Hatter

Empowering Buskers through a Social App

by

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A thesis exhibition presented to OCAD University
in partial fulfillment of the requirements for the degree of

Master of Design in Digital Futures Program
OCADU Open Gallery, 49 McCaul St, April 17th-22th
Toronto, Ontario, Canada, April, 2015
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Abstract

The gradual decline of cash and proliferation of digital payments have created a radical shift, promising new levels of convenience for consumers today. This may adversely impact the earning potential of artists and performers from the busking community. Since the busking community primarily relies on hard cash/spare change from their patrons, I will argue, the predictions of a cashless society can pose great challenges for the busking community. This thesis investigates how mobile technology might address this phenomenon to augment methods of making monetary and non-monetary contributions to buskers. Research through ethnographic methods and literature review, as well as usability testing, the gathered insights and results projected a foreseeable need for buskers and patrons to realize an exchange via a mobile application called 'Hatter.' Hatter enables patrons to continue to contribute to buskers, who in turn are empowered to receive social and financial capital, even in a cashless society.

Keywords: Busking culture, street performance, public art, micro payments/donations, digital technology, urban spaces, digital currency, cashless society, mobile payment trends, social currency, virtual community, social app, near field communication (NFC), beacons.

Acknowledgments

Contents

List of Tables

List of Figures

Chapter 1 - Introduction & Social Context of Problem

The rapid adoption of smartphones and smart cards has significantly altered the way we interact with social and business environments, with interactions such as browsing, payments, purchasing, messaging, dating and navigation being held "on the go." Digital methods of payment for shopping, buying coffee or paying bills, digital wallets, as well as debit/credit cards are an easier, faster and more portable way to connect and transact. To a great extent, these smart technologies have replaced hard cash, coins and cheques with electronic means of payment. Start-ups, retail stores and entire marketplaces are going forth more boldly towards the digital realm and are likely to explore accessible forms of technological payment solutions in order to sustain their business and livelihood.

Major technological and infrastructural developments are currently under way with the introduction of mobile commerce in the form of smart cards and digital wallets, which are on track to significantly affect future methods of payment and decrease our reliance on hard cash (Thomas 2014). Today, there are more than one and a half billion smartphone users worldwide (Emarketer 2014). Mobile technology and cutting edge digital currency, if adopted by both street performers and patrons, can potentially increase revenue for buskers by providing patrons with alternative methods of donation to supplement conventional payment methods. This can lead to a more efficient and sustainable transaction system in which passers-by who have a desire to support buskers can continue contributing to the great art of busking,

since increasingly people are carrying less hard cash or spare change as they embrace the convenience of digital payments.

Busking, a centuries old tradition dating back to the early medieval period, which is an exchange of social services that relies primarily on contributions from passers-by who appreciate and encourage traditional art practices. Buskers include musicians, comedians, statue artists, circus performers, and many more entertainers in urban spaces. I refer to passers-by as 'patrons' in this study; those individuals that contribute to buskers or street performers by supporting them through either social or monetary exchange. Busking has been a major contributor to the urban centers worldwide. Through performing their arts, buskers bring the city's sounds and sights to even the most disconnected passers-by. This creates a vibrancy which in turn enriches the experience of the collective, weaving tighter the fabric of local communities and tourists, enhancing a city's character spaces such as streets and underground subway walkways. Buskers attract public and encourage people to browse from performer to store to restaurant and back to performer. "One industry is attracted to a location because it can make use of contributions from another industry" (McCracken 2006, 45). This creates a mutually beneficial commercial environment for stores, merchants, performers and the public, which also encourages patrons to become a part of the process by supporting various art practices.

The falling use of cash and rapid growth of electronic transactions, particularly smart cards and digital wallets has led many economists to predict the advent of a "cashless society" (Woodford 2000). Similarly, David Wolman, author of

The End of Money, explores the possibility of a "cashless society" in this compelling book and argues that physical money will fade away just as the pay phone has extinguished (Wolman 2012). These theories support the view that the advent of a cashless society in the foreseeable future could severely affect various forms of performing arts such as busking. Unless a new system of digital donation is adopted, in addition to the conventional method, patrons and buskers might lose their ability to keep the tradition alive. This in turn would force buskers to look for alternative sources of income, leaving less time and energy for performing their art in urban spaces. The loss of their contribution to the sights and sounds of the city would reduce not only the cultural capital but also the character of the city as we know it.

1.1 Motivation

As a designer and patron, my interest lies in bridging the gap created by the wavering days of cash to encourage the emergence of a new fully virtual cashless economy in which digital payment and social credibility are the new form of currency. Since I am a supporter of the busking community, I try contributing to buskers or street performers as frequently as I can, but often find that I don't have cash, considering that my preferred payment method is through a debit card or smartphone. This personal experience has led me to carry out this research to explore the contextual problem for buskers in the advent of a cashless society.

