

Undergraduate Thesis Prospectus

Supporting Small Businesses through Collaborative Online Platforms:
Experimentation in Crowdsourcing for Marketing and Publicizing

(technical research project in Computer Science)

The Crowd in Control: Web-based Backing of Small Businesses in the United States

(sociotechnical research project)

by

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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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General Research Problem

How can local businesses compete in an economy that favors large markets?

Small businesses thrived in the mid 20th-century as suburban communities and retail outlets prospered (Clarkin, 1998). In the increasingly digitized modern era, however, small businesses are having harder times competing with larger, multinational corporations. They have less capital and human resources than large businesses, and this reality was made more apparent during the COVID-19 pandemic (Lee et al., 1999). Goolsbee (2020) estimates that more than 400,000 small businesses closed during the initial months of the pandemic, and millions more were at risk. Meanwhile, larger companies were able to consolidate power through strategies such as expansions and acquisitions. 45 of the largest 50 companies in the United States even reported positive profits in March 2020 (MacMillan et al., 2021). The modern economy favors large companies, and small businesses are pressured to employ innovative strategies in order to compete.

Supporting Small Businesses through Collaborative Online Platforms: Experimentation in Crowdsourcing for Marketing and Publicizing

How can websites centered around user-generated content enable small businesses to compete with larger enterprises?

The technical advisor for this project is Professor Briana Morrison from the Department of Computer Science. It is a capstone project that was developed for the course Advanced Software Development Methods (CS 3240). The student collaborators are Catlinh Nguyen, Maggie Bujor, Andrew Nguyen, and Tyler Willis.

As the global economy rapidly becomes more digitized, there are more incentives for small businesses to establish strong online presences. A study conducted by web design agency Pixolabo (2022) found that approximately 85% of consumers use the internet to discover new local businesses, and that businesses without an online platform lose between 70-80% of potential customers. There is extensive research that suggests that an online presence can provide significant benefits to small businesses. Abeysekera (2020) examines the ways in which small business owners influence key stakeholders by telegraphing “intangible” competencies such as “credibility” and “leadership” through their websites. Small businesses, however, are at an inherent disadvantage to large businesses in terms of financial assets and human resources. One strategy to overcome this is to use crowdsourced information. Crowdsourcing refers to any activity in which an independent body of people embrace certain tasks (Zogaj et al., 2014). Crowdsourcing enables collaboration within large groups of people, and websites that take advantage of user-generated content are among some of the most successful to date (Lee et al., 2008). Crowdsourcing data for websites could prove advantageous for small businesses in increasing visibility and community engagement.

The goal of our team’s capstone project was to develop a web application that enables users to crowdsource information about local businesses in Charlottesville. The project was specifically designed and implemented as a response to the COVID-19 pandemic. Some alternatives and challenges were considered. Barbier (2012) states that during times of crisis, applications that implement crowdsourcing can produce “synergistic” results, but they often fail to “provide a mechanism to help coordinate a response.” Studies have also suggested that social media already serves as a viable digital marketing tool (Simula, et al., 2013). The motivation for this capstone project lies in the need to provide a unified, cost-effective, and highly scalable

system that requires minimal input from businesses themselves. Simula et al. (2013) acknowledges that firms hesitate to establish themselves on social media because of the risk that published information could be false or misinterpreted and harm their brand. Our team's application will serve as a professional platform where users can easily explore new businesses and publish the most up-to-date and accurate information.

To create this website, our team followed three phases: requirements elicitation, design and implementation, and testing. We conducted interviews and sent questionnaires to students of the University of Virginia to better understand their perceptions of local businesses. Following this, our team articulated specific features that should be included in the application by creating user stories—informal explanations of the project's features expressed from the end user's point of view. Finally, we conducted several testing strategies such as beta and acceptance testing to determine how well the final project fulfilled its intended purpose. The finished website relies primarily on user-generated information and allows consumers to discover small businesses that fit their needs. Websites such as this are highly scalable and could serve as a sustainable method to support small businesses. Moving forwards, our project could be revised to support businesses in areas other than Charlottesville.

