

Thesis Portfolio

Product Discovery in Artisanal Retail

(Technical Report)

Analysis of the Role of Technology in the Transformation of Artisanal Retail

(STS Research Paper)

An Undergraduate Thesis

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Bachelor of Science, School of Engineering

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STS Prospectus

Introduction

The COVID-19 pandemic has been detrimental for small businesses, especially those who already struggle with maintaining a competitive advantage and retaining customers in the retail industry. The Capstone project involves the design and build of a software-as-a-service tool that facilitates product discovery between creators and artisans, and small retailers, with the vision of bringing back the local, diversified shopping experience. Curate offers a service that caters to both the artisans, at varying levels of establishment, and small retail businesses. The main mission behind Curate is to stabilize physical stores in the current environment using technology to connect retailers to creators and create a sustainable system with an online and offline balance. To help establish the needs of physical retailers and the potential role of technology, for my prospectus, I am conducting a social study for Curate.

The retail industry has often been described in terms of two separate entities, brick and mortar stores and ecommerce. In the last decade, online shopping has grown at a rapid rate while retail shopping has stagnated and declined across various industries. Likewise, during this same time period, technological innovation and growth has also developed at a rapid rate within the online shopping industry, while physical stores such as malls have had limited innovation. However, recently, brick and mortar stores have been making a comeback as the physical retail industry has worked on reinventing the shopping experience. With my STS project, I want to analyze the current state of physical and online retail industries and establish a baseline of the industry. Based on this, I would establish the potential impact of Curate on both physical retail stores and creators and the effect on business strategy, organization, and management on both

sides. I also want to analyze current relationships within the retail industry and new relationships that Curate would create between local stores and artisans.

Research Question

For my research topic, I want to analyze the current state of the retail industry and the how technology is currently used by smaller brick and mortar stores. Through reading current research, it is evident that technology has revamped large retailers, however, I want to expand on this by studying ways of vitalizing local businesses with technology and what changes are necessary for this to occur. Another area of research is studying how technology has impacted the division of labor in large physical stores and how this will differ from technologies impact on division of labor in smaller, local businesses. I also want to address the impact the COVID-19 has had on both the online and physical shopping experiences and the long term and potentially permanent impact that pandemic will have on both industries.

Literature Review

The physical retail industry and the ecommerce industry are often seen as separate competing industries. Ecommerce is also seen as growing at the expense of online retail; however, this relationship is more mutually beneficial. Physical retailers are adopting technologies and innovations from online retailers to revitalize the physical shopping experience and online retailers are finding that opening a physical store is increasing their overall sales. This topic is especially important currently as the COVID-19 pandemic is negatively impacting physical retailers and brick and mortar and stores. Many retailers are struggling to stay in business due to social distancing laws and consumers are relying on ecommerce. While research extensively described the technological innovations in the physical retail space and the changing dynamics of retail channels, there is relatively limited research on potentially negative impacts of

this future of retail. While online retailers have faced significant scrutiny for collecting and using customer data, it is hard to predict whether physical retailers will learn from the mistakes of online retailers and their use of technology or also face similar challenges in the future.

While ecommerce has been innovating at a rapid pace since the adoption of online shopping, the physical shopping experience has stayed relatively the same. However, in the past few years physical retailers have realized that they need to revitalize the shopping experience. Various studies show how physical retailers are adopting e-commerce innovations to use technology to improve the customer experience. One study in the “Future of Retailing” journal, *Technologies Turning Future Brick-and-Mortar Stores into Data-Rich Environments*, describes a future of retail where consumer data is collected using cameras, sensors, and software such as facial recognition to process this data. This study describes how online retailers track each consumer click and interaction which has created an “information advantage” over physical stores. In the picture painted by this study, the struggle of physical retailers has been primarily caused by “the age of anonymous shopper” which has prevented physical retailers from profiting off of consumer data. While the study accurately describes the technology-based future of the retail industry, it presents a narrow view of the problem. One real example of this future is Amazon Go stores. Amazon Go stores automate the grocery experience using various technologies such as computer vision, deep learning, and weight and motion sensors. (Blake, 2019). While Amazon stores are very similar to the reality described by the *Future of Retailing Journal*, Amazon is working towards achieving a unified ecommerce and physical shopping experience, known as an omni-channel retail experience.