This thesis seeks to investigate how mobile technology might be used as a tool for augmenting methods of making monetary and non-monetary contributions to buskers, in the city of Toronto, Canada. To better understand the potential

implications of developing an alternative method for donation, I will analyze and examine cultural phenomena in busking communities through the lens of emerging trends in digital technologies, particularly the recent adoption of digital payment options and the impact that this has had on busking culture.

The initial exploratory phase took place through secondary research via literature review, cultural studies, market research, and ethnographic approaches. To gain an understanding of cultural phenomena surrounding the busking community, both buskers and patrons were surveyed. An online survey was also undertaken to further investigate and understand the core needs of buskers as well as patrons that frequently come in contact with buskers. Through the results congregated from these methods, three prototypes were developed and tested with both buskers and patrons to demonstrate a need for an alternative method of contributing to buskers in the advent of a cashless society.

An anthropological perspective has been taken in this study on busking culture; various research methods were used in order to gain insights and come to a compelling conclusion on the impact of a cashless society. Many economists and researchers are predicting the advent of a cashless society and the repercussions of this can be envisaged through market research and ethnographic study. Through the study we identified that buskers bring people together in urban spaces, enhance city life experiences and create many job opportunities for local vendors and in the entertainment sector. The busking community is weaved together with patrons in such a manner that creates inextricable interdependency with one another. The online surveys revealed that (74%) buskers and (59%) patrons would be interested in

adopting an alternative method for donation by using a social mobile app. It was surprising to see such a high percentage of patrons equally excited about being able to digitally support buskers. These results and outcomes consolidated the ideation of the project for creating a social microdonation mobile application (app) called "Hatter" to facilitate both buskers and patrons.

1.2 Scope & Limitations

Toronto is a city that has come to support numerous buskers and busking locations. Today, Canada is known to be one of the world leaders in busking festivals (Kazemi 2013) as it hosts numerous busking festivals. The geographical focus of this study is based on buskers situated in Toronto, Canada. The designated busking locations in Toronto consist of outdoor venues such as sidewalks, farmer's markets, and public squares, in addition to indoor venues like subway tunnels, covered flea markets, and shopping malls.

For this thesis I have designed and developed a social mobile app for buskers and patrons, which is programmed as a Java application for Android Operating System (OS) as a Minimum Viable Product (MVP) that could potentially be launched for beta testing in the real world with buskers and patrons that were recruited for this study. Market viability of this product and service is not evaluated in the scope of this study.

This research study was perceived to be a sensitive topic in the busking community, as it is considered a taboo to ask buskers questions regarding their income and the revenue that they are able to generate. It is worth noting that no

research has been found that investigates the present status of busking culture in relation to the intervention of digital technology, particularly to digital payment systems that are playing a dominant role in the everyday life of a busker.

Due to time constraints and limited availability of subjects, I was only able to briefly interview fifteen buskers for this study, as most buskers migrate to warmer regions in the winter season. From those fifteen buskers, I followed up with seven buskers who participated in the usability testing for the mobile app prototype. Toronto has a wide array of buskers that showcase the magnitude of their skills in many different ways. Festival buskers, musical or circus street performers and subway buskers are considered as the main categories in the field of busking. For the purpose of this study, my aim was not to highlight the characteristics of these buskers individually, but to consider them as one group. I surveyed and conducted usability testing with all four categories mentioned above to understand the implications on busking culture and to reach an informed conclusion.

1.3 Conceptual Framework

Within a conceptual and practical framework, this study explores and outlines a set of theoretical distinctions for understanding the implications of busking culture in urban spaces and the effect of emerging digital technologies on the same. The term "symbiosis" is introduced to highlight the interdependency between buskers, patrons, and public spaces. The notion of communities in public spaces and the impact of new media on urban spaces are studied to highlight the benefits of embracing buskers in cultivated modern societies. Robert D. Putman's concept of

social capital is explored with the possibility of applying the three components of "moral obligation", "trust" and "social networks" in relation to the busking realm (Siisiäinen 2000). "Social currency," a term derived from Pierre Bourdeu's social capital theory (Kaposy 2010, 86) is examined and applied to discuss interaction in social networks and communities, which may include digital (online) or public (offline) networks. To articulate this concept, Metcalf's Law is introduced in context to the effects of social networks on busking culture. The notion and impact of "cashless society" theory is presented through the words of numerous scholars, economist, and researchers that have proclaimed and predicted this occurrence. Lastly, the concept of hybrid and virtual communities is illuminated with reference to Howard Rheingold's *Smart Mobs* (Rheingold 2003). These theories are essential for understanding the future of busking culture as they provide context and language, enabling intelligent discourse on the evolution of our society and environment.

