# Segmenting the Net-Generation: Embracing the next level of technology

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## ABSTRACT

A segmentation study is used to partition college students into groups that are more or less likely to adopt tablet technology as a learning tool. Because the college population chosen for study presently relies upon laptop computers as their primary learning device, tablet technology represents a "next step" in technology.  Student lifestyles and personality characteristics measured in a survey serve as segmentation dimensions. The survey was preceded by qualitative research used to identify student perceptions of the potential (dis)advantages in switching.  The perceived (dis)advantages of tablet technology for each segment are discussed as implications for "selling" newer technology to this population.

Keywords: segmentation, lifestyles, personality, e learning, net generation

**INTRODUCTION**

As many have noted, the Net Generation is so named because they grew up with technology and share a number of characteristics emanating from their continuous exposure to computers and the internet (Tapscott, 1997; Prensky, 2006; Oblinger and Oblinger, 2005). This has precipitated their developing technical skills, interests and related expectations that in turn, demand new pedagogical approaches in higher education (Tapscott, 2009; Evans and Forbes, 2012). As educators struggle to accommodate this group by developing new programs and curricular delivery systems, they must be cautions not to oversimplify members of the Net-Generation as being singularly homogeneous (van den Beemt, A., Akkerman, S., and Simons, P., 2010; Brown and Czerniewicz, 2010). The case in point is that they are often assumed to be ever ready to move out of their technological "comfort zone" in order to engage newer generations of technology and willingly negotiate the personal challenges that change requires. They may be overly characterized as a population that pursues new technology for the sake of technology as an end in itself. This study examines this assumption using segmentation to differentiate undergraduate students, approaching them as consumers of technology who, as any other consumer population, may hold different technology-related product attitudes and motivations.

Segmentation differentiates the needs and wants of consumers in a way that informs the design of relevant product and service packages, as well as promotional strategies that might persuade a target market of a new product's relative advantage. The present project uses segmentation to examine a college student population in a manner that may be best described as micro-segmentation in order to more closely examine their propensity to embrace the next "level" of computer technology. Micro-segmentation differentiates sub-groups within a broader group that is traditionally assumed to behave as a single segment. This is useful when the broader group is heterogeneous in their wants and needs but is treated as a single market. Partitioning a population such as this into micro-segments makes it possible to provide a more detailed description of behaviors and characteristics relevant to product adoption and identify marketing niches within the broader group that will prove more or less product loyal (Dalgic and Leeu, 1994).

Personality traits and lifestyle descriptions relevant to differentiating members of the net-generation were used as segmentation dimensions. Lifestyle characteristics and personality traits are popular to use in segmentation studies. One of the intuitive appeal of these dimensions is their relationship to deeper motivations which inform one's consumption goals. Consumption choices are goal directed and these goals are often formed around the intangible rewards (i.e., benefits) perceived to be provided by a consumption experience. Huffman, Ratneshwar, and Mick (2000) suggest that consumer goals exist within a hierarchical structure linking more specific and tangible product attributes to intangible or "higher" goals that are broader and more abstract in nature. These higher-order goals are defined within an interior motivational structure that in turn, defines our personalities and lifestyles. Consequently, one's personality and lifestyle is expected to be intuitively compatible with and reflective of the benefits sought in a product purchase. For example, a student who experiences an ongoing need for the approval of others should be expected to express this need in their lifestyle and personality, as well as in the features they seek in product purchases such as their willingness to pay more for a well-displayed, upscale brand name. In turn, the habit of wearing upscale brand-name clothing can be identified as a lifestyle characteristic.

This underscores the importance of remembering that people may, at first, seem to form behavioral intentions (e.g., purchasing a tablet computer) by seeking tangible attributes and features related to that product (a specific computer application). However, the tangible attributes and features are ultimately linked to goals formed around perceived benefits which in turn are motivated by deeper needs reflected in their daily lifestyle. Accordingly, after completing a lifestyle-personality segmentation of our college population, we profile the segments by examining the intangible benefits each segment associates with the adoption of a tablet computer. According to a 2012 research report by the EDUCAUSE Center for Applied Research (ECAR), tablet or touch-screen computing is relatively new and not yet fully embraced by this generation. It is a good representation of what today's college student would perceive as the next step in technology. It is anticipated that micro-segmentation will identify segment sub-sets with different propensities for adopting tablet computers along with insight into their motivations.

