

An Exploratory Study on Consumer Perceptions of Amazon Echo, Alexa, and Smart Speakers

by

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Abstract

The Internet of Things has become a compelling topic of the past decade. Smart Speakers, like Amazon Echo, have become a mainstream product over the past few years. By exploring the consumer perceptions of Amazon and these “Internet of Things” products, we can better curate the marketing mix to serve the needs and values of customers. Through an exploration of various demographics via an online survey, we sought to uncover specific perceptions of consumers in regards to Amazon Echo and Alexa, while also analyzing differences between these demographics so that Amazon can further understand how to create value for their customers.

Literature Review

Internet of Things

Thanks to modern technological advancement, consumers are able to interact with smart objects, which include smart speakers, that have the potential to revolutionize the consumer experience (Donna and Thomas, 2018). As a result, these devices possess their own types of experiences with consumers and one another. With these new ways for consumers to interact with technology, the consumer experience is shifting to adapt to these technologies. Furthermore, these products generate a new wealth of data that provides companies data about their customers that easy widely and easily accessible (Elvy, 2018).

The Internet of Things, however, is posing a new wave of security and privacy concerns for consumers. As smart speakers, like Amazon Echo, continue to make their way into homes across the world, companies will need to earn consumers' trust. For example, there are many current concerns about the amount of information collected, even when the consumers do not command their connected devices to collect their data. Simply put, IoT devices inherently support incursions when it comes to consumer privacy.

According to Yao-Te et al, "With a huge number of users, e-commerce marketing strategies in the IoT become extremely important and must be altered accordingly in response to changes in the environment and industry. Hence, the application of IoT technology to mobile commerce allows users to receive integrated information according to time, location, and context using location-based service, and provides them with a more effective shopping experience." This poses an opportunity for IoT products to be used in a brick-and-mortar environment to curate an experience that meets the needs of customers that were previously not possible.

Through e-commerce, companies can now provide consumers with an extremely curated, online shopping experience. As consumers learn to cope with a world filled with these IoT devices, as Rainie and Anderson note, “Despite wide concern about cyber attacks, outages and privacy violations, most experts believe the Internet of Things will continue to expand successfully over the next few years, tying machines to machines and linking people to valuable resources, services and opportunities.” Therefore, it is essential to understand how people currently feel about this notion and attempt to understand how consumer experiences will be altered moving forward into the future.

E-Commerce Shopping and the Future of Retail

As mentioned by Kumar, the ease of use of e-commerce and access to products and services has created a new opportunity for companies. In the recent past, online shopping has received more attention when compared to more traditional channels. Because of this shift, consumer behavior companies must strive to stay ahead in a competitive online retail environment. To do this, it is vital for e-retailers to understand the purchasing intention and behavior of consumers. To accomplish this, many companies must revise their “promotional” aspects of their marketing mix. This could include offering discounts on products, special offers, deals of the day, and festive offers (Kumar, 2016).

With this new way to purchase items that customers desire, there are consumer behavior implications for how the shopping experience is implemented. For example, new research indicates that the provision of customer service in online shopping leads to customers having a greater sense of control, which enhance their self efficacy to induce stronger purchasing decisions (Yahong, Zhipeng, Fuming, 2018).

With Amazon's prominence in the online retail space, this type of promotional content can prove useful in understanding how consumers interact and behave in an online environment. That being said, however, there are still a number of conventional retail stores across the globe. Companies must, therefore, be able to understand the correct channel to implement their products, while also keeping in mind the promotional material required to gain interest among consumers.

Need to Touch

As we shift into a digital age, we must keep in mind the research that has taken place in regards to need to touch. There are many people who are unable to purchase products without physically touching the products first. These consumers believe that, by touching the product, they will generate more assurance and information and reduce uncertainty (Vieira, 2012). This theory of Need to Touch explains that consumers desire to examine products haptically to make better judgments about the product. Because of this increased use of e-commerce, many consumers may not touch these IoT products before purchase.

In regard to gender, there are differences within the Need to Touch theory. According to Vieira, there is a moderating effect of gender to sense of touch on consumer intention. As a result, females have a higher autotelic score than males. When a consumer has a higher Need for Touch autotelic score, the experiential motivation to shop plays a more important role in regard to impulsive motivation (Vieira, 2012). Additionally, research shows that those who have a higher NFT (Need for Touch) score have less confidence in their judgement when having a lack of direct experience with a product (Peck and Childers, 2003).

Therefore, to properly serve a market segment, IoT products that are sold online might have an issue giving consumers with a high NFT confidence to purchase that item. Therefore, those who touch in order to enjoy the tactile feedback (an autotelic need for touch) are more convinced by haptic elements regardless of the level of involvement in the product. However, according to Jansson-Boyd, “when people do not have a desire to touch a stimulus so that they can experience sensory feedback, they are more likely to be persuaded if a haptic element is present if their level of involvement is low.”