1.4 Overview

The remainder of this thesis paper follows and illustrates the overview for each chapter this paper encompasses.

Chapter 2 - Literature Review

This chapter unfolds by exploring the brief background on busking culture in Toronto in context to the struggles buskers have endured. I analyze the benefits and impact on the art of busking with the advent of smart mobile devices. Interlink between buskers and patrons are illustrated which highlights their interdependency

on each other. The benefits of social exchange through networks and the social value of busking in urban spaces is examined with the movement towards a cashless society. Lastly, this chapter discusses a new form of virtual community for buskers and patrons.

Chapter 3 - Research Approach

In this chapter, both primary and secondary questions are addressed. The research method used for this study is illustrated to highlight key tools used to rationalize the research approach.

Chapter 4 - Field Research

An ethnographic approach was undertaken for field research, which includes interviews and online surveys for both buskers and patrons. Participant's results and outcome are presented and analyzed.

Chapter 5 - Needs Assessment and Ideation

After analyzing field research in chapter 4, a needs assessment and ideation for a mobile app is identified through market analysis, and a project overview for the mobile app is also presented.

Chapter 6 - Design Process

The conclusion summarizes a need for a mobile app for buskers and patrons in the foreseeable future. Presented here are the challenges encountered along the way and

the future directions that would be explored by applying this idea to another community.

Chapter 7 - Conclusion

The conclusion summarizes a need for a mobile app for buskers and patrons in the foreseeable future. Presented here are project reflections, challenges encountered along the way and the future directions that would be explored by applying this idea to other communities.

Chapter 2 - Literature Review

This chapter focuses on a review of historical events and their implications within busking culture. Here, I explore the social and monetary exchange value of busking culture with patrons and urban spaces, as well as the effects on busking culture caused by digitalization of currency in a cashless society are investigated.

2.1 History: The battles of busking culture

The term busker is derived from the Spanish root word "buscar," meaning "to seek" (Merriam-Webster Dictionary 2014). Buskers are street entertainers that include solo musicians, bands, circus performances, statue acts, mime artists or painters in cityscapes, both at indoor and outdoor venues. They engage audiences and manipulate urban spaces, using the environment as part of their props such as an audience member, noise, weather, traffic and so on. "Yet the street performer succeeds in transforming urban *space* into theatre *place"* (Harrison-Pepper 1990).

The busking movement has undergone a fascinating evolution, fueled by hardships, sacrifice, and survival. Although presenting a historical overview is not the primary purpose of this study, highlighting some of the main turning points that buskers have endured throughout history will clarify the present realities of busking culture. In this section, buskers' and patrons' historical social contributions in urban spaces in various forms is studied. The impact of new media and adoption of new payment trends are discussed and analyzed to contextualize how they might evolve to the continuity of busking culture.

This brief historic overview presents the legality and struggles of busking culture, specifically relating to Toronto. Street performance also known as busking is a centuries old tradition of performing entertainment in the public spaces of cityscapes yet it comes across as "a very modern tradition" (Waterman 1990, 367). Busking culture has continuously evolved over the centuries and adapted to the changing environment. In contrast, to earlier years, buskers were out in the middle of the street, they were "in the forefront of people's consciousness, now they are more of a peripheral figure" (David Cohen 1981, 167). When disruptions such as vehicles invaded buskers' natural space in the twentieth century, they created an alternative space in underground subway stations. When concerts and movie theaters stole their audiences, buskers adapted to the conditions by playing outside those venues. Like many other professions, busking is a way of life and an art of living that requires knowledge of practical skills, powers of persuasion, and marketing techniques in order to survive.

Romans were perhaps the first to pioneer the art of street performing dating back to early medieval period. Today street performers, commonly known as buskers in Toronto, have an ancestral relationship with the historical figures of Goliards, Troubadours, Jongeleurs and so forth (David Cohen 1981). James Robbins has emphasized that "one of the most striking things about the history of traditional-music research in Canada is that it is uneven: as a pattern, it is irregular" (Smith 1996, 1). Buskers throughout history have faced numerous issues in urban societies with harassment and legality being amongst the major concerns. Toronto, however, is a

diverse, multicultural city that has come to embrace buskers from all over the world regardless of ethnicity, gender, age, or status.

From the early nineteenth century to the latter half of the twentieth century, buskers had to struggle for their livelihood. Even though the issue of legality had been addressed for the most part in the late twentieth century, busking remained illegal in certain areas of Toronto such as underground subway stations. Today, buskers in Toronto can only perform with a permit in designated public spaces and subway stations (Toronto Municipal Code, Streets and Sidewalks 1997).

Buskers perform with the hope of receiving monetary donations from passers-by. Even though buskers have a significant contribution in shaping the character of cities, these practices have been a "neglected performative" aspect of the everyday life in urban spaces (Simpson 2011). Despite the harassment, legality and city bylaws, buskers persistently struggle through harsh conditions and overcome day-to-day challenges in order to persevere.

