Academic Paper

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CYSE 494: Entrepreneurship in Cybersecurity

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Abstract

The essay is about the topic of Cybersecurity education for the elderly. I will discuss the growth of Elder tech, issues about Cybersecurity for the elderly, a proposal to implement an innovation, connecting other courses to the innovation, evaluating the feasibility of the innovation, and reflecting about the journey of entrepreneurship. The prominence of Elder tech stems from the desire to give back in a social way and disrupts current technology by operating in a booming industry. In turn, as Elder tech is more developed, there are Cybersecurity issues that arise from just having access to technology and learning how to use technology by themselves. To help increase Cybersecurity awareness, I built a platform that teaches the elderly about Cybersecurity in video form, so I explain how to determine if the innovation is a bad idea or a chance of success. Finally, I will rethink about my start from the project and the end of the course.

It's Elder tech time!

The Elder tech industry is growing at a massive scale, and it is not a coincidence. Traditionally, venture capitalists focus their resources on financial, software, and enterprise startups. However, those industries experience times when there is a lack of innovation, as ideas start to dry out. Founders either join in on the hype, or they can pioneer industries that are unsaturated or ripe for disruption. Once founders learn that hype trends don't last long, they pivot to another industry without tons of competitors. There are several key points that drive the need for companies in this industry.

Covid's Influence

First, the Covid-19 pandemic affected the U.S. population. In that population, the elderly were greatly affected because their immune systems are weaker as they get older. When they get sick, they need to get medical attention and pay for any supplies that come from the visit. This can be hard on the elderly because they do not have a stable income stream after retirement. Also, social security isn't that effective as many have to deal with increased costs from insurance and mortgage costs. The inefficiency of the healthcare system raises a big concern for the welfare and accessibility of resources to aid the elderly.

Social Impact

The second point is that more people are caring about the lives of humans in a social perspective. Giving back to the elderly is a huge theme in the last twenty years. As more investors are pulling out their money from backing only profitable companies, they choose to invest in companies with a dedicated mission to benefit society. A specific type of organization, B Corporation, must be certified to meet standards that impact the employees, environment, and community. Startups are finding more ways to differentiate from companies that only care about

profits by entering Elder tech. The relevance of Elder tech is my reason for building a company in this space.

Protection is underrated

Cybersecurity education is an on-demand requirement for the elderly people. Since the Internet is heading from Web 2.0 to Web 3.0, being familiar with the transition allows them to defend themselves from the dangerous cyber domain. Traditionally, older people are the later adopters of the Internet which makes them the least educated population on technology. Many older people do reckless things because they are not aware of the consequences for their actions. Some older people click on dangerous malware, and others input their personal information on untrusted pages.

My solution

The solution to the problem is that they need continuing education on Cybersecurity in order to be more mindful about their online activity. Put simply, the innovation is creating videos on cybersecurity topics, boosting the number of technical resources for the elderly. A better way to picture the innovation is to think of it as a platform where experts curate and discuss information using videos to break down the jargon related to Cybersecurity. Here, the main format is based off designing production-like videos. Videos are the king of engagement, so offering a cinematic experience of the courses creates more interaction and make it more personal by engaging the sight and hearing senses. Despite other formats, our focus on video differentiates us from those who use traditional methods.

Evidence of statistics

To further dive into the topic of Cybersecurity education and the elderly, we need to look at some critical data that can contribute to the discussion. About ~60 million people living in the

U.S. are ages sixty-five and above in 2020. In 2010, there was only ~15 million people living in

the U.S. The population has nearly quadrupled in just ten years. This huge growth is expected as

the life expectancy continues to stay relatively high in the U.S. of seventy-seven years old. Now,

from a statistical perspective, the population of the elderly has increased at an exponential

growth, but still a lot of them come from the period of the 1950s and 1960s, where the Internet

was not even an invention until the early 1980s. By then, most of the technology was still

expensive, and only the rich people could afford the luxuries of the early technology. The elderly

was the last generation to pick up on the adoption of technology. As technology got cheaper

with mass production and having a good supply chain to lower the cost of parts, the elderly are

now able to obtain technology without facing many difficulties.