This idea of need to touch is a vital consideration as consumers move to purchase more items online. For example, as Muthiah and Suja mention how retailers must consider sense, feel, think, act, and relate to create a rich experience that is free of negative cues.

Amazon Perceptions

The trusted relationship between a company and its customers is vital to the survival of any business. In Amazon’s case, it is made clear their ability to earn the trust of their customers. As Hoffman explains, Amazon has been considered to have the best consumer perception of any brand. Not only perceived among the best brands in the world, but customers love to use the e-commerce platform. According to Statista, 67% of people over the age of 18 like using Amazon.

However, there are some concerns with regard to data privacy and other aspects of trust. For example, according to Statista, in 2017, 32% of the respondents explained Amazon as an integral part of their life. However, more shockingly, only 32% of the 940 respondents 18 years or older believed that Amazon respected their privacy. These types of statistics, therefore, prove

that there may be a barrier for customers to purchase a smart speaker from Amazon considering the amount of data and privacy involved in the product.

Amazon Echo and Alexa

Amazon's Echo smart speakers have made an incredible impact on consumers' lives. The list of features that these devices can accomplish continues to grow on a regular basis. Echos can stream music, arrange an Uber pickup, create timers and alarms, give a breakdown of the weather, create shopping lists, add items to a calendar, read audiobooks, read the news, find restaurants nearby, and even pay credit card bills (Smith, 2016). This only begins to scratch the surface of what these devices are capable of doing. These features continue to grow thanks to third-parties' ability to create their own Alexa skills.

The convenience of these devices are changing everyday tasks - from making phone calls to interacting with our homes. However, smart speakers, like Amazon Echo, have some people worried (Henning, 2018). Nevertheless, these devices are not constantly connecting data. Thanks to a "wake word," Alexa is only recording the query after the wake word has been dictated by consumers. The recordings are then stored on Amazon's servers (Henning, 2018). However, major companies, like Amazon, have implemented data controls for consumers, which includes disabling the microphone and deleting stored recordings.

Digital voice assistants, like Amazon's Alexa, are becoming increasingly common. As a result, there are many instances where consumers have shown concerns regarding the protection of the information and data that is communicated with Alexa. As Pfeifle points out, "companies should ensure privacy protections are engineered into their devices, and that legislatures should adopt forward-looking statutes to ensure the protection of users."

Additionally, according to research conducted by the Consumer Intelligence Research Partners, those consumers who own an Amazon Echo are among some of the most loyal shoppers on the Amazon platform. This demonstrates the brand loyalty to Amazon. As a result, Amazon can conduct new ways to enhance the shopping experience. Furthermore, studies have indicated that customers that own an Amazon Echo spend roughly \$1,700 each year (“Alexa Users Spend Big on Amazon”, 2018). This is done through these Amazon Echo devices and Alexa. Now, shopping is made easier for Prime members.

Methods

In order to understand our questions regarding customer perceptions of Amazon Echo and Alexa, we conducted an online survey through Qualtrics. This survey was then distributed to students within Dr. David George Shows’ marketing classes at Appalachian State University for extra credit. Students would also get extra credit if they distributed the online survey to participants that are of a different demographic than themselves. Through this online survey, we collected 173 survey responses, comprising of both men and women. 45.75% of respondents were male, while 54.25% were female. See Appendix A for the online survey that was given to respondents. The beginning of the survey gave participants insight into the data that we were trying to collect, while also defining what a “Smart Speaker” is. The survey covered topics from Need to Touch, product, price, place, product, willingness to buy, privacy, and demographics.

Results

After collecting the surveys, we ran various SPSS outputs from the samples collected to further understand the significance of this research. Some of the charts pulled came from

Qualtrics’ data analysis tools. This helped break down some of the demographics used for this study.

Descriptive Statistics

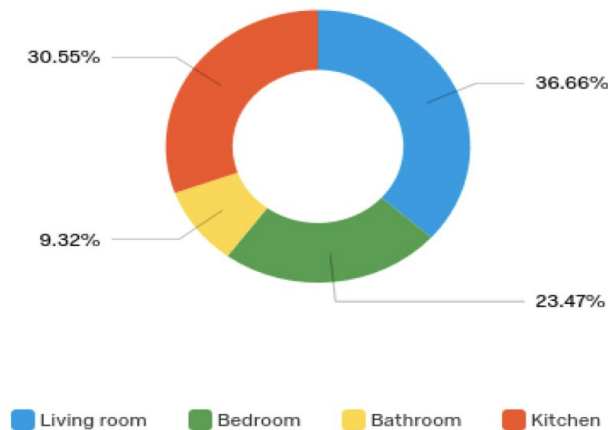
Below are the descriptive statistics from the respondents who participated in this study. The most prevalent profile of the respondents was a 18 to 22 year old caucasian female. This may be because this exploratory survey was distributed through a marketing class at Appalachian State University. Additionally, the most used social media platforms were Facebook and Instagram. This makes sense given the popularity of these social media services. Additionally, the most dominant income is under \$20,000, which, again, is expected given the method in which this survey was distributed.

