

**COLLEGE MARKETPLACE: PROVIDING A SECURE, DIGITAL MARKETPLACE
FOR COLLEGE STUDENTS TO PARTICIPATE IN E-COMMERCE ACTIVITY**
(Technical Paper)

**PRIVACY AND SECURITY ISSUES IN EXISTING PEER-TO-PEER ECOMMERCE
PLATFORMS AND THEIR EFFECTS ON DIFFERENT SOCIAL ENVIRONMENTS**
(STS Topic)

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On my honor as a University student, I have neither given nor received unauthorized aid on this assignment as defined by the Honor Guidelines for Thesis-Related Assignments.

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Introduction

According to the NCES (National Center for Education Statistics), roughly 19.4 million students are currently enrolled in college/universities and this number is only expected to grow in the future years (National Center for Educational Statistics, 2017). One thing that all students pursuing postsecondary education have in common is their need to interact in an ecommerce marketplace to obtain items they desire. Since college students have limited financial access, the most popular places for them to browse are platforms like Facebook Marketplace and Offer Up. However, that is where some of the issues with such wide-access marketplaces become prevalent. Issues such as lack of security and lack of privacy are the breeding grounds for scams to occur. In an article published by ProPublica, discussing the growing rate of scams on Facebook Marketplace, the non-profit news giant quotes a statistic from the bureau's Internet Crime Complaint Center (IC3) stating that in just 2020 alone, there have been a total "792,000 total incidents [regarding online fraud], which is an increase of 70% from the previous year" (Silverman, Thompson, & Elkind, 2021). This alarming increase of fraud cases on a monumental platform like Facebook highlights the compromised security of these platforms and how users, potentially students, consistently fail to recognize different scams.

Alvaro Puig, who serves as a Consumer Education Specialist for the Federal Trade Consumer Advice center, reveals a common scam practice involving fake verification codes where "they [the scammer] will send you a text message with a Google Voice verification code." If the user sends the respective code to the scammer, it can be used to create a "Google Voice number linked to your phone number" (Puig, 2022). Such activity is only possible in a wide-access platform where third-parties, that are completely unrelated, can access other user profiles and utilize the data to their advantage. It becomes evident that Facebook Marketplace and other

similar peer-to-peer ecommerce platforms do not harbor a safe environment for users to engage in ecommerce activity. College students that choose to acquire goods and services from these online ecommerce platforms would evidently find themselves navigating in an adverse environment where at any moment they could fall victims to scams. The growing trend of consumers choosing to shop online also does not pair well with the issues of privacy and security that persist in these existing peer-to-peer ecommerce platforms. According to the UNCTAD (United Nations Conference on Trade & Development), all digital retail platforms have experienced a surge in e-commerce activity where consumers are choosing to go “digital.” The UNCTAD emphasizes that, following the events of COVID-19, the influx of digital shopping led to an increase in “ecommerce’s share of global retail trade from 14% in 2019 to about 17% in 2020” (UNCTAD, 2021). Taking the recent influx of online shopping into account and the failure of existing peer-to-peer ecommerce platforms to safeguard its users, it becomes a necessity for a better online marketplace to be designed, one that is specifically for students and emphasizes security and privacy at its center.

The College Marketplace project aims to address these issues by providing a student-specific marketplace where students can interact with other students at their university, knowing that privacy and security are the biggest assets College Marketplace offers. In this paper I will focus my research on the drawbacks of existing peer-to-peer platforms and analyze the implications of using them in regards to safety and privacy and ultimately the social impacts of failing to uphold them. Evaluating existing ecommerce platforms on their failure to uphold their social responsibility of privacy and security of its users will provide evidence as to the necessity for a student-specific college marketplace. Since it will be an e-commerce platform, similar to

the ones mentioned above, it is evident and essential to compare the challenges with existing platforms, so those can be addressed when developing College Marketplace.

