

**Designing a Mobile Application  
for Small Business Use  
in Strengthening Customer Relations**

---

A Master's Thesis

Presented to

School of Arts and Science

State University of New York

Polytechnic Institute

---

In Partial Fulfillment  
of the Requirements for the  
Master of Science Degree

by

Collin Crabtree-Keeler

December 2015

DEPARTMENT OF ARTS AND SCIENCE

CERTIFICATE OF APPROVAL

Approved and recommended for acceptance as a thesis  
in partial fulfillment of the requirements for the degree of  
Master of Science in Information Design and Technology

---

DATE

---

Russell Kahn, Ph.D.

---

Kathryn Stam, Ph.D.

## **Abstract**

The goal of this thesis and the accompanying mobile application prototype is to conceptualize and design a mobile application for small businesses that would allow these organizations to bridge the technological and communication gap outlined in this document. The resulting application, once fully developed, would also allow business owners to better connect with their customers by offering a service designed to manage customer data and provide incentives for recurring visits. The research outlined in this document focuses on addressing the current issues regarding the aforementioned technological gap, as well as providing ideal design methods in order to create a more effective user interface and subsequent digital service.

## Table of Contents

Abstract .....	iii
List of Figures.....	v
Introduction .....	1
Research Questions.....	4
Literature Review .....	6
Small Businesses and Mobile Technology.....	6
Ideal Mobile Application Design .....	7
Anticipating Platform Change.....	8
Methodology.....	9
Project Research .....	10
Prototype Platform Choice .....	14
Initial Build.....	16
Final Build .....	21
Conclusion .....	27
References.....	30

## List of Figures

Figure 1: A screen capture of the current website for the Warwick Drive-In Theatre located in Warwick, New York. ....	13
Figure 2: The "Start screen" from the initial application prototype build. ....	18
Figure 3: The Customer-specific interface, as it appeared in the initial prototype build. ....	20
Figure 4: The "Start screen" from the most recent application prototype build. ....	22
Figure 5: The interface for business owners, as it appears in the final prototype build. ....	24
Figure 6: A screen shot of the coupon interface. Though the one pictured is for displaying past coupons, all screens that reference digital coupons will appear similar in design. ....	26

## Introduction

Since its inception, digital media has become a massive platform by which messages and ideas can be communicated directly to all manner of people instantaneously, regardless of their location. Yet while interaction with a wide audience via digital media is not necessarily a new concept (in practice, it has been around for decades and has continually grown in capability and strength), there are still a disproportionately large number of organizations that do not even begin to make full use of this medium. This can range from communication technologies being underutilized, to a complete disconnect from the digital media sphere. The reasons behind this effect are twofold. The first having to do with the nature of digital media being such that it is constantly shifting, growing, and evolving; and the second reason resulting from the significant commitment of time and monetary resources required to develop and improve upon such technologies. Because of these factors, many small businesses continue to be left out of the loop.

And while it may not initially seem important for small businesses to stay up-to-date technologically, research findings indicate that it can be vital to our economic stability as a nation. This is due to the fact that small businesses account for much of the financial strength we experience in the United States, and they provide the majority of employment opportunities to the millions of workers within the nation. According to statistics presented by the United States Small Business Association, “The 28 million small businesses in America account for 54% of all U.S. sales” (“Small Business

Trends”, p. 1). Add to this the fact that “Small businesses provide 55% of all jobs and 66% of all net new jobs since the 1970s” (“Small Business Trends”, p. 1), and it becomes clear the impact that small business have on the American economy and subsequently the global economy at large.

Yet in spite of these impressive statistical numbers, many still do not have the aforementioned monetary and temporal resources to dedicate toward staying abreast technologically. These factors are typically the two biggest hindrances when it comes to small businesses being able to stay up-to-date with the ever-evolving technological landscape. This is reflected in the *2013 Small Business Technology Survey* conducted by the National Small Business Administration, in which it was concluded that:

When it comes to challenges with their Websites, time was again a key factor with the majority, 64 percent citing the time it takes to make updates as their biggest challenge. Cost maintenance was less of a factor, however one-fourth still said it was the biggest issue they face concerning their website. (“2013 Small Business Technology Survey”, p. 1)

For these reasons, most still operate from a limited standpoint when it comes to communication and connection via digital media. Over the past decade, social media services, such as Google My Business, and Facebook Ads and Small Business Pages, have played a strong role in helping smaller organizations

establish and strengthen their presence in the digital sphere; but interaction via this particular medium can often be passive and is still somewhat limited in terms of offering incentive to connect and/or participate.

A potential solution that would assist in bridging the gap between small business and consumers, is to create an application for mobile devices that is geared toward attracting potential customers by way of financial incentive. The mobile application would also allow customers to connect with, and follow, some of their favorite and most frequented small businesses. Doing so would offer them a way to keep track of the latest deals being offered by each respective businesses, in the form of digital coupons. Coupons can also be shared and promoted among users, which would in turn create a social aspect designed to fuel larger recognition and growth. This solution would give small business owners more of a presence in the mobile application market without requiring from them a significant investment of finances and/or time.

A prototype has been created to support the mobile application described. Its purpose is to provide a visual basis for the concept, as well as to reflect the referenced theories and design choices. Should an actual application be developed, the prototype would also provide initial design and functionality concepts for the initial build. The following is the URL which directs to the mobile application prototype:

<https://crabtrc.proto.io/share/?id=068db2aa-1c6a-4abf-9fa5-35c78751c64d&v=1>

## Research Questions

Early in the development process for the thesis and accompanying project, three research questions were established; the purpose being to set guidelines to ensure focus was not lost in the pursuit of information. This process worked well, as it established an anchor point for the project as a whole, while also determining a direction in which to focus initial efforts. Subsequently, this ended up shaping the entire endeavor. The outcome indicates how vital and central these questions are to the project as a whole.