Demographic Variable	Most Common Profile (Mode)		Gender	Valid Percentage	Frequency
Education	Some college		Male	45.75%	70
Ethnicity	White/Caucasian		Female	54.25%	83
Marital Status	Single				
Age	18-22		Marital Status	Valid Percentage	Frequency
Gender	Female		Single	34.19%	53
Income	<20,999		In a Relationship	32.26%	50
			Married	30.97%	48
Ethnicity	Valid Percentage	Frequency	Divorced	2.58%	4
Black/African American	1.94%	3	Widowed	0.00%	0
Native American	0.00%	0	Other	0.00%	0
Hispanic	4.52%	7			
White/Caucasian	89.03%	138	Social Media	Valid Percentage	Frequency
Asian/Pacific Islander	3.23%	5	Facebook	34.49%	139
Other	1.29%	2	Instagram	24.81%	100
			Twitter	13.90%	56
Income	Valid Percentage	Frequency	Snapchat	23.08%	93
<\$20,999	37.50%	57	Other	3.72%	15
\$21,000-\$49,999	11.18%	17			
\$50,000-\$79,000	15.13%	23	Age	Valid Percentage	Frequency
\$80,000-\$109,999	13.16%	20	18-22	52.90%	82
\$110,000-\$139,000	7.89%	12	23-38	12.90%	20
>\$140,000	15.13%	23	39-52	15.48%	24
			53-71	18.71%	29
			72 and above	0.00%	0

Amazon Echos in Various Rooms

Before running any major statistical tests, we wanted to understand where in a household a smart speaker is most likely to be placed. Below are the results:

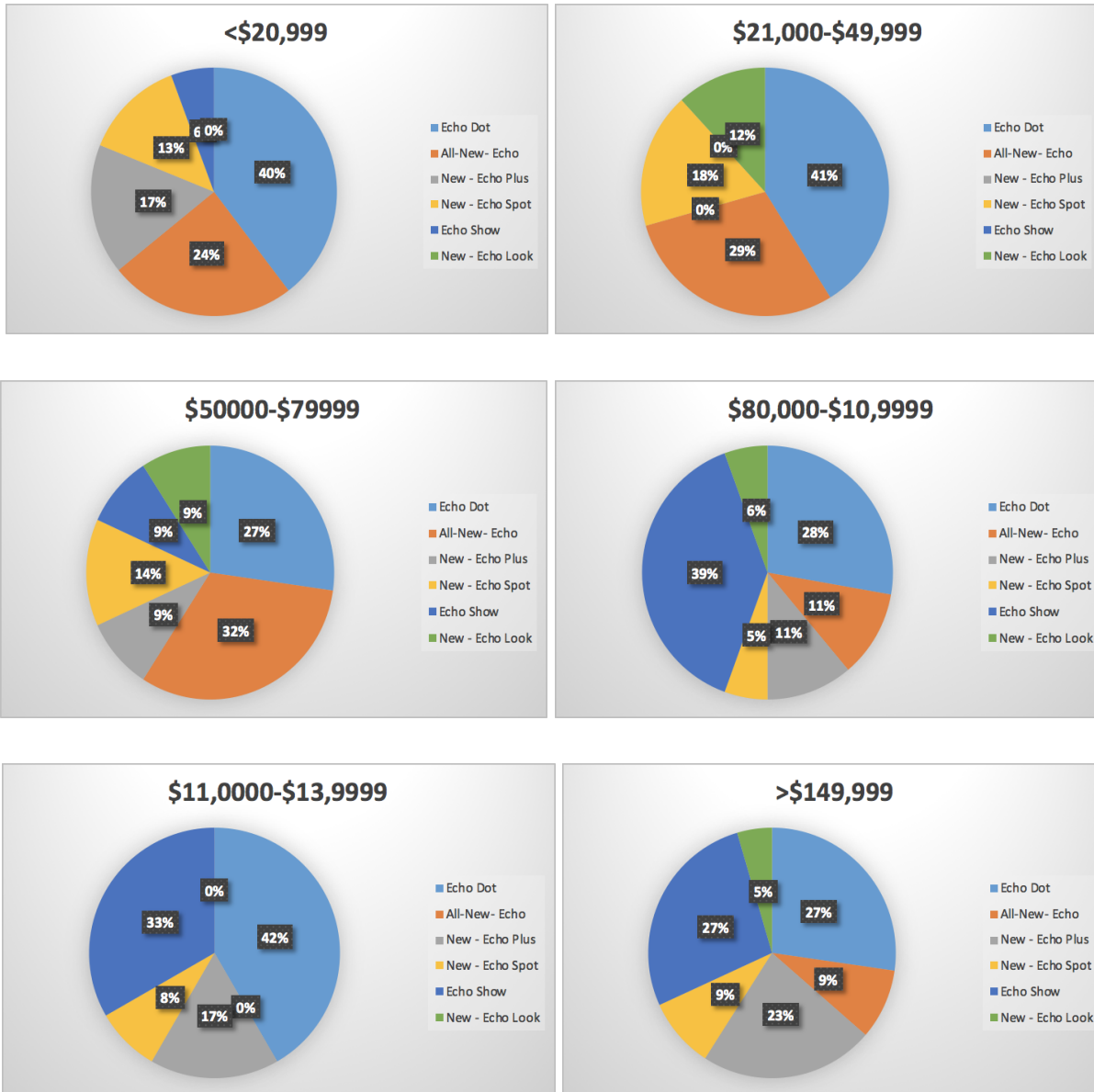
Q13 - I would most likely use a voice-controlled speaker in the following rooms