## METHODOLOGY

The mid-sized, mid-western university where this study was conducted has thoroughly integrated laptop technology and long relied upon laptops as a teaching-learning tool. Virtually all classrooms are equipped with digital technology that accommodate e-learning (e.g. wireless routers, convenient access to power supply, projection devices, etc.) The overwhelming majority of faculty makes use of this technology at some level. Likewise, the student population is familiar with and relies upon laptops in the classroom, for study, and for personal use. They would provide a good test of how willing a population described as innovative and tech-savvy is to abandon a familiar technology in order to change to a "next generation" technology.

### Preliminary Focus Group

Convenience samples of 4-6 student volunteers were used to form focus groups. These students were aware of tablet technology in general but few had access to or were currently using them, confirming that this population was less familiar with touch-screen technology. Overwhelmingly, most students were relying on laptops and smart-phones to meet their digital needs. In order to introduce tablets and present them as a technical alternative, website promotional material for the Apple I-Pad, demonstrating representative functionality of tablets, was provided to the participants to examine and to prompt discussion during the focus group.

Interview guidelines focused on how students presently use their laptops for school and personal applications while probing them to compare these usage patterns with perceptions of how they might use touch-pad technology in the future. Emphasis was placed on identifying the potential benefit they perceived to be relevant to their personal and academic life. Laddering techniques (Reynolds and Gutman, 1988) were used to postulate the "means-end" relationship between tangible tablet features, the benefits with which they are associated, and the "higher-order" values that establish the relevancy of a given benefit (Gutman, 1982). Student attitudes toward tablets as replacements ranged from excitement at the prospect of moving forward in technical sophistication to many students who were reluctant to relinquish their laptops.

Potential tablet-benefits identified during this phase of the project are listed in Table 1 (Appendix). Note that many of these benefits are provided by functionality that is also available on laptops. This led to the conclusion that students more commonly associate the applications

providing these functionalities with touch-pad tablet technology rather than laptop computing. Several negative consequences of using tablets identified during group discussions are also identified in Table 1.

**Survey**

Students of an undergraduate Consumer Behavior class were used to distribute and collect questionnaires to campus students using random sidewalk interception. This resulted in a sample of n = 692 with a response rate calculated at around 75%. A description of the measures used in the questionnaire follows:

*Lifestyle*

Forty Likert scale items describing lifestyles relevant to college students were developed to maximally differentiate students with characteristically different lifestyles.
Examples:
1. "I make getting good grades a priority in my life."
2. "I play a lot of video games"
3. "Weekends are a time to party and blow off steam."

*Personality Dimensions*

Three personality characteristics were measured using 6-point Likert scales: Self-Efficacy, Materialism, and Innovativeness.
Personal-Efficacy, referring to one's belief that they are capable of negotiating the environment in order to set and achieve goals seemed to be a personality characteristic relevant to a student's willingness to engage a newer technology. Learning a new technology poses a challenge requiring some degree of belief in one's own ability. At the same time, new technology provides an additional tool that would enhance one's likelihood of greater achievement in future pursuits. The personal efficacy scale selected for this study represented one of three dimensions of a broader measure used to measure one's general spheres of control (Paulhus, 1983).
Materialism, which refers to one's affinity for acquiring new possessions and the belief that money contributes to achieving personal happiness, would also be related to a student's likelihood of trading in older for newer technology and accordingly, would prove useful in segmenting the population. This personality characteristic would predict that acquiring new gadgetry is a self-satisfying end in itself. A six-item scale (Moschis, 1976) reported and employed by Moschis and Churchill (1978) was used to measure this trait.
Innovativeness identifies one's openness to new ideas and a willingness to try new methods. This personality characteristic has obvious implications for a student's likelihood to engage newer technology and differentiate students who are more or less willing to move to a newer technology. A 12 item innovativeness scale (Leavitt and Walton, 1975) was used.

*Overall Educational Benefit*

Students were asked how effective they perceived tablets to be in their overall learning experience. This measure was intended as a more global measure of the tablet's relative advantage to their education.

*Overall Likelihood of Purchase*

Students were asked how likely they would be to purchase a tablet at a subsidized price as measure of their interest in and willingness to engage this technology.

*Faculty Use of Table Technology*

In order to determine students' perceived necessity of needing to adopt tablets for use in their courses, students were asked about the likelihood that campus faculty would also adopt tablets and incorporate touch-screen technology along with related educational apps into their curriculum and learning activities.

*Personal and Student Characteristics*

Finally, year in school, gender, major program of study and self-reported GPA measures were taken.