The research questions are as follows:

1. What is the most effective platform and design for an application that would meet these needs?
2. What type of need/market is there for a product such as this?
3. In what ways might this product adapt to any possible upcoming technological shifts?

The first question was designated as the primary research question with the intention that it would serve as an overall guide. This particular question also served to tie back in to our collective studies in the *Information Design & Technology* program at SUNY Polytechnic Institute. Its establishment as the primary question was directly

related to this. In concept, the idea behind the mobile application seemed to work well. Any inconsistencies or shortcomings it may have had, in terms of feasibility or market need, were to be sorted out with research guided by the secondary questions. An initial look into the target market did validate that a service could fulfill a need. But in order to make such a service truly accessible, it needs to be well-designed and intuitive. After all, one may have the most valuable tool in the world; but if it cannot be logically deduced by the average user, it is essentially worthless. This theory holds even more truth in modern times. In practice, the usability and design of the prototype would need to be validated by the concepts and theories which were absorbed during our time in the *Information Design & Technology* program. The primary research question would serve as the connection between the two.

The second and third questions, “What type of need/market is there for a product such as this?” and “In what ways might this product adapt to any possible upcoming technological shifts?” respectively, were designated as the secondary questions. These were established to determine the feasibility and long term prospects of developing the mobile application. The idea behind these questions was to verify that such a product would actually serve a purpose and stand out in a market that is already inundated with a steady stream of competing, and arguably similar, services. If there proved to be too much competition, or if it was found that there was no real need among the small business community for a service such as the one being conceptualized, the product would most likely fail to take hold no matter how effective the design. Research did determine that there is a need for a digital service such as the one described in this

thesis and the accompanying prototype; the findings of which will be examined more in the coming sections.

## **Literature Review**

In order to determine if there is a need for such a service within the target communities, initial research is required to either validate or disprove a potential demand. For that reason, a number of articles pertaining to the subject have been collected and examined to assist in making such a determination. The following are some of the key topics that the accompanying literature will help validate. They have been grouped according to article topic, with the appropriate literature referenced to either support or dissuade each topic. The topics addressed are relationship (between the two fields), design, and a potential shift to wearable technology.

### **Small Businesses and Mobile Technology**

Research indicates that now, more than ever, there is a desire in the small business community to adapt to, and engage customers via, the current most dominant form of technological integration. According to the literature referenced in this review, this consensus seems to be unanimous. For the past five years, mobile technologies have been on the rise in terms of popularity. Yet many small businesses still face a barrier to entry in terms of development cost and technological accessibility. In spite of that, many still make an effort to adapt their digital presence so that it is mobile friendly.

In the article *Mobile Adoption on the Rise Among SMBs*, by Tamara Franklin (2014), it is stated that there has been “a sizable increase in small businesses launching mobile websites. The research revealed that 92% of SMBs either already have a mobile-optimized website or are planning to implement one in the next 6 months. The data showed that in 2013, 28% of SMBs were not planning to optimize their website for mobile, but in 2014, that number dropped to 8%—a substantial shift in a very short amount of time.” (Franklin, p. 8). This would indicate that the desire for mobile accessibility is there, and that many small businesses are pushing forward to adapt in whatever way that they can. Yet while optimizing ones website for mobile use is a great start, it is hardly the same thing as having a mobile application that is representative of the goods and services offered at ones small business. This is a main challenge that this mobile application would set out to address.

### **Ideal Mobile Application Design**

In designing a mobile application to potentially be used by thousands, if not millions, the goal is to make sure that the layout and design is effective in providing the user, on both the consumer side and the business owner side, with a seamless and trouble-free experience. No matter how useful the mobile application may be, if it is poorly designed or proves overly complex to use, it essentially is worthless to those who would set out to use it. To make sure that the design is effective as possible, it is imperative to research and incorporate the most recent and effective theories pertaining to interface design. Many articles have been referenced in the formulation of this consensus; all of them in support of it.

One article in particular from the literature selection directly references this topic and offers some very sound advice towards this end. *DESIGN WITH THE user's needs IN MIND* states that “The key to success in the design of mobile applications (native or web-based) lies in a user-centered approach that can fully address the target audience’s needs. It is the consideration of a target audience immersed in a real context that really matters.” (Villar, p. 37). In this case, the target audience is the average American small business consumer. But the small business owner must also be considered as well; for they will be the ones adapting and utilizing the mobile application so that it is initially available to customers, and so that data can be tracked as needed. Therefore, it is imperative that the design of both the front-end and back-end of the application take into account these principles.

### **Anticipating Platform Change**

As is common in technology, medium and platforms are subject to change rather frequently. For that reason, consideration must be taken with regards to the rise in popularity of trends such as wearable technology, and how the mobile application might adapt so as to be more effective in meeting those requirements. While devices such as the Apple Watch, to date, have not made as impactful a first impression in the consumer market as the iPhone, such technology should not be dismissed as a potential medium through which a client can interact with a customer.

