Tablets Vs. Smart Phones: The Battle of the Century

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Technological advances are at the forefront of the innovation revolution that we are experiencing today. As smart phones and tablets have improved and evolved, they have complemented each other but mostly, time after time, they are duplicating many of their functions. This duplication could lead to a potential merge or synergistic effect resulting in one product that offers the best of both worlds. The authors are exploring the levels of preference for different applications that are available in both smart phones and tablets. These applications include schoolwork, access to software, general organizer, communications and social medial, and personal use.

INTRODUCTION AND LITERATURE REVIEW

Technological advances are at the forefront of the innovation revolution that we are experiencing today. While new discoveries and ideas took a lengthy—many times undermined—amount of time to develop, technological advances have been the catalyst that accelerated all these processes from years, to months, to weeks, and who knows what it will be in the future. Miniaturization and nanotechnology have taken us to extreme possibilities where the impossible idea of yesterday has been transformed into the reality of today. Product transformations and adaptations resulting from product development and product modifications seem to be pretty normal nowadays—almost nothing surprises us anymore.

Considering the rapid evolution in mobile communications technology, we have seen how smart phones first and then the tablets have change dramatically the way things used to be. The evolution of these devices presented strong challenges for electronic engineers and IT professional experts as they continue to improve the quality and expand the capabilities of these highly efficient products. In the consumer market, these devices have become almost indispensable and, in many instances, significantly change human behavior—in many cases creating a technological addiction—which many sociologists and psychologists deem, at times, extreme. As educators, we have seen the numerous benefits that technological advances have produced in all educational disciplines or areas. Tablet devices have been successfully adopted by many educational institutions from primary schools to higher education (Martinez-Estrada & Conaway 2012). Smart phones have also been used in class for internet search in schools and colleges. At the same time, educators also recognize the dark side of abusing these technological advances—especially when considering distraction levels, and the potential unauthorized use in testing. Faculty and students differ on the use of smart phones and other electronic devices in class—students exhibit greater acceptance. In a study by Baker and colleagues support stronger support

for undergraduate males and almost the opposite reaction by graduate students on the use of laptops (Baker et al. 2012).

As smart phones and tablets have improved and evolved, they have complemented each other but mostly, time after time, they are duplicating many of their functions. This duplication could lead to a potential merge or synergistic effect resulting in one product that offers the best of both worlds. So, who is going to win? Would the tablet or the smart phone come out as the final solution? Electronic manufacturers are considering direct-touch interfaces and new ideal screen sizes (Brasel 2015) and experimenting with new wireless communication options to increase the efficiency in transmission speed, clarity of sound, extended battery life, enhanced video/visual options, touch sensitivity, and even 3D images to improve control.

The use and proliferation of communication devices will require a certain level of control. Nowadays according to Junglas and Harris, employees are using their own devices—smart phones and tablets—for work related activities instead or sometimes in addition to any other resources provided by the employer (Junglas and Harris 2013). However, the proliferation in the number of mobile devices augments the security risk and becomes a major concern for business and organizations. If the employees provide their own devices for work related activities, the business will save money but the cost of avoiding higher security risks will offset or even surpass the savings (Patten and Harris 2013). On the other hand, according to Waterfill and Dilworth companies are trying to implement, with their employees, a program of BYOD (Bring your own device) in a way that will cut costs, increasing efficiency and employee morale (Waterfill and Dilworth 2014). The time is right for a new and improved device that provides a solution to the duplication in applications, as well as the flexibility to perform multiple tasks requiring now the use of more than one device. In an early case study by Giachetti and Marchi, already pointed to the dynamic product strategy development that the worldwide mobile phone industry had implemented in response to rapid changes in technology, global competition, and consumer preferences (Giachetti and Marchi 2010). The technology improvements on power management and nanomaterials will significantly improve mobile devices memory and computational capabilities (Byoung-Dai et. al. 2013).

Both the tablets and smart phones have become multi-functional devices that provide an extensive array of options to the users. What if, the competitors in this industry decided to consolidate all functions and create the ultimate, more sophisticated, communications device/product? Findings could provide valuable information to those companies in the electronic industry that are considering innovative technological options in the marketing of smart phones and tablets, or future substitute device.

In this study, the authors are exploring the levels of preference for different applications that are available, or could be available, in both smart phones and tablets. These applications were categorized to include schoolwork, access to software, general organizer, communications and social media, and personal use. A questionnaire was design to capture the levels of preference classified under the previously mention categories.

