

# NEEDS ASSESSMENT, DEVELOPMENT, & USABILITY ANALYSIS OF SHOP LOCAL WEEKLY: A WEB APPLICATION DESIGNED TO IMPROVE LOCAL ECONOMY

An Applied Project in Partial Fulfillment of the Requirements for the Degree  
Master of Science in Technology

# BIOGRAPHY

Lindsey Baker

- **Hometown:** Baltimore, Maryland
- **Alma Mater:** Arizona State University
- **Employment Experience:**
  - **2014 - Present:** Director of Design, *Small Emperor, LLC*.
  - **2013 - Present:** Student Grader, *Arizona State University*
  - **2012 - 2014:** Web Designer & Developer, *Freelance*
  - **2007 - 2012:** Supervisor, *Kohl's Department Store*

# BIOGRAPHY

## Continued

- **Major Field of Study:** Graphic Information Technology
- **Date of Graduation:** May 2016
- **Faculty Mentors:** Dr. Thomas Schildgen, Dr. Laurel Ralston, and Deborah Prewitt
- **Aspirations:** Management in web design and development with a specialty in usability.
- **Interest in Senior Project Topic:** My experience thus far has given me a solid understanding of basic web design and development. I feel that the logical next step is to grow into the more interactive realm of web applications where I can really incorporate usability as a focal point in my work. Developing Shop Local Weekly provides me the opportunity to learn more about the technical aspects of web interactivity and a practical application for usability testing while dabbling my toes in entrepreneurship.

# CHAPTER ONE

## Introduction

Needs Assessment, Development, & Usability

Analysis of Shop Local Weekly:

A Web Application Designed to

Improve Local Economy



# CHAPTER ONE

## Introduction

**Statement of the Problem:** The objective of this study is to evaluate the interest in Shop Local Weekly, a web application that improves local economy, and to develop this concept into an effective, usable tool.

### Project Objectives:

1. What prevents residents from shopping locally?
2. Are residents and local businesses interested in using Shop Local Weekly?
3. Is the developed web application a usable and effective tool for residents and local businesses?
4. How can Shop Local Weekly be improved in future adaptations?

# CHAPTER ONE

## Introduction

### Need for the Project:

- Local businesses need a way to attract customers without the exorbitant fees of services such as Groupon, which takes half of all proceeds (Thomas, 2014).
- Through Shop Local Weekly, residents will be exposed to local business promotions, giving them the opportunity to shop local at a lower cost.
- Communities and their residents would benefit from a shift in consumer behavior away from big-box stores and towards shopping locally.

# CHAPTER ONE

## Introduction

### Significance of the Project:

Shop Local Weekly will provide as a usable, effective tool to connect local business owners to their residents so that it may be the catalyst needed to encourage residents to shop local.

### Limitations of the Project:

- Time: The project's time limitation will impede the capacity to carry out long-term testing and assess long-term goals.
- Resources: The ability to test the effect of Shop Local Weekly on local economy is hindered by a limitation of resources.



# CHAPTER TWO

## Review of Related Literature

### Shop Local Deterrents (Crow, 2009):

An assessment of online comments surrounding a shop local movement found that there are three main points of contention, in addition to expense and convenience.

1. Hours: Consumers are frustrated with the limited, inconsistent hours that are often attributed to local businesses.
2. Guilt: The guilt that comes from leaving a small store without buying anything is enough for potential customers to avoid entering the store at all.
3. Returns: If the consumer is able to get to a local store while it's open and is willing to brave to a looming clerk, the limited return policy might still make them think twice about making a purchase.



# CHAPTER TWO

## Review of Related Literature

### Attributes of a Web Application:

A web application is different from a website in that it relies on human interaction to display dynamically created content (Skillcrush, 2013).

### User-Centered Design (Garrett, 2011):

User experience expert Jesse James Garrett considers UX to be a five-layered entity with each layer dependent of the layers below it; as such, user-centered design requires that these layers, or planes, are built from the bottom up. The planes in chronological order:

- Strategy: “This strategy incorporates not only what the people running the site want to get out of it, but what the users want to get out of the site as well” (Garrett, 2011, p. 21). The user needs should be balanced against the product objectives.