This rising popularity and potential for shift is referenced in *WHY EXPLAINING THE POINT OF WEARABLES IS THE TECH SECTOR'S NEXT BIG CHALLENGE*. With regards to wearable technology, it is stated that “The world of fitness actually appears to be storming ahead in this field, with 70 million wearable devices already sold across the world. Market analyst Gartner predicts that sales will rise to over 90 million in 2016. However, fitness is far from the only application for wearable tech. Financial institutions are also making inroads, with wearable wristbands taking contactless payment to the next level.” (Thomas, p. 28). Another piece of selected literature, entitled *Widespread Use of Wearable Technology*, looks at the ways in which this particular technology is being utilized in fields such as military and defense. Both help to give an idea of potential uses for the technology and how it may be incorporated into the design the proposed mobile application.

## **Methodology**

The very first step in the formulation of a digital service such as this is to see if there is even a need for the service. Many things can initially sound like a novel idea; but the practicality ultimately becomes apparent when one conducts research to see what is being done within the targeted field, and if there is a need for that which is being conceptualized. In order to ensure practicality, this project had the same origin. Initially, it was intended to focus on the small business market of a specific region of New York State; Orange County in particular. The reason for this choice was based on familiarity of the region and the knowledge that, due to the trends of monetary centralization,

areas of the United States that are more rural tend to have less financial resources to dedicate toward the improvement of their technological resources.

### **Project Research**

Upon conducting initial research, it quickly became evident that most of the local businesses reviewed, specifically those located within the targeted region, were severely lacking when it came to keeping up with modern trends in digital media. Although the majority did produce and actively maintain some form of independent web presence, most were significantly behind when it came to keeping up with technological trends in internet-based media. Of the websites researched in the region, 90% did have active websites. This means that searching them provided a link to a personal URL, at which the business was actively represented via digital media. Of those with a personal website, only about one quarter were optimized for mobile viewing. Users attempting to view from a mobile device are forced to navigate a website that was initially designed for desktop viewing. While this may not initially seem like a major inconvenience, its effect should not be underestimated. The extra time required, and subsequent frustrations experienced, when attempting to view a non-mobile optimized website via a mobile device, could result in potential customers growing impatient with the inefficient website viewing options. This could then possibly lead to the customer moving on to a competitor offering a better alternative.

If the argument were to be made that a large percentage of website browsing in the United States is currently not conducted via mobile devices, the findings of a recent

study conducted by the Pew Research Center would seek to disprove that. The 2015 study found that:

Nearly two-thirds of Americans are now smartphone owners, and for many these devices are a key entry point to the online world. 64% of American adults now own a smartphone of some kind, up from 35% in the spring of 2011. Smartphone ownership is especially high among younger Americans, as well as those with relatively high income and education levels. (Smith, p.1)

These findings indicate that the majority are equipped for mobile web browsing, and that they do, in fact, use their mobile devices to access the Internet. They also indicate that the younger generations are shown to be more technologically savvy. This means that smartphone ownership, as well as subsequent mobile browsing, will only increase in time. These findings present an absolute need for small businesses to adapt to current technological standards.

Of the small business websites that were researched for this project, many were also found to be significantly outdated in terms of website design. An example of this can be seen in the website for the Warwick Drive-In Theatre, located in Warwick, New York. Figure 1, located below, displays a screenshot of the small businesses' website, taken during the fall season of 2015. Viewing it, one should note the use of multiple banner images to display information, as well as the misuse of color; both habits

reminiscent from the early days of web design. Banner images are not necessarily a bad thing; but when overused, or used an essential part of the structure as opposed to an accent, they tend to become a visual burden.

In terms of chromatic usage, modern color theory suggests to "Use color conservatively." and to "Limit the palette to what the eye can process at one glance." (Lidwell, Holden, Butler, p. 48). Better Color principle, as described in *Universal Principles of Design*, also recommends that one "Do not use color as the only means to impart information since a significant portion of the population has limited color vision." (Lidwell, Holden, Butler, p. 48). Viewing the screen capture in the figure below, it is clear to see that these concepts were not considered in the design of their website. This can ultimately detract from the user experience of whoever is viewing the website.

**Warwick Drive-In Theater**  
News on the Web

Updated Mon Nov 2, 2015

**News Flash!**

**CLOSED FOR THE SEASON!**

- **Show #1 - CLOSED**
- **Show #2 - CLOSED**
- **Show #3 - CLOSED**

**2015 Readers' Choice 1<sup>st</sup> PLACE**

Best Movie Theater Best Place For First Date

**Find Us**

The Warwick Drive-In Theater is *located* at 11 Warwick Turnpike (Route 21) just off Route 94, (right behind Shop-Rite) in Warwick, Orange County, NY 10990. Movie

Figure 1: A screen capture of the current website for the Warwick Drive-In Theatre located in Warwick, New York.

Project research indicated that, within the targeted region, there was a definite need for small business digital media representation via a service that conformed to modern technological trends and web browsing standards. While the small businesses would ultimately still be responsible for their independently owned and managed websites and other digital media assets, the service disclosed in this project would provide a useful and viable alternative. It would allow them to self-represent via a mobile

social media platform designed to allow owners to directly engage with customers. Shopping incentive could also be directly simulated through the use of directly-targeted digital coupons, tailored to suit the more loyal customers as well as the more casual ones. Overall, the intent is to offer a service not typically accessible to most small business owners, which also adheres to modern web design aesthetic and practice.

### **Prototype Platform Choice**

One of the main initial challenges encountered in producing a prototype that would serve as the basis for this project, was in deciding the best way to proceed given the number of resources available. At first the idea of creating a functioning application from scratch, using my current level of coding knowledge and one of the more popular open-source web/mobile application frameworks that are currently available (such as AngularJS by Google), was considered. This idea ultimately proved to be impractical. The learning curve for such a framework can be significant; a commitment for which was beyond the project's production timeframe.

