
**Villanova School of Business
Center for Business Analytics
Cloud Analytics Research Project
December 30, 2015**

Study Purpose: To compare user performance of business intelligence (BI) tasks of varying complexity on both laptop and tablet computers using cloud-based analytics software.

Motivation: The increasing use of tablet devices and cloud-based computing in the business environment make it important to understand if there are any limitations or productivity effects if BI tasks are performed on tablets vs. laptop computers. This is the first research project to focus on cloud analytics implementation issues. As cloud analytics expands to other devices the proposed research model can be extended to include them.

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Experimental Protocol: [SAP Lumira Cloud](#) is the cloud-based, BI solution that is accessed by the participants during the experiment. Participants are randomized into three groups: one group completes the experiment using a laptop, a second group uses a tablet while seated, and the third group uses a tablet while walking. The experiment is organized into three phases. First, the participant completes a short demographic survey addressing: age; gender; education; work experience; size of business organization; experience with BI, computing devices, and SAP Business Objects software. Second, the participant views a brief training video that introduces Lumira and demonstrates its use, including navigation, on the assigned computing device (laptop or tablet). Third, the participant gains access to a data set loaded onto Lumira, and selects and filters the data to create charts that enable her/him to answer each of three questions in turn. After selecting one of the five multiple-choice answers for a question, the participant rates her/his confidence and satisfaction. The experiment takes about 20 minutes to complete. The study team is able to manage up to four participants at a time.

Data: The data collected from each participant includes: the completed demographic survey; the selected answer and confidence and satisfaction ratings for each of the three questions; and video of the session that includes detailed information on the time required to answer each question, and the clickstream/keystrokes/navigation path used to answer each question.

Analysis and Report Preparation: The data collected will be analyzed to determine for each of the three treatments (laptop seated, tablet seated, table walking) and for each question the level of accuracy of answers, confidence, satisfaction, and time required. Statistical tests will be used to determine if there are differences across the treatments for these four outcomes. Differences across treatments after aggregating across all questions also will be determined. A second phase of the analysis will determine what differences, if any, exist across treatments in terms of the time spent on each question, time for different activities and decision phases, chart selected and the total time spent for all the questions. One or more articles will be prepared and submitted to appropriate academic and professional journals for publication.

Status: A pilot study was completed to determine the viability of the experimental procedures. Eighteen individuals completed the pilot and their performance and feedback led to modifications in the experimental procedures. The experiment is currently being conducted both on campus at Villanova University with participants in Villanova's MBA and EMBA programs, as well as with business professionals from participating organizations. Site visits have been conducted at Macy's, Nestle Wyeth Nutrition, Aramark, Bank of America, Thorogood Consulting, Exelon, Janssen Pharmaceuticals, Swift Capital, and the Project Management Institute. To date over 200 individuals have completed the study, with a target sample size of 300. Additional participating organizations are most welcome. Please contact Matt at Mathew.Liberatore@villanova.edu if you are interested in having your organization participate.