METHODOLOGY

A questionnaire was design to capture the levels of preference classified by schoolwork, access to software, general organizer, communications and social media, and personal use. Same set of categories and applications was used for both tablets and smart phones using a five point, balanced, preference scale from Least Preferred to Most Preferred. Subjects were asked to evaluate their preferences on the applications for each of the mobile devices. Demographic/classificatory questions were used to be able to further evaluating potential differences between the participants. Business students from small public university in a southeastern state represented the population of interest. A non-probability convenience sample of thirteen business courses was selected. A total of 331 questionnaires were collected from a captive population of 376 students. Considering that seven questionnaires were rejected for lack of completion or other concerns, an effective response rate of 86.1% was attained. The purpose of the study as well as the voluntary nature of participation was timely disclosed and made clear to participants.

Research procedures were properly followed to assure the students' anonymity, to maintain the privacy of the information, and to avoid duplications in participation.

FINDINGS OF THE STUDY

Table 1 below, shows the demographic profile of the students surveyed. The majority of those surveyed were female (63%), and approximately 87% of the students were either White or African American. The students surveyed were evenly distributed among sophomores, juniors, and seniors, while only 11% were freshman. Management/Marketing and Health Care Management accounted for 71% of the emphasis area of the students. Fifty-seven percent of the students were between the age of 20 and 22. Fifty-nine percent of the students work, and approximately 40% of those students work up to 20 hours a week.

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TABLE 1
SAMPLE CHARACTERISTICS

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Description	Gender	Race	Class	Emphasis	Age	Work	Hours Work
Male	37%						
Female	63%						
White		56%					
African American		31%					
Hispanic		4%					
Asian		6%					
Other		2%					
Freshman			11%				
Sophomore			28%				
Junior			28%				
Senior			33%				
Accounting				19%			
Financial Services				10%			
Health Care MGMT				30%			
MGMT/MKT				41%			
17-19					30%		
20-22					57%		
23 or more					12%		
Work						59%	
Don't Work						41%	
Up to 10 Hours							21%
Up to 20 Hours							40%
Up to 30 Hours							21%
More than 30 Hours							18%

Significance differences were examined within each of the five categories of comparisons: School Work, Access to Software, General Organizers, Communications/Social Media, and Personal Use. The Z test for the difference between two proportions was used to test for differences between the responses for the two extremes, Least Preferred (1) and Most Preferred (5).

The comparison between student use of tablets and smart phones in regards to school work is presented in table 2. The use of tablets is significantly higher than smart phones when using e-books, doing homework, and accessing printers. However, there was no significant difference among the students in accessing school systems such as Blackboard. These results indicate that students typically

use their tablets for reading textbooks, homework assignments, and printing purposes. Students tend to use both tablets and smart phones for the purpose of accessing systems such as checking their grades on Blackboard.

TABLE 2
SCHOOL WORK COMPARISONS

Tablets						Smart Phones				
LP				MP	**School Work**	LP				MP
1	2	3	4	5		1	2	3	4	5
*21%	9%	15%	17%	*38%	E-Books	*54%	17%	12%	6%	*11%
10%	7%	17%	20%	46%	School Systems	13%	10%	21%	13%	43%
*13%	7%	12%	26%	*42%	Homework	*39%	18%	15%	10%	*16%
*12%	6%	12%	22%	*48%	Access Printers	*34%	14%	16%	10%	*26%

LP = Least Preferred   MP = Most Preferred   * = Significant difference at .05 alpha

Students use both tablets and smart phones to access software; however, table 3 indicates that student use of tablets is significantly higher than smart phones in the use of software. All four of the access to software categories: word processing, presentation software, spreadsheet, and database, received significantly higher usage on tablets than smart phones. Apparently, students depend much more on tablets to access software.

TABLE 3
ACCESS TO SOFTWARE COMPARISONS

Tablets						Smart Phones				
LP				MP	**Access to Software**	LP				MP
1	2	3	4	5		1	2	3	4	5
*11%	6%	9%	18%	*56%	Word Processing	*46%	16%	14%	12%	*12%
*10%	8%	9%	15%	*58%	Presentation Software	*47%	15%	15%	11%	*12%
*10%	6%	13%	16%	*55%	Spread Sheet	*49%	16%	14%	11%	*10%
*13%	7%	10%	18%	*52%	Data Base	*49%	15%	16%	9%	*11%

LP = Least Preferred   MP = Most Preferred   * = Significant difference at .05 alpha

Table 4 below, shows the use of tablets and smart phones as a general organizer. The results of the survey reflect a significantly higher use for smart phones over tablets in this area. This may be explained by the availability and ease of use for smart phones over tablets in accessing calendars and appointments, memo pads, to do lists, and address/phone books. Students do use tablets as a general organizer to some degree, but not nearly as extensive as smart phones.