Elderly troubles

What happens when the elderly suddenly get access to technology without having any

prior experience? You guessed it. They make lots of mistakes and often run into obstacles as

novice users. Well, it's too bad that even learning how to use technology for the elderly is not a

simple thing to do, especially in the era where people just are so busy and don't have time to

check in with others around them. So many people in their adult years are busy with their

personal lives, so they neglect to address the needs of the elderly. When the elderly have no one

to give them some basic information, their sources either come from other elderly people or

information that isn't useful to them. There is a downside of elderly to elderly teaching of

technology because one false miscommunication can cause the other side to learn bad habits if

no one recognizes that the behaviors are wrong.

Internet rabbit hole

The Internet is full of low-quality and general information (Altay et al., 2023). Given Google's dominance over the search engine, results are not based on how specific or relevant the information is to the query. Instead, sites prioritize on the SEO of the page. SEO means Search Engine Optimization, where key words are given to the page to be almost close to the query. SEO is not perfect as some people can craft their SEO to be seen, until the user clicks on the page to find out that the result has nothing to do with their expected results. Since SEO is made as an algorithm to organize and sort results, creators can push out more lower quality content and still be discovered on the Internet. So, the Internet is an echo chamber of webpages copying one another to see who is the most popular site on the first list of results (Kocher, 2022).

Framing Cybersecurity

However, the distribution and targeting of the solution is not changed to suit the needs of elderly people. They are given information in a more sugar-coated way which may misled their learning when they think too simply about the concept or associate it to information that doesn't help them at all. Besides getting more people to be hands-on and educated in cyber terms, the reason that perpetuates the lack of knowledge for cybersecurity is due to the fact that they are ignored as an age class because companies make products for the masses, but they don't listen to the needs of the elderly because it will be more complications which companies don't want to risk doing something that costs more money and take more time to adequately adapt to the elderly. Even though there has been awareness on cybersecurity for the elderly, the elderly don't really think that the resources are helpful because they still continue to make the same mistakes, despite warnings that try to prevent the elderly from doing risky behaviors. Also, some of the media doesn't consider other factors that may result in a cyber-attack like the portrayal of how older people are more likely to fall in a scam, then the perception will also be held by hackers

who are looking to find the easiest targets. Granted, the media needs to show some sympathy to help give the elderly more confidence to learn more and practice effective cybersecurity techniques.

Content doesn't match

While the distribution of information is cumbersome, the potential problem is that no one in the audience can influence or rate the results. Since Google is the main proprietary party, it has full control over what the people see on their feed. Even if the information is good and easy to learn, there is no method for the audience to own the content because everything is hosted on servers. It's too much of a hassle to save content from thousands of websites. The Internet has also fostered a culture of publishing once and moving on without updating older content. When content is not updated, people are forced to trust newer content, but some of the content may not even be as good as the original, detailed content. For example, some information about older trends like promoting healthy habits become replaced by content that encourage impulsive and acts of challenges like the ice bucket or tide pod challenge. Since every content focuses on current trends, previous information gets archived or even removed from some websites. As much as information is permanently stored on the Internet, the overload of information adds more noise to the attention span and consumption of media. In terms of discovery and pushing out content, there is too much competition from others who can easily make and host cheap websites.

YouTube's moment

This is highly contrasted with YouTube, another product from Google, that focuses on long-form and short-form videos. On YouTube, the quality of the videos almost directly correlates to viewership and recommended videos that promote other channels. Searching on the

search bar gives more accurate results by emphasizing the likes and overall engagement from viewership and comments. This means that the audience has a direct impact on the video's success rather than the creator who is doing all the work to remain seen. Also, videos don't always get the same discovery, depending on the audience because some videos flop while others attract people outside and within the channel. Even a high quality video can fail when no one wants to watch the topic, or drops off from the initial boost of the YouTube algorithm (Pedersen, 2019). With all this said, engagement and creating content that resonates with the audience is the key to making a successful product. In terms of engagement, YouTube is so phenomenal at rewarding people who make quality content and punishing those who go against the community guidelines. Since video is so good at capturing our attention, the incorporation of video content in our platform is an obvious choice.