While the future of physical retail is technology based, the future of the retail industry combines this innovation with a shift towards a single channel experience rather than consumers having the option of either a physical store or website to shop from. Various research studies describe the concept of an “omni-channel” retail experience, where “where all data is shared among and between channels, the customer can buy in one channel and return in another one. The offering and service are consistent through all channels”. (Eliasson, 2018). According to a study by the Internal Journal Electronic Commerce, a traditional retail store would serve as a hub which would integrate all channels of potential sales. In this concept, customers would be able to move effortlessly between physical and online channels and physical stores would be in the center of this omni-channel. The main problem this study describes is that currently retailers view ecommerce and physical retail as separate. (Piotrowicz, 2014). However, this study was written in 2014, and since then a certain degree of omni-channel retail has been achieved by large retailers. According to a study in the Social Science Research Network, many brands have tested this concept using a “Zero Inventory Store” (ZIO), a small footprint, experience-centric retail location which carries no inventory for immediate fulfillment but fulfills orders via e-commerce. The study found that when shopping on ecommerce at a ZIO, customers spend more and more frequently. The ZIS store also provides additional product discovery and brand attachment, providing further benefit to the online retailer. These ZIS stores show retail stores as “hubs” described can actually help online retailers achieve an omni-channel retail experience rather than just an online experience. (Bell, 2018). Walmart is a clear example of a brick and mortar business expanding into e-commerce and successfully implementing a single channel retail experience. (L,2015)

While the retail industry has been undergoing a transformation for a while, the current COVID-19 pandemic has caused major unexpected changes in the retail industry. A combination of restrictions on indoor activities and social distancing and a recession, many physical retailers, especially small brick and mortar stores, are struggling to survive. Surprisingly, the pandemic is actually accelerating some innovation in physical retail. A Harvard Business Review study, a future of contactless shopping which has already been trialed in the past. A future of contactless shopping would require a more immersive technology based experience. (Machtiger, 2020). Looking at the current research on the relationship between physical retailers and ecommerce retailers, it is clear that there is a wide and diverse network of relationships across the retail industry. Technology has shifted retail toward a new unified shopping experience where online and physical retail is interconnected. This research shows how currently technology plays a significant role in physical retail but current innovators are mostly comprised of large physical retailers such as Walmart, Amazon, and Costco. To further this research, this project would study adapting technology in smaller brick and mortar stores to research the impact of our Capstone project. To further organize the relationships presented by the current research, the Actor-network theory was used to establish a heterogeneous actant network.

STS Framework and Method

To identify the heterogeneous actant network in my research, first the actants have to be identified and described. My research topic involves analyzing the relationship between physical brick and mortar stores and online shopping and how technological innovation from online shopping is now being applied to the comeback of physical stores. The human actants within this network include the retail workers, physical store owners, customers, and all types of employees for large online retailers. Non human actants are composed of technology that has created online

shopping and is now helping physical shopping grow and the products the retail industry is based around. One heterogeneous actant network within my research is the relationship between retailers (NH), technology (NH), and customers. To add clarity to this network with an example, one example of this network is a physical clothing store, checkout free technology, and customers visiting the store. For the customers, this technology provides convenience and saves time and for the retailers provides more revenue as the store is able to support more customers and provides customers a better shopping experience. Other instances of shopping technology such as AI based recommendations provided via phone provides the customer with a personalization shopping experience and convenience as the AI is able to predict the customers interests and needs. The products that physical and online retailers carry can also be added as a non human actant to this network as they are the basis of the entire shopping experience. Technology eases the effort required for a customer to obtain a product they need or want and also help retailers sell products that customers did not necessarily realize they wanted. The main relationship in this network is the relationship between physical and online retailers (NH) and customers (H) is a classic trade situation with technology (NH) serving the purpose of facilitating exchange and growth between these two main actants.

In order to form this actant network, the actants have gone through various translations. One of the main focuses of my research is how the physical shopping industry is revitalizing itself through technology and other methods. Prior to this transformation, the network between physical retailers (NH) and customers (H) almost broke down to a downward trend of sales which can be seen as a connection between these two actants. During this time frame, online retailers (NH) and customers (H) were forming a stronger network as more and more customers were increasingly shopping online. Recently, a more connected network has formed that involves

both online and physical retailers. Large and small retailers have realized that they need an online presence to succeed in the current state of the retail industry and have also realized that the typical physical shopping experience needs to change to draw customers back. This heterogeneous actant network can be used to explain the construction of technology and society in my research. One example is consumer data collection and analysis of this data to gain customer insights. The construction of this field has been directly caused by this actant network as online retailers have needed new and more personalized ways to draw consumers within the vast sea of retailers across the internet.

Timeline

For this project, research will be conducted next semester across six weeks. The first couple weeks will be spent collecting quantitative data through analyzing secondary sources including archive studies, policy studies, and other online resources. As part of the Capstone project, a one-month long survey cycle was conducted with a goal of 100+ creator responses, 200+ shopper responses, and 25+ retailer responses. The survey cycle collected 150 creator survey responses, 342 shopper responses and 4 retailer survey interviews. As part of this STS project, further survey retailers and conduct a second round of surveying based on insights from STS research and the first survey cycle.

Conclusion

This STS prospectus research outlines the research that will be conducted next semester for this project. By the end of this research, I hope to better understand the relationship between ecommerce and physical retail and the future of the retail industry, and the technologies involved.

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