The conclusion was reached that it would be more beneficial to create a visual prototype to serve as the basis, and also as a design guideline, for the application. Functionality, while desirable in supporting an element of interactivity, was not necessarily required. A fully-functioning prototype could always be built at a later point in time, after the initial process of project conceptualization and design. The more important aspect, with regards to this project, was in designing the interface so that it is simple to navigate and meets the needs of all users.

At the time of writing this, a number of different web/mobile application prototype creation services exist. Some also have the capabilities needed to produce an interactive mock-up which allows users to navigate and interact with it directly. This would allow for the user to get a sense of application functionality without having to rely too heavily on their imagination. The process in deciding which service would be best suited for creating the intended product involved a number of factors. First, it required a sizable amount of research, which entailed analyzing different services to get a feel for their capabilities, interface usability, and overall quality. Factors such as cost also played a role in the ultimate decision. After some time researching and testing a number of the more popular application prototype creation services, a suitable platform was chosen to serve as the basis for creating the prototype.

The platform which was ultimately chosen goes by the name of *proto.io*. This particular service is noted for its diversity of functions, effective interface design, ease of use, and the ability to create an entire application prototype by simply dragging and dropping different elements. There is an associated cost to use the service, but it is fairly reasonable considering the tools provided. An education discount is also provided for those who register with an academic email; this ended up reducing the monthly cost to fifty percent of its most base subscription charge. The resulting prototype, directly referenced in the following sections, can be viewed via this link:

<https://crabtrc.proto.io/share/?id=068db2aa-1c6a-4abf-9fa5-35c78751c64d&v=1>

## Initial Build

The first attempt at creating a visual prototype involved the use of the image editing software *Adobe Photoshop* to create a wireframe layout. This proved to be a useful tactic at first, especially in terms of establishing the visual design aspect, but it was eventually deemed to be too static and limited. A much more viable alternative was to use an application prototyping platform, such as *proto.io* which ended up serving as the foundation of the prototype build. Constructing directly within that framework allowed for the establishment of design and the simultaneous implementation of application functionality, however limited it may initially be. The decision to proceed this way not only saved time, but it also allowed for further familiarization with the platform of choice while allotting for the constraints of a mobile interface.

In using an image editing software such as *Photoshop*, it can be relatively easy for one to forgo device or platform limitations, and instead give way to unrestricted creative freedom. It can also be possible for one to incorporate a design element that may not be applicable and/or practical in a mobile interface. However, when using an application prototyping platform such as *proto.io*, the user becomes limited to the capabilities of the selected platform. This more accurately constrains them to the proportions and standards of the target device, beyond simply assign screen dimensions to a document. Taking this approach during construction of the application prototype, which ended up (at least temporarily) being named *Revisit*, helped in

providing guidelines within which to focus efforts. This proved to greatly assist in the overall design process.

The figures below showcase a few of the screen captures from the initial build of *Revisit*. This process was as much about familiarization with the platform as it was about building a functioning prototype. This is the phase in which the ideas were manifested into an actual, visible product. Here, concepts were laid out and the basic framework was established. This is not to say that there will not be considerable modifications and probable redesigns, should production move beyond this phase; but in terms of taking that first crucial step of product inception, this is where the idea really began to take form.

With regard to choice of color within the *Revisit* prototype, the color principles cited above in the critique of the website for the Warwick Drive-In Theatre, were referenced. Care was taken in the selection and use of a limited color palette. The colors chosen were based on the current color scheme of American currency. The intention behind this decision is for there to be a subliminal association that links the mobile application to the saving and generating of dollars. With regards to the choosing of a color palette, it is recommended that the designer “verify the meaning of colors and color combinations for a particular target audience prior to use.” (Lidwell, Holden, Butler, p. 48). In doing this, a relevant association can be made an applied via the choosing of specific colors.

The figure below displays the "Start screen" of *Revisit*. From here a user can either navigate to the interface designed for business owner use and management, or to the one designated for customers. Once logged in, the user would not come back to this screen unless they log themselves out or there is a device reset.