Technological inventions have had some adverse effects on all live entertainers including people performing on the stage as well as on the streets. Radio, cinema and television were just the start of an alteration in the busking culture (David Cohen 1981). More recently the Internet, mobile devices and electronic payment systems have all impacted street entertainment in one way or another. These inventions, mediated through smartphones and other mobile devices, have clearly altered the perception of a place by superimposing a deeply engrossing virtual space onto the urban fabric.

Most passers-by pay less attention to street performances when they are engaged in activities such as listening to music through their headphones, browsing social networks, navigating with the help of an app, speaking to or texting a friend. Conversely, it may be argued that mobile devices such as smartphones have benefited street performers and added social value to their art practices by enabling the posting of comments and pictures on various social media platforms. This point will be further elaborated through insights received from the online survey and interviews of buskers and patrons detailed in Chapter 4.

2.2 Art of busking

In the 21st century, the rise of new media and contemporary digital technology has provided buskers; with tools to connect, explore, navigate and amplify their performances through many diverse means. One of the most significant changes taking place in this arena is the exponential innovation in the field of smartphones. In the digital era, innovation is occurring faster than ever before and has enabled buskers to find suitable locations to perform, connect with their audiences and promote themselves on social media platforms through their smartphones.

There are a number of considerations that preclude the art of busking such as finding and assessing the suitability of a "pitch" to perform for a street performer is extremely crucial (Simpson 2010, 141). The words *pitch* or *spot* in busker vernacular are used to refer to the space where buskers situate themselves. The location they choose depends upon a few variables such as foot traffic, weather, public events and the presence of retail stores or street vendors, all of which are factors that can impact

buskers' income. The relationship between the performance and the pitch where it takes place is one of "both constraint and inherent unpredictability" (Grosz 2001, 50). Thus, for a pitch to be chosen by buskers it is crucial that it should allow clear visibility, good acoustics and a sense of security for the establishment of an intimate relationship with their patrons. Through field visit observation, designated busking pitches were examined in outdoor street locations and indoor subway stations. The locations in subway stations were more organized as opposed to outdoor busking locations. Subway stations have designated marked areas, with yellow dotted lines embedded in the floor that set the stage for buskers to perform. Outdoor street locations do not have a specific marking however, in many cases, an iconic object such as a guitar case or hat is used to draw an imaginary boundary. This builds a form of temporary spatial social relation, which changes the use of space between buskers and patrons.

Even though the busking community has adopted new technological trends it has retained some of the busking politics and principles that apply to all buskers, including amateurs entering into the busking realm. For instance, the pitch can create a conflict of interest with other buskers. Usually, however, buskers are respectful of one another's pitches and are cautious of not using the same pitch to perform as it is considered discourteous in the busking community (George Mckenna & Memphis Deville, buskers interview by author, January 2015). In recent years, finding a decent pitch to perform has become extremely convenient for buskers with Internet, data, wireless technologies, and global positioning systems (GPS) integrated in their smart phones.

In order to pay acknowledgment for one of the greatest innovations in telecommunications history, we should give credit to the legendary inventors and engineers that have contributed to the birth of smartphones. Alexander Graham Bell, 1877 is of course legendary for inventing the telephone and just less than a century later we can thank Motorola chief executive Martin Cooper, 1973 for inventing the first portable handheld cell phone, informally known as the "Brick" (Goggin 2014).

The invention of smart phones and other mobile devices has changed our lives drastically in terms of how we move, behave, and interact. Most buskers surveyed, own a smartphone with data enabled packages. These "smart phones have become the central element of mobile ubiquity" (Goggin 2011, 148) with mobile applications playing a significant role in the emerging ubiquity. "These particular technologies of mobility at the intersection of mobiles, Internet and computing promise to make possible the idea of cultures characterized by, presuming, and grounded upon, ubiquitous information" (Goggin 2011, 149). The emergence of smartphones and mobile applications has made it possible to retrieve all sorts of information and perform actions on the go, without having to rely on desktop or laptop computers. Besides, simply making phone calls and sending text messages, smartphones are equipped with built-in mobile hardware and software application features. A definitive list would be too long to provide, but for buskers, the following are important: GPS navigation system, wireless fidelity technology, radio, Bluetooth, camera, motion sensors, media players, and mobile banking applications. This features amounts to an extremely powerful instrument that could enhance buskers'

performance, productivity and means of generating increased donations through the use of mobile banking applications configured on their smartphones.

In addition to finding an ideal pitch to busk, another key step that buskers practice is the technique to generate more donations is "seeding" money in their instrument case or hat at the very start of their performance (Twomey 2012, 23). This is likely to increase their chances of generating more revenue from patrons as it signifies the busker's worth. However, too much seeding can also disrupt contributions and send a wrong message to patrons. Seeding of money applies mostly to musical and circus street performers, as well as to subway buskers.