It turns out that the kitchen and the living room are the most popular choices, while the bathroom, understandably, is the least likely to contain a voice-controlled speaker. Now that we have an understanding with regard to the preferential rooms to host this product, it is time to start conducting statistical tests to understand customer perceptions.

Income and Types of Amazon Echos

We wanted to understand the preferential differences between various incomes of those who participated in the survey. Therefore, we asked participants to rank the Amazon Echo offerings to see which features and pricing are preferred between groups with varying incomes. Because of the different types of smart speaker products that Amazon offers, these different groups may have varying opinions on the types of products that they believe should be purchased. Therefore, we broke down the preferential differences between these products by the participants' annual income. Below are the results by percentage:



Within the lower income brackets, we can see that the cheapest Echo offering, “Echo Dot,” is preferred, while the “All-New - Echo” is second choice. As annual income increases the Echo Show and other, more expensive smart speakers become more preferred. However, the Echo Dot seems to be the most popular choice among all Echo offerings. This may be due to the functionality of the device compared to more expensive versions, while also being priced at an astounding \$50, which often has discounted rates on Amazon as well.

Age and Privacy Concerns

With these smart speakers, there are many concerns in regards to privacy and the information that companies, like Amazon, are collecting when we use these devices. As a result, we wanted to observe if there were any statistical differences between the various age groups.

We broke down the age groups into the following categories:

- 18-22
- 23-38
- 39-52
- 53-71
- 72 and above

Because this is an exploratory study, we did find results for those that were 72 and above. These were the results:

Anova	Sig	F
Smart Speakers are listening even when I do not want it to be	2.97	1.1241
I think companies are collecting the data from these smart speakers	0.352	1.097
Smart speakers are listening all the time	0.228	1.46

Interestingly enough, we discovered that there were not any statistical differences between age groups when it came to the three statements that were considered during the survey in regard to privacy. Though this is an exploratory study, these results prove that all age groups can be considered to have the same opinion in regard to the privacy and data collection. This is important to understand in regards to how all consumers, regardless of age, perceive and understand privacy. As Amazon continues creating and developing technology for the Amazon Echo product line, this is a key finding that is important to keep in mind when conveying this type of information to consumers. We wanted to take this finding a step further to understand

how correlative the questions were to one another. The statement “Smart Speakers are listening even when I do not want it to be” was compared with “I think companies are collecting the data from these smart speakers.” We ran a correlation test to see the relationship between each other:

Smart Speakers are listening	.705 correlation
Are collecting the data from these smart speakers	

According to the results, there is a strong, positive correlation between these two statements. Because of how strong the linear correlation is, we understand that those who strongly believe that Smart Speakers are listening at all times also believe that Amazon collects the data from these smart speakers. Now we know that there is not a statistically significant difference between age groups when it comes to concerns about privacy, and we know that those skeptical about Alexa listening at all times have a strong positive correlation with a belief that companies, like Amazon, are collecting data. With this in mind, we want to understand the results of how strongly these participants agree with these two statements. So, the means of the responses were broken down by age group, and we discovered the following results:

Q18 - Please rate your answers based on the following statement

18-22

Smart Speakers are listening, even when I do not want it to be. I think companies are collecting the data from these Smart Speakers



23-38

Smart Speakers are listening, even when I do not want it to be. I think companies are collecting the data from these Smart Speakers