Technical Topic

College students do not have a secure student-only marketplace to engage in ecommerce activity that is college-specific. Avoiding scams and interacting with students on platforms like Offer Up & Facebook Marketplace led to the birth of College Marketplace, which streamlines the process of posting listings online in a secure environment. College Marketplace is an online, peer-to-peer ecommerce platform that allows college students to engage in ecommerce activity with other students within their university. As opposed to other existing platforms, while navigating this platform, students will have the confidence that they are interacting in a secure platform where the other participating members are actively enrolled in the respective University. During the development of the platform, a variety of security measures were implemented to accomplish this, namely Google Authentication, to ensure that only college students have access to the platform, and leveraging the power of MFA (multi-factor authentication), specifically duo mobile, to address any potential password leaks. The google authentication check serves as the first line of defense. Each university has its own respective emails and only verified students, that are actively enrolled in that school, have access to those emails. The benefits of emails associated with an organization is that they cannot be forged (Witts, 2019). These emails will be the primary credentials that students will use to login; however, that alone will not be enough. Levering the multitude of benefits provided by MFA will instate another checkpoint to ensure only authorized students have access to the platform. SecureLink, a company that focuses on critical access management, emphasizes that

implementing MFA reduces overall third-party engagement, “better controls who has access to your files,” and it takes away password risks as knowing an individual's credentials is not sufficient to access the corresponding system (Jones, 2021). Furthermore, all the traffic that occurs within the platform will occur via a secured network where the data being transferred will be encrypted to deter potential attacks. Since security and privacy are the biggest areas of concern that existing platforms lack, College Marketplace will prioritize that aspect above all else.

Having addressed the security concern, to design and develop the actual platform, a wide variety of tools, services, and frameworks were employed. To design a user-friendly platform that hosts a welcoming environment for college students, Figma was utilized to quickly iterate through different designs based on input and feedback received from other college students. In regards to designing the platform, Figma was selected over the AdobeXD platform because it allows multiple team members to collaborate on the same design, it is easier to use since one can “create beautiful designs without learning too many new things,” and it was a platform that team members, including myself, had experience with (Malik, 2022). The design process was perhaps the most challenging as the platform needed to have the right balance of different colors and themes that appeal to students the most, however, a reasonable color palette and layout was ultimately decided upon after various iterations. To actually build the product, Laravel, a full-stack PHP framework, was leveraged due to the utility and efficiency it provides as well as the great technical support available whenever development was faced with challenges (Shukla, 2019). A framework “is simply a boilerplate that facilitates development by offering infrastructure that you can build your own code on top of” (Stahl & Higgins, 2022). Furthermore, Laravel, which is specific to the PHP language, was decided upon due to

the convenience and utility it offers when working with databases. In terms of storage, MySQL is used for the purpose of storing sensitive information of participating students in an encrypted format (Derek, 2022). To host the website, AWS, which is an online platform that allows products to be hosted on the cloud, was employed. AWS was the obvious choice because it offers an inexpensive means to easily and rapidly scale any product (McAllister, 2017). The tools and frameworks mentioned above, combined with a thorough analysis on how existing platforms fail to protect their user base, will collectively aid in developing a platform that is secure and safe for college students to navigate.

STS Topic

Understanding the complex relationship of technology and society and analyzing the detrimental effects to different social groups, if a technology fails to uphold the social responsibility of protecting its users, helps to us to understand the larger implications of peer-to-peer platforms. The growing number of consumers choosing to shop virtual highlights the technological determinism at play where consumers will engage in ecommerce activity online as opposed to in person for the sake of efficiency and convenience. Technological determinism is simply the idea that society and technology have a causative relationship where “technology is a driving force of culture in a society and it determines its course of history” (Communication Theory, 2018). By extension, it is reasonable to believe that in some cases this causative relationship will be beneficial and adverse in others.

As we have discussed previously, this shift from in-person commerce activity to online has large implications, ones that can't be overlooked due to the detrimental effects on society as a whole. Discussing existing peer-to-peer platforms further, the ProPublica news-media outlet

highlights that “the company’s confidence about the safety of its platform is misguided” as the company’s primary line of defense is an automated software that “frequently fails to ban obvious scams” (Silverman, Thompson, & Elkind, 2021). Abiding by technological determinism, the platform failing to protect its members against scams will falter the consumers confidence in trusting online ecommerce platforms. This lack of confidence of users in cybershopping will persist from platform to platform and will have a detrimental effect where consumers are more cautious than ever and may not take advantage of certain scenarios as they have been scarred from previous experiences.