Digital value

One of the main problems with charging for videos is that digital products are not valued as highly as physical products. Most people don't really want to pay for virtual products because it is just a link that can die or break at any time. Also, with many digital products, most people have fell into some scam while obtaining a digital product (Cumming et al., 2021). For example, I decided to spend money on a crowdfunding campaign, but it turns out that the campaign was not fulfilled, and the operating team ran off with the money. I couldn't get my money back because it was paid on a Visa card, but it wasn't guaranteed with money-back by the Kickstarter platform. With many scams using online purchases, many people are wary of being scammed over and over again (Robb et al., 2023).

Retention

To really evaluate the value of the product, I must charge the product at a lower price because most elderly don't have so much money to spend and market the product to appeal to the target audience. While the pricing is often a cumulative estimate of time and labor spent on the videos, the harder part is to convince the elderly to try something new. When thinking about the target audience, since over 90% of our customers will be in the elderly range, this demographic range is often the last to adopt new products or always wait until the early adopters have a good experience. Well, since most of our customers are late adopters, the focus on marketing will need to be aimed at our user segment and offer up ways to funnel them into our product. This can either be by having limited discount deals or offering a section of the course for free to see how the experience will look from the customer side. The benefit of having the elderly as an audience is that they are typically loyal and will continue to support the business as long as the business cares about them. So, for Elder tech, the churn of the company will be less if the customers are satisfied with the product.

Accessibility

Besides thinking about how the customers can adopt our product with incentives, our team must also think about issues related to accessibility (Zainal et al., 2023). While technology is pretty accessible to the elderly, the use of cellular and broadband networks are still pretty high cost due to the upgrade to 5G data. The elderly don't really need unlimited plans, so they often get cheaper plans that don't provide enough data or messaging time. Also, some of the elderly live in places that don't get much reception in the area like in rural places or even in places that lack towers which reduce their options of choosing a provider for their internet usage. Furthermore, low-income programs only give limited internet coverage, and the person still has to cover the rest of the costs. Universal internet access is only an ideal concept because only

people with money can have access to quality internet. So, the elderly may need to find more

ways to get the information to learn more about Cybersecurity.

Books and Wi-Fi

The first option for them is to go to a library. A library has plenty of resources that may

talk about technology, and there is free internet to connect for those without home internet. But,

libraries may block or limit visiting of sites, even if the site is not malicious at all. On a side note,

the books in libraries often take time to be placed on the catalog, so if lots of people check out a

specific book, it may take a longer time to be able to check out the book. Now, another option for

them is to go in a public area that offers public connectivity, so people don't need an account to

sign into the network. Places like Starbucks and around college campuses like ODU offer

connectivity for guests which the elderly can use to gain access to the Internet.

No connectivity

Now, a counterargument to the idea is that the elderly may not be able to access the

website, such as issues with providing information over the website, lack of understanding about

websites, or have physical limitations with navigating over the website. To address this issue, our

team will also have a delivery option where the elderly can order by phone call or by magazine.

Once the order is placed, our delivery will have the video in either DVD format or in a USB

where the person can watch the video offline with a computer or hook another cable to transmit

to their television. Having alternative options than just a website allow me to capture more of the

audience who may not have the means to go on the website and reach out to the population who

are limited by the access of technology.

Testing user feedback

So, what happens if the product is able to be delivered to the elderly? I think that the elderly will be able to ask questions that can develop the next topic for our videos and provide feedback on how effective the videos are compared to other videos on the internet. Things like lighting, using audio effects, and b-roll footage all make a difference in the understanding of the topic. If the elderly doesn't like one thing, we can fix it up before rolling out the video. For example, our team will have a group of elderly people who are in our insider ring. These people will be able to get on demand and behind the scenes shots which they have the power to make changes as they wish to see in the final production. Then, after going through the initial test batch, I will continue to show it to another group of people to see if the videos are able to be understood from their perspective. To not use the same age population, I will take younger kids like in high school to watch and critique the videos. This population will help to cut back on the vocabulary and lower the complexity of the videos.