39-52

Smart Speakers are listening, even when I do not want it to be. I think companies are collecting the data from these Smart Speakers



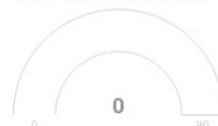
53-71

Smart Speakers are listening, even when I do not want it to be. I think companies are collecting the data from these Smart Speakers



72 and above

Smart Speakers are listening, even when I do not want it to be. I think companies are collecting the data from these Smart Speakers



On a scale of 1 to 100 in terms of agreement with these two statements, all age groups fell between 68.79 and 83.4. This demonstrates all age groups' agreement with these two statements. Therefore, if Amazon would like to convey a message to consumers about collection of data and privacy, the company must keep in mind that people of all ages strongly agree with the statements that Amazon Echo is listening even when it is not supposed to and companies, like Amazon, are collecting data.

Smartspeaker Ownership and the Features Used

We began by looking at the relationship between those who own smart speakers and the features that are used. We then compared this data to those of respondents who do not own smart speakers, which were the majority of those who took the survey. We asked both smart speaker and non-smart speaker owners to rate which of these five features they would use an Amazon Echo speaker for: music, calls/texts, weather, reminders/alarms, and smart home functions. We did this by conducting an independent t-test to see which of these features have statistical significance when the factor of owning a smartspeaker is added.

		Features				
		Music	Calls/Texts	Weather	Reminders/Alarms	Smart Home Functions
Do you own a smartspeaker?	Yes	91.88	44.56	82.94	69.75	66.53
	No	73.45	47.58	64.58	62.78	55.64
Sig		0.001	0.023	0.003	0.212	0.999

Through our analysis, we have discovered that music, calls/texts, and weather are statistically different when comparing those who own a smart speaker to those who do not. On the other hand, however, reminders/alarms and smart home functions are not statistically significant with levels of .212 and .999 respectively. Therefore, smart speaker owners are more likely to use a speaker for music compared to those who do not own one. Furthermore, those

who do not own a smart speaker believe that they would more likely use it for calls and texts compared to those who own a smart speaker. Though these numbers are similar, there is a statistical significance of .023, which meets the .05 threshold necessary to be statistically significant.

The results of this test are extremely insightful when it comes to a customer's perceptions of Alexa contrasted to those of one who does not own an Amazon Echo. Those participants who do not own a smart speaker believe that they are more likely to use it for calls and texts than those who actually own a smart speaker. Conversely, those who own a smart speaker use it for weather and music significantly more than one who does not own a smart speaker or Echo. However, considering the results, when targeting to the groups individually, music and weather should be promoted to those without an Echo because of this group's desire to utilize these features.

Education vs. Knowing Metrics

In the survey, we asked a series of questions which asked the participants their perceptions of the amount of thought that is given during a decision. We wanted to compare this to the education levels of the participants to see if there was a significant difference between these groups. We ran an Anova test to see if we could find a significant difference between groups in regards to the four "knowing" questions that were asked. Below are the results:

	Sig	F
I tend to think harder than is necessary	0.001	4.286
I would rather do something that is sure to challenge my thinking abilities than something that requires little thought	0.031	2.391
I like having the responsibility of handling a situation that requires lot of thinking	0.023	2.538
I seek out situations where there is a likely chance I'll have to think in depth about something	0.049	2.171

From this test, we have discovered that all questions in the "knowing" metric produce a significant difference in terms that the difference groups of education gave in regard to their

response. Therefore, we continued with our investigation to further understand the exact differences between groups when it came to education level and the “knowing” metrics. By running an Anova test, we are able to see the means of each group on a 1 to 7 point scale.

Duncan Post Hoc Test		
Thinking harder than necessary	Group 1	Group 2
Less than high school	3.00	
High School or GED	4.60	4.60
Some College		5.61
2 year degree		5.42
4 year degree		5.23
Professional degree	4.29	4.29
Doctorate degree	3.00	

We first look at the statement “I tend to think harder than is necessary.” There are two groups of education levels that vary significantly from one another. The responses from Group 1 tend to “somewhat disagree” to “Neither Agree nor Disagree” while Group 2 has the opinion that leans more on “somewhat agreeing.” Therefore, for those education levels in Group 2, Amazon can expect the mentality of somewhat agreeing with thinking harder than necessary, while those participants that are in Group 1 (less than high school, high school or GED, professional degree, and doctorate degree) are significantly differing opinion that somewhat disagrees with Group 2.

