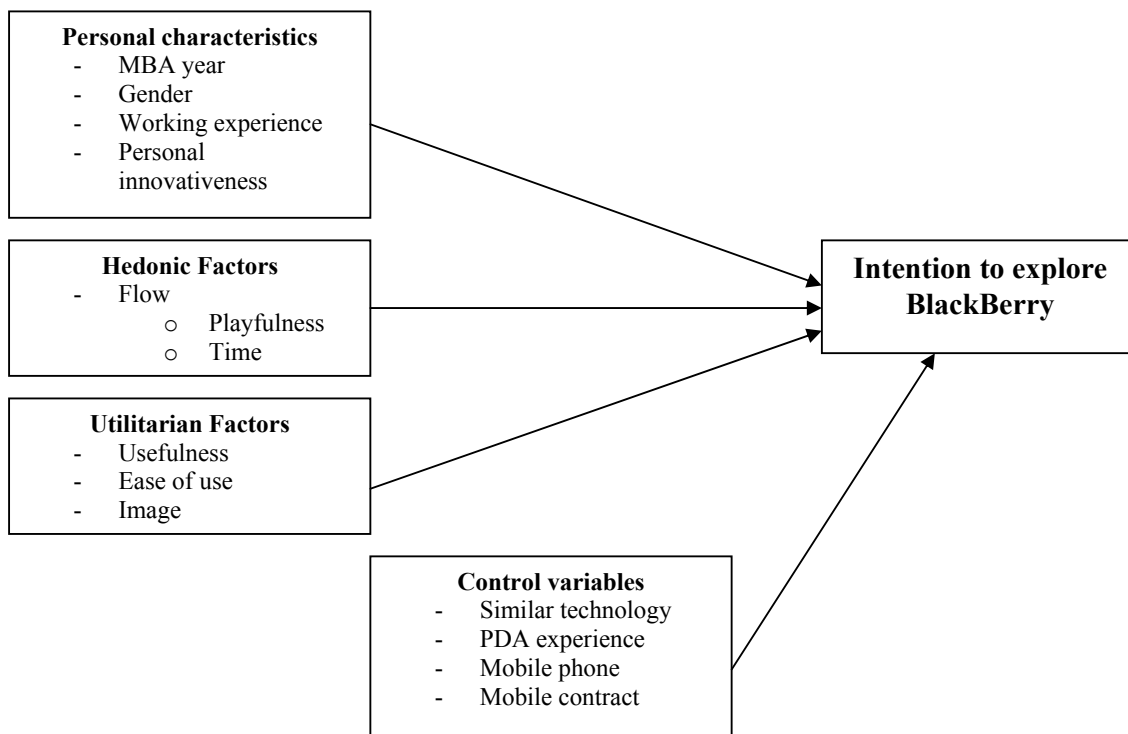
Although the usefulness of the BB for maintaining contacts *within* the School is recognized by both first and second year students, the following graph points out that the second year students do not perceive the BB as critical for the maintenance of the contacts *outside* the Smith School.



Beyond BB use: the BB exploration

Besides the analyses reported above, we attempted to identify the determinants of students' exploration of new functionalities for the BB. In general, user's intention to go beyond a simple use of a technology represents the starting point for individuals' innovative use of technology. In particular, we considered three kinds of factors concerning the relationship between users and the BB, and tried to determine which significantly affected users' willingness to explore new BB functionalities:

- Individual characteristics.
- Factors related to the hedonic aspect of the BB (this factors refers to the individual pleasure of interacting with the BB).
- Factors related to the utilitarian aspect of the BB (this factors refers to the ability of the BB to enhance individual performance or social image).



Some of the variables included in the model need further explanations:

- *Working experience*: number of years of employment before joining Smith's MBA Program.
- *Personal innovativeness*: individual trait related to individuals' willingness to try out new technologies.
- *Flow*: this concept is related to the perception of enjoyment using the BB (playfulness), and to the perception of losing the sense of time (time).
- *Usefulness*: represents individuals' perception that the BB helps to accomplish their task.
- *Ease of use*: it is related to the perception that the use of BB is free of cognitive effort and it is easy to learn how to use the BB.
- *Image*: represents individuals' perception that the use of BB could enhance their social image.

- *Similar technology*: indicates if users already own a technology which is similar to the BB.
- *PDA experience*: indicates if users had already an experience of using any PDA.
- *Mobile phone*: indicates if users already had a mobile phone.
- *Mobile contract*: indicates if users had a pre-existing phone contract.

The analysis has been performed considering both the data referred to September 2004 and April 2005. The model has been tested through two separate linear regression which present a good explanatory power (the first one explains 45% of the variance, while the second explains 49% of the variance among individuals).

September 2004

Looking at the table reported below, it is possible to point out that students' intention to discover new functionalities is not related to their demographic characteristics such as gender, working experience or MBA year. The only individual characteristic which influences the intention to explore the BB is the trait of personal innovativeness toward a technology. Individuals who tend to be more innovative are more likely to explore new ways to use the BB. Besides the individual characteristics, it is possible to note that students tend to explore the BB if they feel immersed and enjoy its use (flow). Moreover, the perception that the BB is easy to use stimulates their willingness to display exploratory behavior. Finally, also the perception that BB helps them to perform their assigned work and enhances their image in important social groups both contribute to students' tendency to find out new ways to use the BB.

Dependent variable: Intention to Explore		
	Coefficients	Sig.
MBA Year	.009	.893
Gender	-.020	.768
Working Experience	.006	.932
Personal Innovativeness	.249 ***	.000
Flow	.257 **	.007
Usefulness	.173 *	.048
Ease of Use	.160 *	.031
Image	.182 *	.014
Similar technology	.001	.986
PDA Experience	-.073	.324
Mobile phone	-.073	.308
Mobile Contract	-.026	.706
<i>R Square</i>	<i>.458</i>	

April 2005

In the April/May 2005 measure however, the strength of various determinants of the tendency to explore/innovate in BB functionality change somewhat. Personal innovativeness is not as important as in September 2004, whereas the perceived usefulness of the BB in helping students complete their work assignments and in enhancing their social reputations become more important determinants. Therefore, the personal innovativeness seems to be a trigger in the initial phase of the adoption process but its effect diminishes overtime, while factors such as usefulness and reputation enhancement become more important.

Dependent variable: Intention to Explore		
	Coefficients	Sig.
MBA Year	-.083	.219
Gender	.048	.481
Working Experience	-.058	.400
Personal Innovativeness	.159 *	.027
Flow Usefulness	.255 **	.009
Image	.196 *	.027
Ease of Use	.079	.318
Similar technology	-.031	.673
PDA Experience	-.029	.686
Mobile phone	-.113	.105
Mobile Contract	-.015	.827
<i>R Square</i>		<i>.495</i>