Scaling

With that in mind, as the customer base starts growing, we need to raise more funding to focus on hiring and marketing costs. Since a team of four people cannot make videos continuously, we have to outsource some of our work to make sure that the team is efficient and not wasting time on tasks that are too time consuming. We also need to fill in some roles such as the technical support for those who have trouble navigating the website and to address calls that come into our phone line. But, we also have to be cognizant of our financials when we raise funding. Since we are charging a fair price for our customers, the hard part is finding a way to make more money because the pressures of keeping a startup to be cash positive is different than bootstrapping and using Angel investment. We will have to rely on other streams of revenue by doing merchandise, sponsorships for the videos, and launching another corporate arm to help

generate revenue. Also, if we accept venture funding, we have to be more careful with the money (Bendig et al., 2023). That means that in addition to hiring more employees and spending money on equipment, we must be careful about overspending and running out of cash if we don't plan out and budget the funds. Also, we need to talk to the investors about our milestones and concerns by sending them a monthly update, meaning that the company is still responsible to answer back to the investors who are now sort of like our bosses and have power over the whole company. The worst part of giving equity is that the investor can now make decisions, good or bad, that the team must listen or else the investor can kick out the CEO and higher officials. Although we are giving up control, the team will work on cutting back spending and maximizing the value of the investment.

Art is attraction

The problem and innovation relates to many of my courses that are not related to my major. In ARTH 121A, I had to learn about the origins of art and different type of styles. Then, I had to critique some artworks using vocabulary from the class. The meaning of art is very significant in how I package and sell my innovation. As we all know, the user interface and design process influences how likely a person is going to try a new product. After all, a bad looking product often shows that the entrepreneur puts no effort when making it. When I market to people on social media, the images and promotion posters also need to communicate my brand and message. With any product, it needs to be evaluated and critiqued by other people, not just the opinion of the creators. Seeing other people's input really can reveal insights and details that I may have missed when I was building the product.

Communication

In COMM 101R, I had to learn about the importance of public speaking and generating notes to improvise during the presentation. The learnings from public speaking emphasize the need to communicate effectively and survey my population to assess product-market fit. As I will go on calls with people from both audiences, I need to be able to speak confidently and persuade others to try out my service. After I finish the talk, I will send a brief summary, so the people can remember the information if they forgot while I spoke to them. Writing smaller notes can help me with my pitching of the product because I don't have to memorize everything and save time when speaking to be concise.

Play the game

In GAME 201T, I learned about the elements of a compelling game and got to do some basic creation of gaming assets. The process of creating a game and making a product is super similar. First, I have to get an idea. Then, I have to make a simple prototype of the game. Finally, I make the rest of the game and release it, so people can experience the game. The process can be applied to other things besides games and launching a company. Now, the only difference between the two is the audience which can be different. My product is targeting older people. But, my games are made to be played by children around ages 15 and under. Another valuable application is that games can teach a valuable lesson. For example, a farming game can teach about the tools and conditions where crops need more sunlight or fertilizer. Now, the use of quizzing is an example of positive reinforcement. Quizzing is a gamified approach to go over the content in the videos. By reviewing the material learned, the user can retain the information and develop their perception of how it relates to him/her. Our videos will incorporate trivia to review the concept and test the knowledge of the elderly. By incorporating gaming concepts, the elderly can learn in a fun, rewarding manner where their brain is stimulated to improve their processing

and reaction times, even when their brain starts declining as part of the aging process. The

different courses help to integrate other knowledge to not only rely on Cybersecurity, but also

advance the discovery of more interesting things along the way.

All those clones

To determine if the innovation is effective, there are some metrics I can use to track the

success of the product. First, the biggest thing to consider is if the idea is being copied by my

competitors. Generally, an idea that is thriving is also being adopted by other companies to take

away market share from the original company. For example, the emergence of BeReal sparked a

revolution in spontaneous selfies. Even established media companies like Instagram, Snapchat,

and Tik-Tok added their own clones to regain back some of their customers who switched to

BeReal. If a product is truly innovative, more companies will get in on the idea. This is why no

product is safe from competition because alternatives may surpass or delve into an existing

market to steal users.

Timing is blessed

Another metric that can be a good indicator is the usage time of the product. A good

product will make users spend more time in it. For example, if people spend an average of six

hours, that is a pretty impressive time. However, one or two hours of usage means that the

content is not engaging enough, or people start to lose interest in using the product. This explains

why websites use analytics to track how long a user stays on a webpage which can affect how the

product is marketed and re-distributed to the target audience.