Duncan Post Hoc Test		
I would rather do something that is sure to challenge my thinking abilities than something that requires little thought	Group 1	Group 2
Less than high school	4.50	
High School or GED	4.50	
Some College	5.04	
2 year degree	4.84	
4 year degree	4.48	
Professional degree	4.71	
Doctorate degree		7.00

We then ran a post hoc test for the statement, “I would rather do something that is sure to challenge my thinking abilities than something that requires little thought.” Interestingly enough, the only major difference between the responses in this question was with the group that had earned their doctorate degree. This group strongly agreed with this statement, while Group 1,

which consisted of all other education groups, were more neutral in regard to this statement.

Therefore, in terms of marketing material and the marketing mix, it may serve Amazon to curate their materials for those with doctorate degrees to be a bit more challenging and require more thought than marketing materials for lower educated groups.

Duncan Post Hoc Test		
Enjoyment of responsibility of a lot of thinking	Group 1	Group 2
Less than high school	5.50	5.50
High School or GED	4.30	
Some College	4.71	
2 year degree	5.32	
4 year degree	5.29	
Professional degree	5.21	
Doctorate degree		7.00

We continued with this procedure by conducting a Post Hoc test for the statement, “I like having the responsibility of handling a situation that requires lot of thinking.” We, again, observe two groups that have statistically different opinions. The participants who have an education level of less than high school and doctorate degree take somewhat agree to strongly agree with this statement, compared to Group 1.

Gender and Need to Touch

There have been multiple studies about the differences between male and female behaviors in terms of “Need to Touch” consumer products. We wanted to understand if there was a significant difference between gender in the need to touch need to touch metrics that we used. See Q11 in the Appendix for the “Need to Touch” questions that were used. After analysis, we discovered the following results:

Need to Touch		
	Number	Mean
Male	65	54.88
Female	82	59
	Sig	0.422
	F	0.648

Though it seems that females slightly preferred need to touch compared to males, the independent t test revealed that the difference is not statistically significant in terms of one gender having a preference of Need to Touch compared to another. This means that Amazon should put the same amount of effort serving the Need to Touch Metric for both males and females.

Gender and Online vs. Retail

Given the result of gender compared to Need to Touch, we thought it prudent to see if there was a substantial difference between the genders in regard to preference of either online versus brick-and-mortar shopping. Therefore, we take the four questions regarding privacy and compare them to gender:

1. Where would you most likely buy this unit - online (0 to 100 scale)
2. Where would you most likely buy this unit - Retail (Best Buy, etc.) (0 to 100 scale)
3. I am more likely to go to a store to see this in use (1 to 7 scale)
4. I am more likely to buy if I see this product in use

We ran another t-test compared with these variables to identify if there were any differences between genders. See below for the results:

Gender v. Online and Retail					
		1. Online	2. Retail	3. See in store	4. Buy if seen in store
Male	68	63.22	49.94	4.33	5.3
Female	80	55.24	48.26	4.63	5.36
	Sig	5.21	0.129	0.475	0.362
	F	0.415	2.326	0.513	0.835

Though it seems that males had a higher response for both online and retail, and females had a higher response for “See in store” and “Buy if seen in store” questions, there is not a statistically significant difference in the responses between females and males. This is because all significance levels are above .05. However, though there is not a statistical difference, we can infer that both genders are neutral regarding whether they purchase a product either online or in a brick-and-mortar retail store.

Amazon Prime and Willingness to Buy

We wanted to see if there was difference between whether Amazon Prime affected the purchasing decision of a product. We narrowed down the feature by explaining it as “free, two-day shipping.” We found the following results:

Prime and Willingness to Buy	Sig	F
I am more likely to go to a store to see this in use	0.02	4.00
I am more likely to buy if I see this product in use	0.159	1.864

The results suggest that there is a statistically significant difference between the groups who believe that Amazon Prime two-day shipping will increase their willingness to purchase when contrasting whether seeing the product in use will affect the buying decision. However, the statement “I am more likely to buy if I see this product in use” does not have statistically different groups of people who responded to the Amazon Prime shipping question. In regard to

the question, “I am more likely to go to a store to see this in use,” we found the following results when compared to the Amazon Prime question:

Duncan Post Hoc Test			
I am likely to go to a store to see this in use	Number	Group 1	Group 2
Not at all	45	3.89	
Somewhat	70		4.73
A great deal	39		4.9

This implies that those who believe that Amazon Prime two-day shipping does “not at all” affect the buying decision have the opinion of “disagreeing” to “neither agreeing nor disagreeing” that they are likely to go to a store to see the product in use. However, for those who feel that Amazon Prime shipping would influence their purchasing decision “somewhat” and “a great deal,” are higher on the spectrum. This means that they fall further on the side of “somewhat agree” that they are likely to go into a store to see the product in use. Though the point is subtle, this can make a major impact when discussing retail strategy. Amazon may want to, therefore, focus on customers influence on Prime to have demonstrations of the product “in person” before a purchasing effort is made.