**Cluster Analysis**

A k-means cluster analysis using the personality traits and lifestyle measures described above was used to identify student segments. Effective segmentation identifies groups that are distinctive from one another and maintain individual group homogeneity with regard to characteristics that are meaningful in describing prospective customers. These guidelines led to a 4 cluster solution. The lifestyle and personality profiles of each group follow. All reported differences in segment characteristics were statistically significant ($\leq$ .05) as determined using an appropriate test of differences (i.e., one-way ANOVA or Chi-Square test).

**RESULTS**

**Segment Descriptions**

Segment one was named "Partiers" and made up about 26% of the sample. Good grades was least important to this group. They indicated the highest frequency of playing video games, watching TV and R-rated movies, and eating junk food. They were most open to the use of recreational drugs, pre-marital sex, using alcohol and weekend partying. At the same time, they were most likely to procrastinate completing their school obligations, finding their classes to be boring and pointless. They were most likely to be behind on their bills and least likely to plan for their financial future. Expectedly, they described themselves as restless when home alone and typically chose to go out with friends rather than stay home to study, believing that college is mostly for "making memories." They were most likely to choose an attractive dating partner

over one who was smart. They placed relatively high priority on looking good, also indicating that large groups do not make them nervous. Interestingly, this group also reported the highest levels of materialism and innovativeness as personality characteristics. Subsequent to segmentation, the Partiers were determined to have greater propensity of being males with lower than average, self-reported GPA's. They were somewhat more likely to be Business majors and were distributed relatively evenly across year in school.

Segment two, who made up 23% of the sample, were named the "Pragmatics". They stayed fit, avoided junk food and spent the least amount of time playing video games. They placed the highest emphasis on looking good and spent the most time at tanning salons. They were similar to the Partiers in many ways. They were not particularly interested in their classes; they enjoyed weekend parties and alcohol use, though not to the same extent, and often chose to go out with friends rather than study. They also were more likely to agree that college is for making memories. They differed from partiers in that they seemed to be more pragmatic. They placed higher emphasis on taking time to make "right decisions", getting good grades and were more involved in extra-curricular activities. This is group was obviously social. They reported having more friends to support them in times of trouble and were more likely to make time for family. In terms of personality characteristics, they reported high levels of personal efficacy and were fairly materialistic, though not very innovative. This group had a high propensity of being female. They were more likely to be either Nursing students or undecided in their major. They were least likely to have a Liberal Arts major.

Segment three was named "Loners". They made up about 23% of our sample and had the lowest level of self-efficacy and innovativeness. Large groups made them nervous. They were not involved in extra-curricular activities, preferred to work alone, were least likely to report having friends to rely on in times of trouble, and were least involved with their family. They were most likely to report being depressed and were least likely to feel that they have a "calling" to a particular career. They stayed at home, placed the least emphasis on staying fit, played video games, watched TV, ate junk food, and were fairly tolerant of drug use and sexual promiscuity. They were least likely to believe that college is for making memories. Though reporting that they were fairly well informed on world events, they procrastinate studying, placed the least emphasis on taking time to make right decisions and planned little for their financial future. They were most likely to spend time in coffee shops and most likely to settle for "less than their ideal" when choosing a spouse. This group was equally male and female, had lower than average GPA's, were more likely to be undecided in their majors or Business majors and less least likely to be Nursing or Education majors.

Segment four, named the "Scholars" and who made up around 28% of the sample, indicated the highest level of self-efficacy and were least materialistic with regard to personality characteristics. They were also most likely to be involved in extra-curricular activities, made time for families and were more likely to go to church. They were environmentally concerned, most likely to take their classes seriously, and emphasized the importance of getting good grades. They were most likely to plan on going to grad school, felt that they have a "calling" in their career and were most likely to pass up going out with friends in order to stay home and study. They were also the least likely to report being depressed; they were least likely to watch TV, party on the weekends, use alcohol, endorse pre-marital sex or drug use, or use tanning salons. They stayed fit and ate healthy food but de-emphasized the importance of looking good, and were least likely to choose an attractive dating partner over one who is smart. Expectedly, this

group reported having the highest GPA's. They were somewhat more likely to be female and most often majored in Education or Liberal Arts.

**Segment Profiles and Tablet-Related Attitudes**

Two aspects of the tablet benefits identified in Table 1 were compared across student segments. The first benefit-related measure, as described previously, used a 6-point Likert scale to determine students' perceived likelihood of actually realizing the benefits (or negative consequences) listed in Table 1 (Appendix), were they to switch to a tablet. Second, the importance of each of these benefits (consequences) in their decision process was determined using simple correlations between their likelihood of achieving the benefits and their likelihood of purchasing a tablet.