Patrons donate to buskers in many different ways; the most common form of contribution is donating hard cash or spare change. Other contributions include food, drinks, coupons or social promotions through online social networks, which can create various effects on buskers depending on the form of contribution (Simpson 2010, 152). Some patrons are drawn towards donating to buskers for the love of art, performance or music in the city, which adds life and vibrancy to the social sphere. There are moments when the performance is appreciated, and in those moments of appreciation patrons want to donate a token of gratitude to buskers. Some donate for personal reasons such as when an old recollection is evoked, while others offer support out of concern for the welfare of busking culture. Patrons also donate to buskers because they feel the need to do good for humanity.

Massumi defines affect in his introduction to Deleuze and Guattari's "A thousand Plateaus;" he makes it clear that "affect" is not a personal feeling, but rather a "pre-personal intensity corresponding to the passage from one experiential

state of the body to another and implies an augmentation or diminution in that body's capacity to act" (Simpson 2010, 9). Feelings are personal and factual, while emotions are social, and affects are pre-personal. Affect is an abstract experience of intensity, which cannot be expressed in words but is felt instead. In some practices, the experience of affects is more predominant in people and can change behaviour patterns in social practices such as in the busking culture.

Receiving monetary donations does not necessarily lead to an optimistic effect on buskers' performance. As Serres suggests, "the sound of the coin is not worth the coin" (De Beer 2014, 13). This can be interpreted to mean: donations contributed by patrons may not always create an uplifting effect on buskers and the social exchange might not be worth it. Donations can most certainly produce an encouraging effect, by motivating and enhancing buskers capabilities to perform, but it can also, paradoxically create, an adverse effect that can potentially demoralize buskers from performing at their best (Simpson 2010, 152). This primarily depends on how patrons empathize and contribute to buskers. The effect produced on buskers can vary each time depending on the way donation or appreciation for the performance is contributed by patrons. Hence, the connection between buskers and patrons is the most significant aspect of busking culture.

2.3 Interlink between buskers & patrons

It is crucial to understand the social relationship embodied between buskers and patrons in urban spaces. Buskers and patrons are inextricably interlinked and share an intimate, reciprocal relationship. Just as Mccracken states, "a performer would not

be complete without an audience in the same way that a store needs customers" (McCracken 2006, 45).

The concept of symbiosis is most commonly found in biology, but its application has vastly increased in a number of fields, including art, culture, communication, technology and urban spaces (Cartes 1997, Campbell et al. 2006, Gary and J. 2007). Albert Bernhard Frank first coined the term "symbiosis" in 1877, even though it is usually credited to Anton De Bary. He defined symbiosis as the "living together of unlike named organisms" (Peacock 2011, 220). Even though buskers and patrons bear individual characteristics in urban spaces, they evidently share the same space and time. The term "symbiosis" best captures the essence of the relationship between a busker and a patron. As buskers and patrons quite literally benefit one another, the term symbiosis is fitting to characterize their relationship. Granted, the ways they benefit from each other are vastly different; however, they are highly interdependent on one another. If it were not for patrons there would be no buskers, and vice versa.

The act of patronage has been in practice as a social institution that dates back to the early Renaissance (Jancke 2004). Patronage networks consisted of special fields such as art, literature or politics. During that time, joining the patronage system meant becoming someone's student and developing a special relationship with that mentor (Jancke 2004, 1). It is worth noting, that the symbiosis present between the teacher and student is very similar to a busker and patron; teachers would have not existed if there were no students and vice versa. Today, patrons are influential agents that support and endorse artists, performers or organizations in the

community by contributing various forms of gratitude which could include financial aid, food, shelter, appreciation or even publicity through social media networks. While some buskers do not rely on busking for their primary source of income there are others who are completely dependent on patrons' gratuities for their survival.

Invisible parameters are set between buskers and patrons that define the boundary and proximity of their interactions. Interactions between buskers and patrons can result in "microinteractions that can help constitute larger social structural phenomena" (Duneier and Molotch 1999, 1264). The symbiosis between buskers and patrons is amplified due to these intercultural microinteractions that become an important part of an individual's experience in urban spaces. The closing of distances between busker and patron creates potential for greater experience and microinteractions for the patrons and "this possibility of interaction has meant that improvising skills and the personality of the performer become more important" (Mason 1992, 11). Consequently, the symbiosis between the buskers and patrons becomes more fluid, producing stronger bonds in communities as well as in social networks to bring people together in ways that enrich urban spaces. This also increases the opportunity for patrons to interact with performers within close proximity. Additionally, this potentializes the enhancement of buskers' likelihood of gaining recognition through social media platforms as well as attracting substantially larger donations.