To further emphasize the gravity of this matter, ProPublica also highlights that the 400 low-paid contractors deployed to resolve matters regarding scams sometimes engage in unsolicited activity themselves where workers often “spy on romantic partners and commit other privacy violations” (Silverman, Thompson, & Elkind, 2021). The idea of security and privacy are two sides of the same coin and failing to address one has detrimental effects on the other. Continuing the argument of user confidence, the framework of techno-social life can be utilized in concurrence to emphasize that social interactions within a community will also be adversely affected as individuals feel they are constantly being monitored. Technological determinism highlights that the growing trend of consumers going digital results in social interactions occurring in a heightened state where an online platforms consistent failure to protect its users breeds fear and uncertainty in individuals. The adverse implications of failing to establish a secure platform discussed so far have been mild, but Silverman from ProPublica, also highlights that in terms of illegal and criminal activity, scams are only the beginning where more significant crimes can also take place in these unmonitored, less secure platforms. The author states that “since the start of the pandemic, criminals across America have exploited marketplace to commit

armed robberies and, in 13 instances identified by ProPublica, homicide” (Elkind, 2021). The evidence provided serves to highlight the drawbacks of using existing ecommerce platforms and emphasizes that although technological determinism advocates for online ecommerce activity, the failure to uphold social responsibility of platforms to protect its users ultimately has a detrimental impact on the techno-social relationship.

Research Question & Methods

To what extent does an online platforms inability to provide a safe and secure environment influence user confidence in digital platforms and ultimately the social interactions that occur externally? This question highlights the sensitive dynamic that exists between humans and online ecommerce platforms where an online platforms inability to protect its users has detrimental impacts both digitally and the physical interactions that occur externally. Online platforms, specifically peer-to-peer, exist in accordance to the needs of individuals and the techno-social interactions that occur have a larger social impact that may not be immediately visible through the minute interaction that occurs digitally. User trust and confidence is a significant factor on the performance of an online platform where repeated violations of this trust and failure to uphold and address the social responsibility to protect the user ultimately results in a rampant growth of illicit activity. This research question highlights the social dimensions of the project and emphasizes the consequential effects on human-to-human interactions as an outcome of breaking this trust. Exploring this question through the frameworks of technological determinism and techno-social life will help provide evidence for the development of College Marketplace. This topic will be explored by reviewing newspaper articles that discuss data breaches of online ecommerce platforms and evaluating the adverse effects it had on the user

base. The research collected will take into consideration different perspectives in regards to how the data breaches occurred and the potential safeguards implemented to prevent future occurrences. This topic will be further supported by conducting surveys to examine consumer confidence, specifically of college students, in existing online peer-to-peer platforms to ultimately justify the need for College Marketplace.

Conclusion

The recent growth of online platforms to provide goods and services, pertaining to all aspects of social life, has caused shift in human shopping patterns where, more than ever before, individuals are choosing to engage in online platforms to address their needs. However, this growth in online peer-to-peer platforms also means that there are greater risks for individuals to navigate when partaking in online ecommerce activity. The increase of illicit activity in ecommerce platforms has caused individuals to lose confidence in online platforms as well as in other members of society. Although inarguably there are benefits to engaging in a peer-to-peer ecommerce platform, namely diversification, ease-of-use, and variety, the existing platforms are not the most ideal due to their failure to protect the respective members against fraud. This research paper will focus on this very idea of providing a safe environment for users to engage in ecommerce activity or what causes the lack thereof. By analyzing this idea through the lens of technological determinism and techno-social life, we can identify the reasons why the existing platforms no longer harbor a safe climate for users and ultimately address those in a new solution that is directed towards keeping college students safe while providing them a safe and secure environment to engage in ecommerce activity.

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