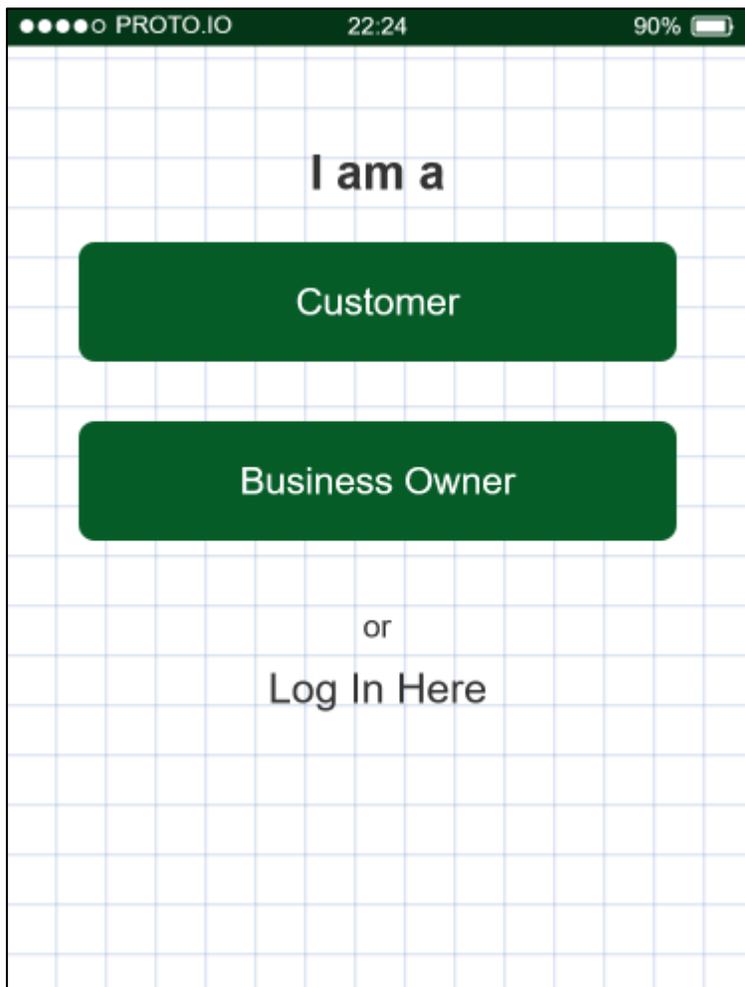


Figure 2: The "Start screen" from the initial application prototype build.

This particular interface was designed to serve as the entry point to the application. With that in mind, it adheres to some of the "Entry Point" principles put forth in *Universal Principles of Design*. For instance, the layout makes use of minimal barriers and follows the suggestion that any barriers incorporated "should not encumber entry points."

(Lidwell, Holden, Butler, p. 80). It also makes use of "Points of Prospect" rule, stating that:

Entry points should allow people to become oriented and clearly survey available options. Points of prospect include store entrances that provide a clear view of store layout and aisle signs, or Internet pages that provide good orientation cues and navigation options. Points of prospect should provide sufficient time and space for a person to review options with minimal distraction or disruption — i.e., people should not feel hurried or crowded by their surroundings or other people." (Lidwell, Holden, Butler, p. 80)

The next image, Figure 3, displays the draft layout of the customer-specific interface. This section of the application would allow potential customers to view their connection to the stores associated with the service. From here they can view which stores they chose follow, and also browse local stores or search all stores. The purpose of the latter option would be to view which deals that the organization has available, as well as to view any other associated information which has been made available prior by the business owner.