Buskers are able to gauge their performances by donations and response through applause or even simple gestures like nodding received from patrons (Simpson 2010, 152). Donations vary from person to person depending on the social

exchange value perceived by the patron. Buskers that can persuade and attract patrons to generate more donations create a positive environment for themselves. Since street performance or busking is not confined to a theatrical stage, creating trust and engagement with passers-by is one of the biggest challenges for buskers as patrons in busking culture are a result of "voluntary associations" (Siisiäinen 2000, 04). Patrons are the most important agents in busking culture that establish their appreciation for buskers by either giving them donations or endorsing them through social media networks. In fact, the exchange of social currency is one of the most effectively charged aspects of busking culture.

2.4 The exchange of social currency

New media technologies based on the Internet revolution have facilitated the emergence of all sorts of new online communities and communicative practices (Wilson and Peterson 2002). These online communities exhibit a wide range of social practices that enable multiple participants to engage with each other simultaneously to exchange a variety of goods, services and information.

Collective action across networks involving millions of users can be situated in the conceptual framework of social capital. The term, social capital, seems to have first appeared in Lyda Judson Hanifan's earlier discussions of rural school community centers in 1916 (Conrad 2007), in which Hanifan refers to social capital as "tangible assets that count for most in the daily lives of people: namely goodwill, fellowship, sympathy, and social intercourse among the individuals and families who make up a social unit" (Keeley 2007, 104). This was later, rediscovered and adopted

by Robert D. Putnam in his essay, "Bowling Alone." Putman draws out three social components from the concept of social capital theory: norms of moral obligation, social values of trust and social networks of voluntary associations (Siisiäinen 2000). In short, Putnam illustrates a broad vision of social capital and concretely links it with collaboration and community in complexly connected societies, by relating "social capital to features of social organisation such as networks, norms and social trust that facilitate coordination and cooperation for mutual benefit" (Putnam 1995). Social capital refers to the collective value of individuals, which enables social networks to emerge and in exchange enhances "social currency" of individuals through these social networks. Therefore, the concept of social capital is concerned with the investment in social relationships and individuals' social network value, which could be tied to the busking community. Putnam's theory lays the foundation for understanding the broader societal benefits and functions of online communities and networks in the context of the busking culture.

In the book, *The Wealth of Networks*, Yochai Benkler illustrates an example from Putnam's work on immersive societies with high social capital. Benkler mentions the dynamics of social networks that have come to "supplant real world human interactions, rather than simply to supplement them" (Benkler 2006, 362). The rapid growth of technology in online social networks has created a major shift in individuals that depend on other people's social relationships, leading to what Manual Castell refers to as a "networked society" (Castells 2000). For instance, in a networked society, buskers and patrons are dependent on each other for contributing something "good not because they know each other but [because] they trust that

their own action will be rewarded via the positive development of communal relations" (Siisiäinen 2000, 4). These norms of moral obligations can produce a feeling of "trust" between buskers and patrons. As Seligman states:

> *The emphasis in modern societies on consensus is based on interconnected networks of trust-among citizens, families, voluntary organizations, religious denominations, civic associations, and the like. Similarly the very "legitimation" of modern societies is founded on the "trust" of authority and governments as generalizations (1997, 14)* (Siisiäinen 2000, 4)

Trust is based on these interconnected networks that further create social exchange and build voluntary associations that are significant to individuals, especially to buskers in this case. In Putnam's conception of "voluntary associations" we find the most important aspect of social interaction and exchange that can influence and affect individuals in several ways. In the busking culture, voluntary associations accurately describe the relationship between patrons and buskers and their contributions in varied forms. One of the ways, in which patrons contribute to buskers, is by donating social currency through social media networks, allowing buskers to use their performances as leverage to amplify their reach. This in turn could increase buskers' social capital and help build their reputations which in turn can translate into tangible enhancements to financial capital.

Social currency is derived from social capital theory, which was developed by French sociologist Pierre Bourdieu. Social currency is representations of sentimental value exchange between people that can either take shape in physical (offline) social spheres or virtual (online) platforms through social networks and online communities. Social currency can boost the value of buskers when patrons endorse

them via social media networks such as Facebook, Twitter, YouTube, Instagram or other social networks.

On social media networks instrumented through smartphones, buskers receive acknowledgment in the form of comments, likes, emoticons; this is a type of social currency that is exchanged between patrons and buskers. According to Jana Boyd, "new social technologies have altered the underlying architecture of social interaction and information distribution" (Boyd 2007, 1). Through these social media networks, buskers are able to promote themselves and inform their fans or followers about their whereabouts and upcoming performances, creating opportunities to boost revenue.