# CHAPTER TWO

## Review of Related Literature

### User-Centered Design Continued:

- Scope: The scope occurs when the user needs and product objectives are assessed to determine specific requirements for the content and functionality of the product.
- Structure: The structure plane is all about developing a conceptual structure for the site; main elements include interaction design and information architecture.
- Skeleton: “The skeleton is a concrete expression of the more abstract structure of the site” (Garrett, 2011, p. 20). In this plane, the placement of content (such as images, text, and navigation) is determined and arranged visually - much like a wireframe.
- Surface: “Content, functionality, and aesthetics come together to produce a finished design that pleases the senses while fulfilling all the goals of the other four planes” (Garrett, 2011, p. 134).

# CHAPTER TWO

## Review of Related Literature

### Heuristic Evaluation (Nielsen, 1995):

An expert reviews the interface against a predefined set of principles or guidelines with the intention of uncovering usability problems (Sauro, 2011). Nielsen's set of ten heuristic principles:

- Visibility of system status
- Match between system and the real world
- User control and freedom
- Consistency and standards
- Error prevention
- Recognition rather than recall
- Flexibility and efficiency of use
- Aesthetic and minimalist design
- Help users recognize, diagnose, and recover from errors
- Help and documentation



# CHAPTER TWO

## Review of Related Literature

### Usability Testing (Usability Evaluation Basics):

- Ease of learning: How quickly can new users accomplish basic tasks?
- Efficiency of use: How efficiently can experienced users accomplish tasks?
- Memorability: After visiting the site, can users remember how to effectively accomplish tasks during future visits?
- Error frequency and severity: How often do users make mistakes while using the website, how serious are the errors, and how easily do users recover from these errors?
- Subjective satisfaction: How do users like using the website?

**Likert Item:** Method used to assess an attitude or degree of opinion. Odd-point scales provide a neutral option. Options are coded with corresponding values (The Likert Scale Explained).

# CHAPTER THREE

## Methodology

### Strategy:

- Product goals will be defined in terms of success metrics.
- Online questionnaire will collect demographic and psychographic data and uncover potential motivations for shopping local.
- Three user personas will be created.

### Scope:

- Content checklist (Jones, 2009) will be used to define requirement and to cultivate quality content.
- Required functionality will be defined in positive, specific, and objective language.

# CHAPTER THREE

## Methodology

### Structure:

- System will be designed to respond in a way that the user expects.
- Card-sorting test will be administered to determine a logical and intuitive organization and labeling of content.
- Data collected will be used to develop a visual site map to show the system's flow.

### Skeleton:

- Interface elements will be designed and information will be arranged in a way that is intuitive for users.
- Combination of navigation systems will be used to accomplish navigational goals.



# CHAPTER THREE

## Methodology

### Surface:

- Desktop and mobile screen sized mock-ups will be created for three web pages.
- Incorporate four principles of visual design:
  - ▶ Contrast
  - ▶ Repetition
  - ▶ Alignment
  - ▶ Proximity

# CHAPTER THREE

## Methodology

### Development:

- Shop Local Weekly will be developed locally using an XAMPP web server.
- The web application will be uploaded to a live test server so that it can be tested across various devices and common web browsers.

### Heuristic Evaluation:

- Nielsen's set of ten heuristic principles will be used.
- Evaluators will rate severity of compiled problems with standardized rating scale.
- Modifications made based on feedback.

# CHAPTER THREE

## Methodology

### Usability Testing:

- Pre-Test Questionnaire: Demographics collected used to select five usability test participants.
- Usability Test: Standardized script will be used to conduct a task-based usability assessment of the web application. Included scenarios and correlating tasks will be decided based on the predetermined product objectives and user needs.
- Post-Test Questionnaire: Questions will inquire about the opinions and attitudes toward Shop Local Weekly after participants have experienced the web application.
- Data Analysis: Data collected during the usability test will be assessed for patterns and common problems among participants. Suggestions to improve the web application in future adaptations will be made.