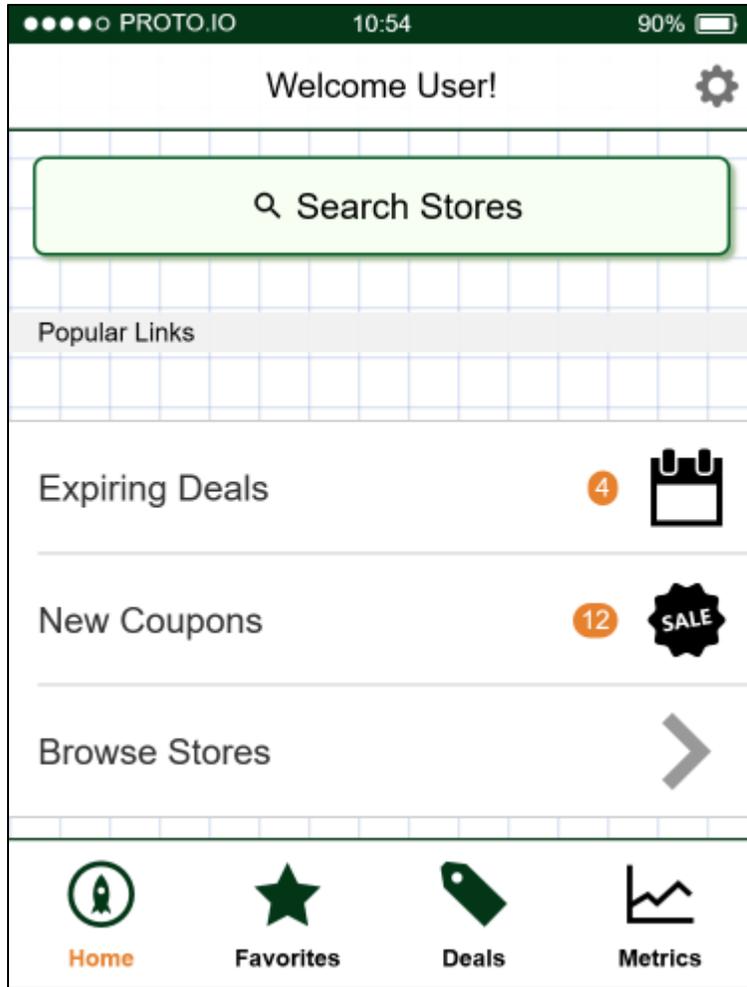


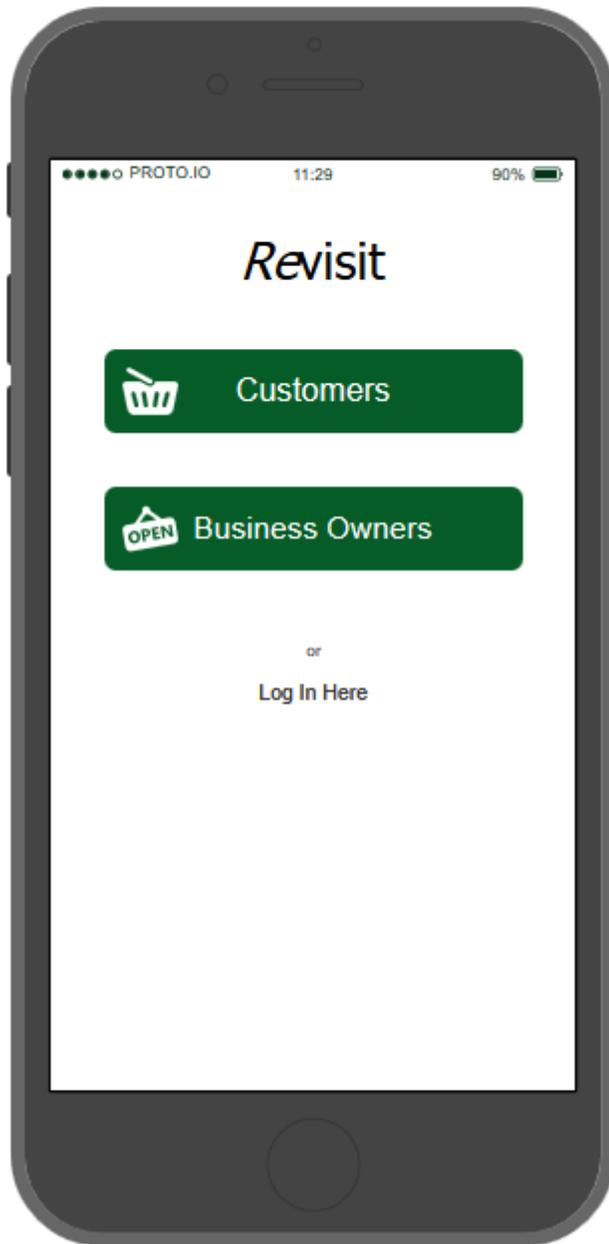
Figure 3: The Customer-specific interface, as it appeared in the initial prototype build.

The initial layout of this section of the application was based on the principle of hierarchy, as well as conforming to the parameters of the tools made available by *proto.io*. Hierarchical representation is defined by *Universal Principles of Design* as a form of representation that "is the simplest method of increasing knowledge about the structure of a system." (Lidwell, Holden, Butler, p. 122). It is ideal in disclosing how a system best operates and for what uses it is most ideal. The content in figure 3 was structured in a top-down format that was determined to be the most useful for the average user. This can be subject to change as additional data and feedback becomes

available. The use of horizontal menu buttons was inspired by the initial decision to utilize the general interface assets made available by the platform. This was also a result of the choice to explore and familiarize myself with the service and its interface, by using the tools and menus that were directly available. As can be seen in the next section, the layout represented in Figure 3 was eventually abandoned for a more intuitive one.

### **Final Build**

The most recent build of the application prototype, also known as the "final build" (as it relates to this project), makes use of a number of design aesthetics and implements some key information design theories to produce a more effective user interface. The first example, pictured in Figure 4, is a redesign of the application "Start screen", which was referenced earlier.



*Figure 4: The "Start screen" from the most recent application prototype build.*

The redesign incorporates the unofficial product logo, featured at the top of the layout. It also makes use of icons, featured alongside the text within both buttons. The argument for the use of icons is further explained in the next paragraph, which references Figure 5 and focuses on the business owner-specific interface. The only other notable design

change here is the font size reduction of the link to the login screen and the removal of nonessential copy, such as the "I am a" statement incorporated in the initial build of this particular screen. The link to the login screen was deemed to be secondary and not essential enough to be an area of focus. Therefore, it can be reduced in size that it is still locatable, but does not stand out. The "I am a" statement was an example of passive redundancy, "the simplest and most common kind of redundancy", being defined as "the application of redundant elements only when an active element fails (e.g., using a spare tire on a vehicle in the event of a flat tire)." (Lidwell, Holden, Butler, p. 204). In this case, it offered minimal backup value and was therefore deemed expendable.

Figure 5 showcases the user interface for the business owner portion of *Revisit*. While it initially was presented in a manner very similar to that of the customer-specific interface displayed in Figure 3, both layouts underwent significant design alterations for the later build.