Buskers embracing social media networks as part of their practices, can amplify their fan base, resulting in the creation of the network effect which is based on Metcalfe's Law (Odlyzko and Tilly 2005, 2). Metcalfe's Law is frequently applied in businesses plans and strategic planning to forecast future trends and profitability. Metcalfe's Law states that a network's "value is proportional to the square of the number of users" (Odlyzko and Tilly 2005, 1). For instance, if you have 100 connections on social media networks, then the total value of network is 100 squared or 10,000 times greater than the value of one user. If Metcalfe's Law is applied to the busking community's development of social capital, it could in return produce network effects involving the influence of other forms of capital. According to certain buskers, when a patron acknowledges a busker's talent by posting comments, pictures or videos instantly on social media platforms through their smart phones, their friends' and family's network can connect, reach, like and in turn share with

their own networks as well (Peter Cavanagh, busker interview by author, October 2014). This can also produce network effects as their reach rises logarithmically through these interactions.

The information distributed on social media networks enables buskers to reach a larger audience, which in turn helps in building affiliations, conversations, recognition, and trust through those networks. Through these patterns of behaviour, network effects spread through users' circles of friends and the reach keeps multiplying with the acknowledgement of each user. Hence, it would be valid to argue that creating a mobile social application could result in the formation of a virtual community for buskers that could help connect them to other buskers, generate more revenue and connect with patrons that wish to be a part of the online busking community.

2.5 Social value of busking culture in urban spaces

Busking is a passion and a form of artistic expression that transforms public spaces into performance places which in turn enhances city life experiences and brings people together. Buskers provide something to the everyday life of a city (Harrison-Pepper 1990). They affect how people feel and respond sometimes by developing relationships regardless of ethnicity, religion, gender, age or status, helping communities to flourish in urban spaces.

These urban communities are formed in public spaces with the collective participation of individuals who come together as public. According to Jürgen Habermas, "the bourgeois public sphere may be conceived above all as the sphere of

private people come together as a public" (Habermas 1962, 27). Street performance in urban spaces encourages community building by supporting neighbouring businesses such as street vendors, food trucks, retail stores, bars and restaurants. These shared spaces are public spaces, but combined social activities attract foot traffic, weaving them into community destinations. Hence, the interdependence of public spaces, street performance and private people connects them in ways that benefit important aspects of social urban spaces. Just as the existence of street performers cannot be detached from their patrons, similarly, the existence of urban spaces cannot be separated from patrons, which constitute the existence of public spaces. Elizabeth Grosz has argued that urban spaces and the human body are interwoven. Grosz, further articulated this in her classic paper "Bodies-Cities" by illustrating how performance[s] establish urban spaces and [the effect of] urban spaces on bodily performances (Grosz 1998). Thus urban spaces and people become inseparable and strangers become neighbours as they mutually enjoy the spectacle of street performance.

As Jane Jacob mentions in her book *The Death and Life of Great American Cities*, streets in cities serve many purposes besides carrying vehicles, and city sidewalks – the pedestrian parts of the street serve many purposes besides carrying pedestrians (Jacobs 1961, 29). Street performers or buskers also contribute towards a safe environment for pedestrians in urban spaces. As Susie Tanenbaum points out in her book *Underground Harmonies*, "musical performances increase safety in the subways by pacifying potential criminals" (Tanenbaum 1995, 90). Since performances bring

people together, as explained by Jacob's eyes on the street concept, they decrease the potential of theft and immoral behaviours.

"Street performance is an art form accessible to all, absent of admissions fee" (McCracken 2006,45). Since buskers are not limited by the confines of a theatrical stage, they have the freedom to interact with their patrons in a more intimate, rather unscripted way, by crafting audience and ambiance as part of the performance. Becker states, "Occupational identities contain an implicit reference to the person's position in the larger society, tending to specify the positions appropriate for a person doing such work" (Becker and Carper 1956, 346). For buskers, it gives them the freedom to express themselves in urban spaces without succumbing to the four walls of a corporate office, which in turn gives them the liberty to move freely whenever and wherever.

Many pedestrians on street sidewalks and underground subway stations walk past too quickly to take in their surroundings. In such cases it is not only a loss for buskers who generate less revenue, but also for the city as it has the potential to lose street art in urban spaces that could further disrupt businesses for other industries. This is why it is extremely important for buskers to improvise their performances, so that they do not come across as monotonous to their patrons in everyday life.

Buskers and street performers have a legitimate way of earning a living. However, people in the past have regarded them as beggars due to the outdoor and indoor venues they share with panhandlers (Smith 1996). Buskers in the twenty-first century are well regarded in the community for their social credibility, not only because buskers bring music to our ears or delightful sights to our eyes, but because

they contribute character to societies on a larger scale by promoting tourism, community building and culture through various art practices.