The Crowd in Control: Web-based Backing of Small Businesses in the United States

In the U.S., how are small businesses seeking to use community websites with locally crowdsourced information and reviews to promote their markets?

The COVID-19 pandemic revealed a stark contrast between the circumstances that small and large businesses operate under. Using the number of self-employed individuals as an indicator of small businesses, the U.S. Small Business Administration (2021) reports that this

number was down by 20% in April 2020 compared to April 2019. At the same time, 32 of the world's largest corporations—many of them U.S. based—saw profits increase by an upwards of \$109 billion (Oxfam International, 2020). Many small businesses turned to the web to promote themselves, and as the pandemic diminishes in prevalence today, small businesses still look to digital spaces to contend with larger enterprises. Crowdsourcing refers to engaging an independent body of contributors to perform tasks usually delegated to an organization (Thuan et al, 2015). The pervasiveness of the internet has led many to view crowdsourcing as a key component to sustainable business models.

Many researchers have investigated the extent to which websites and the use of crowdsourced information benefit small businesses. One study suggests that in allocating more time and resources to marketing online, particularly through social media, small businesses increase engagement with their clientele and improve overall customer experience (Channel Insider, 2011). Leveraging social media can also foster a sense of community. Simula et al. (2013) affirms that crowdsourcing information on digital marketing tools increases engagement between businesses and consumers. Information propagated on social media, however, is more susceptible to misinterpretation, and creating and maintaining social media profiles requires time and effort from businesses themselves. Soliciting input from other individuals may be a more accessible method for businesses to promote their markets.

Participants include both U.S. government and state government agencies. The U.S. Small Business Administration (SBA) (2022), an independent agency of the national government, aims to promote America's economic competitiveness by providing resources and direct support to small businesses. Isabella Guzman (2022), administrator of the SBA, states that "the world's economy has grown increasingly digital, particularly over the course of the

pandemic,” and that “the SBA will help more small businesses accelerate their online and social media strategies to power their businesses.” The California Office of the Small Business Advocate (2020) conducts similar initiatives on the local level to offer technical and financial aid for small businesses. Their goal is to provide “tools to create communities online, attract new online tourism, and increase small business revenues” (CALOSBA, 2020).

Participants also include small business coalitions that advocate for equity between small and large enterprises. One such coalition, Small Business Rising (2022), aims to garner technical assistance for small businesses and combat consolidation of control by larger companies. Their opponents argue that “corporate concentration” has increased only modestly over the past few decades, and that larger businesses are able to employ more people and serve wider consumer bases (Atkinson, et al., 2021). In a letter to the Senate, Small Business Rising “underscore[s] the urgency for Congress to advance legislation aiming to address Big Tech’s monopoly power” and to present legislation that will allow small businesses to gain power in digital spaces (Small Business Rising, 2022). Researchers continue to champion the value that small businesses bring to locals. They better understand the needs and values of the neighborhoods they serve and are, therefore, able to fill niche markets and cultivate a better sense of community (Lee et al., 1999).

Finally, residents of local communities continue to echo their support and patronization of small businesses (Kaine, 2022). In highlighting small business success stories across Virginia, Senator Tim Kaine (2022) states that small businesses have adapted in response to the COVID-19 pandemic and that they are “the backbone of our communities.” In opposition, the Information Technology and Innovation Foundation, a nonprofit public policy think tank, advances the notion that larger companies are “more innovative, contribute more to the economy” and “have a better track record of advancing a host of other progressive goals”

(Atkinson, 2021). Proponents of small businesses emphasize that while small businesses cannot match larger companies in terms of pure resources, the contributions that they make to locals, namely “forming and shaping the identity of a community” as well as building “connections and relationship with the people” are immeasurable (CAEDC, 2022).

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