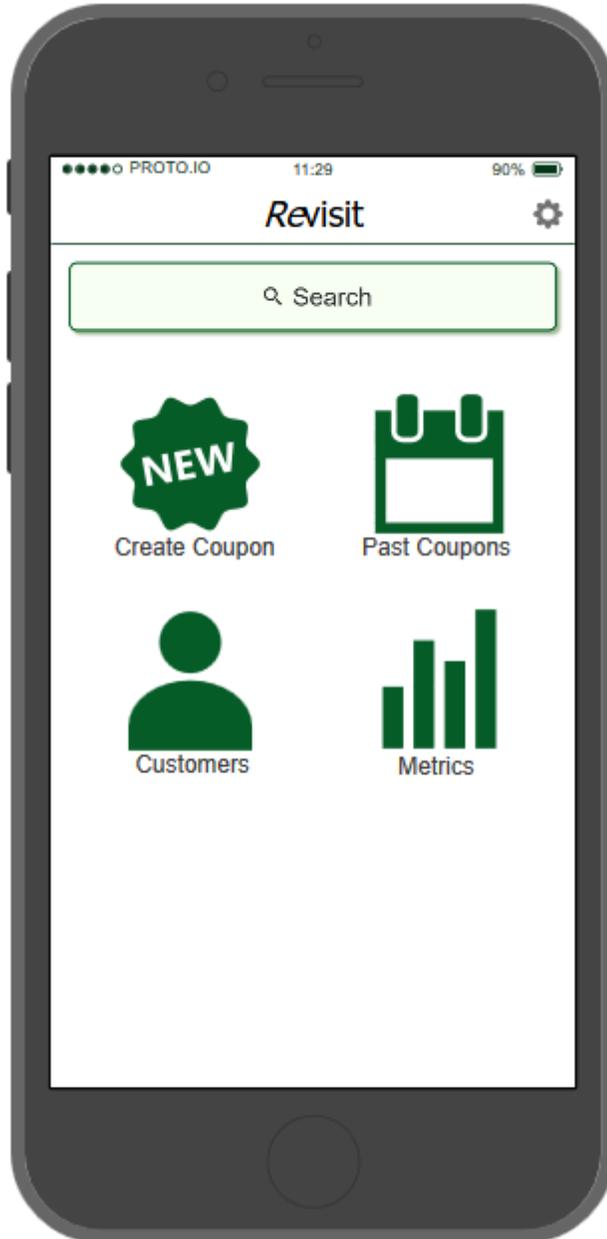
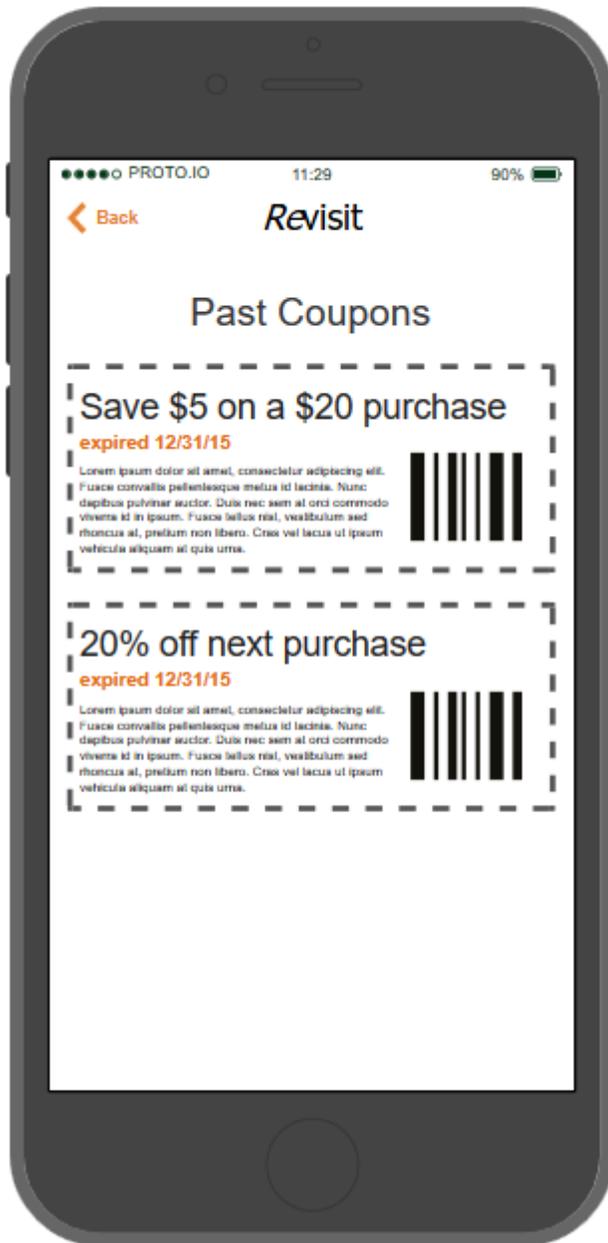


Figure 5: The interface for business owners, as it appears in the final prototype build.

Initially, one may notice the use of horizontal menu buttons has been retired, in favor of the use of icons to display navigation information. The decision behind this choice was based on the picture superiority effect. Described in more detail in *Universal Principles of Design*, the effect is achieved because "pictures are generally more easily recognized

and recalled than words, although memory for pictures and words together is superior to memory for words alone or pictures alone. ". The suggested use of the picture superiority effect is to "improve the recognition and recall of key information. Use pictures and words together, and ensure that they reinforce the same information for optimal effect." (Lidwell, Holden, Butler, p. 184). In this case, the concept was used in the attempt to improve navigation efforts and to aid users in making a quick mental association by using both image, in the form of icons, and text. Ideally, this would reduce the amount of time spent in menu interface screens and increase the amount of time dedicated toward using the service toward the benefit of the individual user. The search bar remains at the top due to hierarchy, as well as to remain accessible. Also, the "Welcome User" copy has been swapped out for the *Revisit* logo; the latter being deemed much more essential for marketing and branding purposes.

The image in the last figure is that of the coupon interface. This specific screen features the layout for the "Past Coupons" area, though the aim is to have all sections that reference any digital coupon to appear similar in design. The concept of similarity is used as the basis for this choice. This concept, put forth in *Universal Principles of Design*, is defined as occurring when "similar elements are perceived as a single group or chunk, and are interpreted as being more related than dissimilar elements." (Lidwell, Holden, Butler, p. 226). The idea is to create an association between all sections featuring digital coupons, to convey the idea that they are of a similar nature and, in some cases, directly related.



*Figure 6: A screen shot of the coupon interface. Though the one pictured is for displaying past coupons, all screens that reference digital coupons will appear similar in design.*

All digital coupons will only be made available at the discretion of the owner representation their business via the application. As such, all coupons will relevant, related, and accounted for. Though the same digital item may be featured across

multiple interfaces within the same application (e.g. the “Expiring Deals” screen and the “Current Coupons” screen), the idea is that it is still a single element representative of a single offer. The concept of similarity was specifically referenced to strengthen this idea.

## Conclusion

Based on the research conducted during this study, it has been concluded that there is a definite need for a mobile application service such as *Revisit*. In reference to the statistics put forth in the Introduction section of this document, small business account for the majority of the economic foundation in the United States, yet many do not have the monetary resources and time required to stay up to date with regards to technology and digital media. The second research question of this study made inquiry regarding this, and the results indicate that such a need does exist.