TABLE 4
GENERAL ORGANIZER COMPARISONS

Tablets						Smart Phones				
LP				MP	**General Organizer**	LP				MP
1	2	3	4	5		1	2	3	4	5
*32%	11%	22%	15%	*20%	Calendar/Appointment	*3%	4%	9%	16%	*68%
*30%	11%	25%	13%	*21%	Memo Pad	*5%	3%	15%	18%	*59%
*30%	15%	20%	15%	*20%	To Do List	*2%	5%	12%	15%	*66%
*35%	14%	20%	12%	*19%	Address/Phone Book	*3%	2%	6%	9%	*80%

LP = Least Preferred   MP = Most Preferred   * = Significant difference at .05 alpha

Student are constantly communicating through smart phones as well as using social media. It is no surprise that Table 5 shows a significantly higher usage for the smart phones in this area. Although student use tablets in this area, especially in the area of internet access, e-mail, and social media, the usage with smart phones is significantly higher in these areas. Since the primarily purpose of smart phones is to enhance communication as well as provide social media choices, it is no surprise that smart phones would receive significantly higher responses in this area.

TABLE 5
COMMUNICATION/SOCIAL MEDIA COMPARISONS

Tablets						Smart Phones				
LP				MP	**Comm/Social Media**	LP				MP
1	2	3	4	5		1	2	3	4	5
*14%	10%	14%	17%	*45%	Internet Access	*2%	2%	5%	10%	*81%
*47%	12	17%	11%	*13%	Voice Mail	*4%	2%	8%	12%	*74%
*19%	8%	21%	17%	*35%	E-Mail	*3%	2%	6%	13%	*76%
*21%	10%	23%	14%	*32%	Social Media/Other	*3%	1%	3%	10%	*83%

LP = Least Preferred   MP = Most Preferred   * = Significant difference at .05 alpha

Table 6 shows the use of tablets and smart phones usage by students for the purpose of personal use. The results of the survey indicate a mix response on the personal use of both tablets and smart phones. Students tend to use tablets for personal reading over smart phones. There was not a significant difference on the use of watching videos. In addition, students preferred using tablets to smart phones in watching TV. Students mostly prefer using smart phones as an alarm clock. In addition, students mostly prefer using smart phones in playing games (62%); however, 41% of the students also prefer using tablets for playing games as well.

TABLE 6
PERSONAL USE COMPARISONS

Tablets						Smart Phones				
LP				MP	**Personal Use**	LP				MP
1	2	3	4	5		1	2	3	4	5
*16%	6%	14%	16%	*48%	Book Reader	*29%	11%	19%	13%	*28%
13%	3%	14%	18%	52%	Video Player	13%	8%	14%	16%	49%
*13%	5%	12%	17%	*53%	TV Player	*21%	10%	21%	13%	*35%
*35%	16%	13%	15%	*21%	Alarm Clock	*1%	2%	4%	11%	*82%
*21%	9%	14%	15%	*41%	Games	*7%	5%	13%	13%	*62%

LP = Least Preferred   MP = Most Preferred   * = Significant difference at .05 alpha

CONCLUSIONS AND RECOMMENDATIONS

The results of the survey revealed significant differences among student usage with regard to tablets and smart phones. Schoolwork significantly favored tablets with the exception of access to school systems such as Blackboard. In addition, accessing software by the student was significantly higher for tablets than smart phones. However, students significantly preferred using smart phones over tablets for the purpose of a general organizer. The students significantly preferred the use of smart phones for communication and social media to tablets. Using tablets and smart phones for personal uses were mixed among the students. Students preferred the tablet for personal book reading and watching TV, while students preferred the smart phone for alarm clock and playing games. There were no significant differences among the students with regard to preferring either the tablet or smart phone as a video player.

Further analysis could be conducted to determine if there are significant differences between male and female responses within regard to the use of tablets and smart phones. In addition, other demographics such as classification and emphasis area could be tested for significant differences as well. The results of this study may be useful for developing marketing strategies for promoting student usage of tablets and smart phones.

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