Comparisons across segments regarding student perceptions that they would actually realize the benefits (consequences) revealed a fairly consistent and intuitive pattern ($p \leq .05$). Students described as the "Pragmatics", a highly materialistic segment that demonstrated strong self-efficacy, consistently demonstrated the strongest belief that adopting tablet technology would indeed result in their achieving the benefits listed in Table 1, along with a lower belief that they would experience the negative consequences. Conversely, the "Loners" were least likely to believe that they would realize these benefits and were more likely to believe that that tablets would only complicate their life. In virtually all aspects the "Partiers" and the "Scholars" were mixed in moderate beliefs that tablets would deliver the desired benefits, typically with no statistically significant differences between them. Exceptions were that the "Scholars" were most likely to believe that tablets would only be useful for specialized educational applications. As well, the "Scholars" were least likely to believe that tablets would be useful for shopping. Another exception was that "Partiers" were most likely to believe that tablets would be helpful in making their study time more efficient. Overall, "Pragmatics" were more optimistic in their perception of the benefits a tablet might provide as opposed by the more skeptical "Loners".

There were several benefits (consequences) that did not statistically differ between segments. All segments modestly agreed that tablets could prove to be somewhat of a distraction ($\bar{x} = 4.3$) and be difficult to type on ($\bar{x} = 4.2$). Similarly, all somewhat agreed that tablets would help them be more creative ($\bar{x} = 3.7$) but that they would have limited use beyond serving as a third auxiliary device in addition to their laptops and cell phones ($\bar{x} = 3.4$). All segments seemed to doubt that that tablets were overly fragile ($\bar{x} = 2.9$) or that they would prove to be too difficult to learn to use ($\bar{x} = 2.1$).

**Decision Criteria**

Regarding the importance of these various benefits in each segment's decision to purchase a laptop, correlations were calculated between their perception that they would realize each benefit and their likelihood to purchase. This has been established as a straight-forward and reliable method of determining benefit importance (Smith and Deppa, 2009).

Most benefits (consequences) were significantly correlated ($\leq .05$) with purchase likelihood, indicating that students would indeed take these benefit dimensions into consideration in making a purchase decision. Exceptions were whether or not tablets would prove to be a distraction from doing their "real" work and whether or not tablets would be difficult to use in typing documents. In other words, although most students agreed that these would be likely

shortcomings or consequences of using tablets, they were not issues considered important in their decisions to purchase or not purchase.

To more clearly demonstrate differences between the segments regarding the benefits most influential in their purchase decision, only benefits correlated with purchase likelihood at a level of r = .500 or greater are reported:

What benefits were most strongly associated with "Partiers" decision to purchase a tablet? The best predictor was improved communication with family and friends, followed by easier web-surfing and more convenient shopping. Note that this group previously indicated the strongest belief that tablets would make their study time more efficient however it turned out that this was not an especially important factor in predicting their tablet purchase. "Pragmatics" were most influenced by a tablet's potential of making them more creative, followed by a more fun/enjoyable learning experience, the ability to better organize themselves and finally, staying more engaged with class activities and instructors. Regarding "Loners", there were no correlations above the r =.500 cut-off. The strongest purchase predictor for Loners was the promised of an improved ability to shop (r =.490). Finally, strongest predictors for "Scholars" were staying better organized, more efficient study time, and staying better engaged with class activities and instructors.

Students' overall belief that tablets would provide them with a more effective learning experience and whether or not they believed faculty would actually incorporate touch-screen technology into their teaching activities were also compared across groups. These measures were significantly correlated with student's purchase likelihood for all segments, though the promise that tablets would make their overall learning experience more effective was most important for the "Pragmatics", followed closely by "Scholars". Overall learning effectiveness was least important to "Partiers". The issue of whether or not faculty would employ this touch-screen technology was most important for "Scholars" and least important to "Partiers". Finally, regarding 'likelihood to purchase', "Loner's" were significantly less likely to purchase than the others. The remaining segments did not significantly differ in their purchase likelihood. Their overall purchase likelihood was $\bar{x} = 4.0$.