Because the technological landscape is subject to rapid development, the question of whether or not *Revisit* could adapt to any impending technological shifts was also presented. The technology researched, with regards to this question, was that of wearable tech. This is because it is the most known and relevant recent technology that has yet to be adopted by mainstream users. Researching this aspect resulted in the decision that the application currently need not be concerned about adapting to meet this potential technological shift. The reason for this is because wearable tech has currently not gained a substantial enough foothold in the mass market, and any interface currently available in this market would be far too limiting with respect to the functionality of this application. It could potentially serve to accentuate some of the

included features; but in terms of functioning as a stand-alone application on a device such as an Apple Watch, it would not be feasible.

The main question of this study is focused on determining the most effective platform and design for the *Revisit* mobile application. The arguments, logic, and research behind the choices regarding this matter have all been described in-depth throughout the prior pages. Initially, the platform for the application prototype was chosen based on a number of factors. In the end, usability, affordability, and quality were the main deciding factors behind the decision to construct it using *proto.io*. Many of the choices made regarding the interface design were reminiscent of concepts learned during my time spent in the *Information Design & Technology* program. As such, a handful of the books used within the program were also referenced with regards to the interface design choices. Most notably, *Universal Principles of Design* played a large part in providing the information design concepts used in the creation of the prototype interface.

It is worth noting that these concepts and ideas are subject to change and will surely evolve over time. This applies to the information design concepts referenced within this document as well. *Revisit* is not meant to be a finalized product either. The intent is for it to also continue to grow and evolve over time. The work conducted here serves as a solid foundation for what could be a full-scale mobile application service. But it is also far from complete. Though this is the end of the study, as far as *Revisit* is concerned this is only the beginning. There is still much to be done in order for this

concept to grow out of the initial research phase and move into the full-scale development phase. With equal parts luck and hard work, perhaps this prototype may one day be actualized into a digital service that bridges the gap between small business, technology, and consumers; a gap that clearly needs to be shortened.

## References

- 2013 Small Business Technology Survey | National Small Business Association | NSBA.biz. (2013). Retrieved November 16, 2015, from <http://www.nsba.biz/wp-content/uploads/2013/09/Technology-Survey-2013.pdf>
- Bramwell, Jason. (2013, September 5). Modern Technology Lacking in Most Small Businesses. *AccountingWEB*. Retrieved December 26, 2015, from <http://www.accountingweb.com/technology/trends/modern-technology-lacking-in-most-small-businesses>
- Chang, C., Chatterjea, K., Goh, D. H., Theng, Y. L., Lim, E., Sun, A., & ... Nguyen, Q. M. (2012). Lessons from learner experiences in a field-based inquiry in geography using mobile devices. *International Research In Geographical & Environmental Education*, 21(1), 41-58. Retrieved October 05, 2015. doi:10.1080/10382046.2012.639155
- Eddy, N. (2014, May 23). 10 Ways Mobile Technologies Are Reshaping Small Businesses. Retrieved October 05, 2015.
- Eddy, N. (2014). Small Businesses Investing in Mobile Technology. *Eweek*, 1. Retrieved October 05, 2015.
- Franklin, T. (2014). Mobile Adoption on the Rise Among SMBs. *Econtent*, 37(8), 8-12. Retrieved October 05, 2015.
- Hoehle, H., & Venkatesh, V. (2015). Mobile Application Usability: Conceptualization and Instrument Development. *MIS Quarterly*, 39(2), 435-A12. Retrieved October 05, 2015.

- Howard, C. E. (2015). Widespread Use of Wearable Technology. *Military & Aerospace Electronics*, 26(9), 16-23. Retrieved October 05, 2015.
- Jacobson, R. (2000). *Information Design*. Cambridge, Massachusetts: MIT Press.
- Katz, J. (2012). *Designing Information: Human Factors and Common Sense in Information Design* (1st ed.). Hoboken, New Jersey: John Wiley & Sons.
- Lidwell, W., Holden, K., & Butler, J. (2010). *Universal Principles of Design: 125 Ways to Enhance Usability, Influence Perception, Increase Appeal, Make Better Design Decisions, and Teach through Design* (2nd ed.). Beverly, Massachusetts: Rockport.
- Preimesberger, C. (2015). What Do SMBs Need From IT? Simple: It's Simplicity. *Eweek*, 1. Retrieved October 05, 2015.
- Small Business Trends | The U.S. Small Business Administration | SBA.gov. (2015). Retrieved November 16, 2015, from <https://www.sba.gov/content/small-business-trends-impact>
- Smith, A. (2015, April 1). U.S. Smartphone Use in 2015. *Pew Research Center Internet Science Tech RSS*. Retrieved December 28, 2015, from <http://www.pewinternet.org/2015/04/01/us-smartphone-use-in-2015/>
- Tarasewich, P., Gong, J., Fiona Fui-Hoon, N., & DeWester, D. (2008). Mobile Interaction Design: Integrating Individual and Organizational Perspectives. *Information Knowledge Systems Management*, 7(1/2), 121-144. Retrieved October 05, 2015.

Thomas, M. (2015). WHY EXPLAINING THE POINT OF WEARABLES IS THE TECH SECTOR'S NEXT BIG CHALLENGE. *Engineering & Technology (17509637)*, 10(9), 28. Retrieved October 15, 2015.

Villar, M. A. (2013). DESIGN WITH THE user's needs IN MIND. *T+D*, 67(7), 36-39. Retrieved October 05, 2015.

Washicko, C. (2013, July 12) Click, Don't Clip Your Coupons. *U.S. News Digital Weekly*. Vol. 5 Issue 28, p24-24. 1p. Retrieved October 05, 2015.