Make some, lose some

Finally, the company can be evaluated in terms of loss and profit. Companies that operate

on a loss generally have a non-scalable product, overspend on hiring people, or face too much

competition from other companies. Other reasons factor into loss, but loss is often a big red flag that forces companies to pivot to another idea. If my company manages to make a profit, that is a sign that the product is being purchased and has enough interest to make even more money. A profiting company means that there is a demand for the product, which as long as both demand and supply are high, the product is going to penetrate the market and hold on to its customer base.

Manpower

In order to turn the product into reality, I need to build a team. It is the foundation of building a company. Generally, the size of the team does not matter, as long as there is enough people to distribute roles and responsibilities, so that no one has to juggle everything in the company. In my team, I will have three people who will help me with the execution of the company. Although each of us will have different responsibilities, all of us will be contributing our expertise into building courses. Other than that, our team will split the job of marketing, website building, customer service, and design amongst us. Also, the establishment of the company will be under an LLC to prevent any liabilities that may occur from the company.

Marketing

After establishing the team, the next step is to start marketing as early as possible, even though the product is not ready to the public yet. Through advertising and social media, our outreach will be trying to gain attention and give promotions for early adopters. Some social media platforms that we are considering are Facebook, Pinterest, Tik-Tok, and Twitter. Although there are more social media platforms out there, I start with some of the most widely used ones before adopting other social media platforms. Using those platforms, I can create ad campaigns to be featured on the front page and improve the visibility of my company. However, advertising

is extremely expensive, so it might be a small experiment. The cool part with social media is that there are topics for anything which communities allow for easier access to niche groups and for getting some of the user base.

Prototyping

Once our team has some potential customers, the third step is to begin making a website. Having a website presence is very important because people will be able to find us on search engines and from press releases. To make a website, I will use an ecommerce platform to create a simple landing page that people can click on. Next, I will have to find a video hosting platform to create the courses and hide them, so that people have to pay to unlock them. After I have a video platform, I will add the payment options, so that people will be able to purchase the videos. Now, the platform is complete, and I will do a beta test of about a hundred people to see how it goes and fix any errors before the official launch. When the beta test is going smoothly, I will then open it to the public which allows us to handle more money and get better feedback from everyone. Using the money that is earned, I will hire more course instructors to make videos.

Funding

Once I have experienced huge growth, my company is ready to raise the first seed fund from different venture capital investors. Investors are very careful about investing in a company because there are so many companies, but they can only pick a few to invest their money in. Part of their job is to conduct due diligence to assess whether the company meets its expectations or not. Since the company is growing fast, and it is making a decent amount of money, it would be perfect to raise funding, especially when I am dealing with hiring more employees and pushing for wider adoption. If the seed round is raised, I can offer more services in my product like live

classes or streaming the course where the audience can ask questions right when the lesson is being covered.

Team bonding

The biggest lessons that were learned are the objective of teamwork and experiencing obstacles/failing. When working with a team, there is so much reliance on other people, and checking in is very important for meeting deadlines. Since our schedules are different, we have to discuss the details more intensely, or the team may not fully grasp the workings of the company. Having a team is also a good thing because it can be lonely when working on the project. Also, accountability is key because other people may not feel like they can accomplish the task, but encouragement and support goes a long way into working diligently. Throughout the course, we failed to achieve some of our goals, but we realized that failure only pushed us to move faster and break more things. Through experimentation, I learned that being more receptive can open more doors and overcome any difficulties with creating Minimum Viable Product.

Going back

If I had to redo the project, I would start by asking the target population if they are willing to pay for the product. Once I got some responses, I can see if my idea needs tweaking or brainstorm how I can create the business model. Another important part is to check in more with my team because sometimes we get caught on making the product, but there hasn't been much debate on different features. Hashing out the execution will make things more efficient and reduce some of the excess features that are not necessary for an initial product. This entrepreneurship journey has been a wonderful experience for me, and I hope to incorporate the knowledge from this course into the workforce to become a scrappy asset to any team.

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