Discussion

Smart speakers are becoming frequently used in households across the country. The Internet of Things is certainly the next era of revolutionizing technology. However, consumer opinions and concerns should be addressed by major companies, like Amazon, to be sure that there is not only transparency, but that their products have the proper marketing mix to address the values and needs of consumers. Through these various tests, customer perceptions of these smart speaker products become clearer. We looked at various results that observe findings from privacy to feature sets regarding perceptions of these products.

After conducting these tests, it is clear that any company selling smart speakers should consider differentiating the marketing mix for e-commerce marketing compared to traditional retail marketing, while also being sure to use both channels as effective purchasing outlets for consumers. Amazon should consider curating the marketing experience in terms of the Need to Touch metrics. Differentiating the Echo experience in a retail store compared to purchasing online may assist consumers in purchasing the product. However, unlike what previous research has revealed, we observed that there is not a difference between females and males when it comes to a need to interact with these products in person. Additionally, Amazon should consider utilizing a brick-and-mortar approach for those potential consumers who desire to interact with the product. However, there should be future research conducted that looks at a more diverse demographic, while also having more people participate.

Amazon should also learn to curate the promotional content of their integrated marketing communications. This especially applies to promotional content that conveys where the Amazon Echo is placed in the room. We now understand that different aspects of a consumers demographics can have an impact on the type of product that is ultimately purchased. For example, those with lower annual incomes are more likely to purchase an Echo Dot, while those with higher incomes prefer the Echo Show. Therefore, consumer perceptions of products are subject to change based on demographic differences, but this is not always the case as we observed in the Need to Touch Metrics in regard to gender.

As the Internet of Things continues to expand, it would be best for smart speaker companies to address the concerns that consumers have with regard to how the information that they provide Alexa is being used. Privacy is becoming a more pressing topic each day, and large

companies are facing some tough questions in an increasingly digital world. It would be wise of Amazon to do the same, especially as the Amazon Echo product line continues to grow and evolve.

Conclusion

The Internet of Things is revolutionizing consumer interaction with large companies, like Amazon. However, as these products become more sophisticated, Amazon must keep in mind the results found in this study to ensure that customer values are at the center of the products that are offered. It is clear that consumers are concerned about the interconnectivity of IoT devices, and companies, like Amazon, should be as transparent as possible in regard to the use of consumer data. As these issues regarding data and privacy continue, the company must find ways to be transparent between different groups, while also keeping in mind the aspects of Amazon's products that matter the most to various customer groups.

Further research should attempt to reach a more diverse population of Echo users, while also increasing the volume of participants. Additionally, because privacy is such a pressing issue, it would certainly be interesting to see what particular aspects of privacy that consumers care about the most. Future research should also consider the different consumer behavior patterns of brick-and-mortar retail against e-commerce shopping.

The intention of this paper is to share with Amazon a variety of different aspects to consider when evaluating customer perceptions regarding Amazon Echo, Alexa, and Smart Speakers. Through the insights provided in this paper, Amazon can make more informed decisions about how to understand the perceptions that consumers have about their products.

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Appendix A: Online Survey Questions

Honors Thesis Survey

Start of Block: Introduction

Q25 This is a survey to understand customer perceptions about Amazon Echo and Smart Speakers in general. Please answer the following questions as honestly as possible.

Q26 A "Smart Speaker" is a handsfree speaker that you control with your voice. Smart Speakers, like Amazon Echo, connect to voice-controlled virtual assistants, like Alexa Voice Service, to play music, make calls, send and receive messages, provide information, news, sports scores, weather, and more.

End of Block: Introduction

Start of Block: Place

Q9

Use the sliding bar to emphasize your level of agreement.

I place more trust in products that can be touched before purchase. (3)

I feel more comfortable purchasing a product after physically examining it. (4)

When browsing in stores, it is important for me to handle all kinds of products. (5)

If I can't touch a product in the store, I am reluctant to purchase the product. (6)

There are many products that I would only buy if I could handle them before purchase. (11)

I find myself touching all kinds of products in stores. (12)

Q15 Have you seen an advertisement for a voice-controlled speaker?

- Definitely yes (1)
- Probably yes (2)
- Might or might not (3)
- Probably not (4)

- Definitely not (5)

Q16 I would like to see advertisements about these products to help me understand what it does.

- Like a great deal (1)
- Like a moderate amount (2)
- Like a little (3)
- Neither like nor dislike (4)
- Dislike a little (5)
- Dislike a moderate amount (6)
- Dislike a great deal (7)

Q13 I would most likely use a voice-controlled speaker in the following rooms

- Living room (1)

- Bedroom (2)
- Bathroom (3)
- Kitchen (4)

Q14 If this product came with 2-day shipping, this would increase my willingness to buy

- Not at all (1)
- Somewhat (2)
- A great deal (3)

End of Block: Place

Start of Block: Write down three words that come to mind when you see the phrase "Smart Speaker"

Q1 Write down three words that come to mind when you see the phrase "Smart Speaker"

- Word 1 (1) _____

Q3 Please answer the following questions.