**SUMMARY/CONCLUSIONS**

There are clear differences between sub-groups of the Net-Generation regarding their attitudes toward and likelihood of embracing new technology. First, most segments were only modestly likely to purchase a tablet ($\bar{x} = 4.0$) and their motivations varied significantly. "Loners", comprising a substantial portion of the sample (23%), were even less interested.

Students described as "Partiers" were most likely to consider tablet benefits unrelated to learning in their purchase decision. They were also least likely to consider a tablet's contribution to their overall learning experience to be important, nor was their instructor's likelihood of employing tablets in the classroom especially relevant to their purchase decision. This group's belief that tablet's would make their study time more efficient may have been somewhat naïve though it indicates an awareness that they may need to consider improvement in this aspect of their academic life. The computing functions in which they were most interested were likely functions they already employ on their laptops. "Partiers" were as likely to purchase a tablet as "Scholars" and "Pragmatics", however they were also the most materialistic segment and are probably more likely to purchase any socially visible product. It is unlikely that this group will

engage tablet technology to enhance their own learning without guidance and some form of extrinsic motivation.

"Scholars" had more education-related motivations for moving to tablet computing than the other groups. However, they showed the greatest concern for whether or not their instructors would actually make use this technology if they were to commit to using a tablet. This, taken together with their strong belief that tablets would only be useful for specialized educational application indicates a willingness to negotiate a newer technology but only if the educational benefits are made clear. They are likely to be highly dependent upon instructors equipped with a well-planned curriculum that integrates tablet applications.

"Pragmatic" students like to have fun but are also practical and purposeful in balancing their social life with maintaining good grades. This group also considered the educational benefits of tablets in their purchase decision. They differed somewhat from "Scholars" with a stronger interest in technology that would help them be more creative and make learning more fun. They were most optimistic about realizing tablet benefits but it cannot be assumed that they would invest significant time and effort into using tablet technology for education-related purposes on their own. They are, as their name suggests, pragmatic. They do not appear especially intellectually curious and likely have busy and active social lives. If there is no real payoff in using their tablets as an educational tool, if tablet are not integrated into their classrooms and curriculum, it is unlikely that they would take the initiative to do so on their own. However, with practical applications and training, this group's high level of self-efficacy would support their technical engagement.

"Loners", who seem more generally pessimistic and introverted, were least likely to purchase tablets and demonstrated less interest in the tablet-related benefits. This group could be considered laggards and will likely avoid engaging this technology, especially for education-related applications, until forced to.

Educators must be cautious in assuming that meaningful change will happen by indiscriminately dispensing new product technology into the hands of the Net-Generation. It would be naïve to assume that technical savvy and curiosity alone would motivate them to negotiate the challenges that come with change. Educators must still lead the way. Touchscreen technology in particular, holds much promise for classroom innovation and may even be especially beneficial for more withdrawn students such as the "Loners" (Geist, 2011). However, the effective integration of new technology into higher education will not happen without supporting pedagogical strategies which in turn, will require investment into faculty training and support (Oblinger and Hawkins, 2006). Change in any form represents an investment and the present student generation is as resistant to change without benefit as is any other generation, whether or not the change involves technology.

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**APPENDIX**

**Table 1**

| Suggested Tablet Benefits: |
| --- |
| 1.  Computing in more varied locations |
| 2.  Easier online shopping |
| 3.  Easier web surfing |
| 4.  Staying better organized, multi-tasking |
| 5.  Owning newer and more novel technology |
| 6.  Learning would be more fun |
| 7.  Expressing one's self more creatively |
| 8.  Needing to carry fewer book |
| 9.  More ready access to webcasts/podcasts |
| 10. More ready access to and use of audio/visual material (video, pictures, etc.) |
| 11. More ready access to music |
| 12.  More ready access to entertainment, games, etc. |
| 13. More efficient use of study time |
| 14. More mobile |
| 15. Having easier and more frequent communication with friends and family |
| 16. Better contact with class activities/instructors |
| 17. Improving one's own technical sophistication |
| 18. Opportunity to learn and practice more advanced technical applications |
| 19. Ability to take /modify pictures and video |
|  |
| Suggested negative consequences of using tablets: |
| 1.  Tablets might hold little advantage over using a laptop in combination with their smartphones, resulting in having to needlessly carry one more device. |
| 2.  Tablets could be a fun "distractions" from more purposeful learning activities. |
| 3.  Typing documents could be more difficult on a tablet. |
| 4.  Tablets apps could be difficult to learn, making their life more complicated. |
| 5.  Tablets are too fragile |
| 6.  Tablets would only be useful when using very specialized applications |