0 10 20 30 40 50 60 70 80 90 100

How likely are you to use it to play music? (1)	
How likely are you to use it for calls and text? (2)	
How likely are you to use it to check the weather? (3)	
How likely are you to use it for reminders/alarms? (4)	
How likely are you to use it to control lights, tv, etc.in your home? (5)	

Page Break

Q6 Rank the following Amazon Smart Speakers based on your likelihood to purchase.

Q7 Rank the order in which you would buy these Smart Speakers.

- _____ Echo Dot (1)
- _____ All-new- Echo (2)
- _____ New - Echo Plus (3)
- _____ New - Echo Spot (4)
- _____ Echo Show (5)
- _____ New - Echo Look (6)

Q17 In the space below, please click in the space that best expresses your feelings.

	Very Low (1)	Somewhat Low (2)	Neither High Nor Low (3)	Somewhat High (4)	Very High (5)
The likelihood of purchasing the voice-controlled speaker is: (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

The probability that I would consider buying the voice-controlled speaker is: (2)

My willingness to buy the voice-controlled speaker is: (3)

Q36 In the space below, please click in the space that best expresses your feelings.

Strongly Disagree (1)	Disagree (2)	Somewhat disagree (3)	Neither agree nor disagree (4)	Somewhat agree (5)	Agree (6)	Strongly agree (7)
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If I were going to buy one of these products, I would consider buying this product at the price points shown.
(1)

At these prices, I would consider buying the product.
(2)

Q8 In the space below, please click in the space that best expresses your feelings.

Strongly disagree (1)	Disagree (2)	Somewhat disagree (3)	Neither agree nor disagree (4)	Somewhat agree (5)	Agree (6)	Strongly agree (7)
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A discount would be an incentive for me to purchase . (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I would buy multiple personal assistant speakers (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

End of Block: Write down three words that come to mind when you see the phrase "Smart Speaker"

Start of Block: Block 3

Q18 Please rate your answers based on the following statement

Strongly Disagree Strongly Agree

0 10 20 30 40 50 60 70 80 90 100

Smart Speakers are listening, even when I do not want it to be. (1)	
I think companies are collecting the data from these Smart Speakers (2)	

Q21 Smart Speakers are listening all the time.

- Strongly Agree (1)
- Agree (2)
- Somewhat Agree (3)
- Neutral (4)
- Somewhat Disagree (5)
- Disagree (6)
- Strongly Agree (7)

End of Block: Block 3

Start of Block: Block 6

Simply knowing the answer is not enough; I need to know the reasons behind the answer. (19)

Knowing how or why something works is more important than just getting the job done (20)

Knowledge is bliss. (21)

End of Block: Block 6

Start of Block: Block 5

Q27 Which of the following Smart Speakers have you heard of before taking this survey?

- Amazon Echo (1)

- Google Home (2)
- Apple HomePod (3)
- None of the above (5)

End of Block: Block 5

Start of Block: Block 4

Q39 Do you own a Smart Speaker?

- Yes (1)
- No (2)

Q30 What social media platforms do you use?

- Facebook (1)
- Instagram (2)
- Twitter (3)

Snapchat (4)

Other (5) _____

Q20 How old are you?

18-22 (1)

23-38 (2)

39-52 (3)

53-71 (4)

72 and above (5)

Q22 What is your highest completed education level?

Less than high school (1)

High school or GED (2)

- Some college (3)
- 2 year degree (4)
- 4 year degree (5)
- Professional degree (6)
- Doctorate (7)

Q23 What is your annual household income?

- < \$20,999 (1)
- \$21,000-49,999 (2)
- \$50,000-79,999 (3)
- \$80,000-109,999 (4)
- \$110,000-139,999 (5)
- > \$140,000 (6)

Q24 Gender

- Male (1)
- Female (2)

Q28 Are you a(n)... (click all that apply)

- Student (1)
- Parent (2)

Q33 Are you...

- Black/ African American (1)
- Native American (2)
- Hispanic (3)
- White/Caucasian (4)

- Asian/Pacific Islander (5)
- Other (6) _____

Q34 Are you...

- Single (1)
- In a relationship (2)
- Married (3)
- Divorced (4)
- Widowed (5)
- Other (6) _____

Q35 Please write down the first and last name of the person (student) who invited you to partake in this survey. Please make sure to click on the "next" button to complete.