Buskers contribute to uplifting the economy by drawing tourists in cities all around the world, from the bridges of Paris to Quincy Market in Boston to numerous busker festivals in Toronto. These busking festivals facilitate buskers to bridge the gap between other international buskers, connecting performers from all around the world, which in turn creates numerous job opportunities in the entertainment industry (Brant Mathews, FireGuy busker, interview by author, January 2015). Many great performers have started out as buskers; Canadian musician and composer Loreena McKennitt busked with her harp down at the St. Lawrence Market in Toronto for many years (Ratuski 2012). One of the world's biggest stars, Justin Bieber started his career by busking on the street in Stratford, Canada (Daily Mail 2011). Guy Laliberté was a highly respected street performer in Quebec before he turned his little busking troupe into Cirque du Soleil (McCarthy 2014), which is one of the biggest live entertainment groups in the world today.

These buskers are not just role models but a source of inspiration for many young and aspiring buskers since they have altered the face of busking culture. Therefore it is understandable that for some buskers this life choice is considered to be a platform for having their talent discovered. It is easy for them to showcase their talent with the possibility of becoming a renowned performer, since busking in urban spaces does not require much in terms of financial investment and recognition does not cost any money. A report from Downtown Yonge Business Improvement Area evaluated estimates that on average, more than a hundred thousand pedestrians a

week cross the intersection of Yonge and Dundas, Toronto (The Downtown Yonge Business Improvement Area, 2014). Buskers performing at sites like Dundas Square can come in contact with more than twenty thousand people a day. What is more, the leverage buskers can receive from patrons through social media networks instrumented through smartphones can have a multiplier effect. Upcoming or young buskers can benefit from these urban spaces by creating an audience following, acquiring recognition through talent agencies, gaining social credibility and earning a living by busking at sites like Dundas Square or underground subway stations of Toronto. Street performance or busking is a distinctive part of our urban spaces, making it an integral part of the larger social media phenomenon.

Putnam states, as active participants of a cultivated society, it is our obligation to contribute to the welfare of our communities (Putnam 1995) therefore, this type of engagement in social activities can encourage busking and different forms of art practices.

2.6 Busking for tomorrow's society

The advent of a cashless society has been a topic of discussion for many years now and it is by no means a new concept (Turoff 1975). It may be argued that we are still in the transition phase heading towards a cashless society, as the use of cash and other paper promising notes like cheques are still prevalent in most civilized societies today. Many economists and researchers have heralded the arrival of a cashless society that will eliminate the use of cash and cheques, with the possibility of digital payment systems predominating world-wide (Papadopoulos n.d, Herzberg 2003,

Cohen 2004; Henderson 1987, Kurtzman 1993, Miller n.d, & Khan 2009). This has led others, to argue that the increasing use of cashless payments, while not entirely supplanting the use of tangible cash, will continue to create new market opportunities in the digital sector to supplement cash instead (Woodford 2000).

A cashless society can be defined as a "virtual representation of the society's structure that intangibly underlies the movements and transfers of goods or services" (Turoff 1975, 319). To further elaborate, cashless societies can be characterized by the complete immersion of money in electronic networks and the replacement of cash, made possible by new media technologies (Papadopoulos n.d).

New media has given consumers the appropriate technology and interface to make payment transactions through personal Internet enabled devices. Increasingly smartphones and other mobile devices are treading the way forward towards mobile payments. These new technological payment trends, instrumented by smartphones create new possibilities of fulfilling social and cultural sustainability in a society. Increasingly, people are embracing alternative methods of payments in the form of digital currencies instrumented through smart phones, and other mobile devices. These online systems are becoming an obvious choice to replace established modes of payment in day-to-day commerce for buying, selling, and donating to charitable organizations.

Today, high penetration of smartphones and other internet-based mobile devices have revolutionized digital payment systems and the way in which society interacts, given that there may be ten billion mobile Internet enabled devices in use globally by 2018 (Cisco Global Mobile Data Traffic Forecast Update 2013). Digital

technology has created new innovative dynamics for payment systems facilitated through smartphones most commonly known as mobile wallets. There are three prominent categories of mobile wallets: one that is facilitated through a smart card application stored in smart mobile devices with banking details and security authentication tools which functions similarly to a debit card (Flatraaker 2009). Another, by refilling digital currency facilitated from smart cards into our smart mobile designated application that are used to make smaller purchases, for instance, using a Starbucks application to buy coffee or food. The third, uses a smart mobile device to make online purchases supported through a credit or debit card on various e-commerce websites. This latter method of payment is widely known as 'm-commerce' and has gained popularity as it replaces the need for cash or credit cards and provides convenience, security, and other affordances of mobile payment systems.

Pew Research Internet Project, investigated opinions of industry experts about what people's "wallets" may look like in 2020. 65% of respondents supported the idea of fully embracing and adopting the use of smart phone devices by swiping for purchases, eliminating the need for cash or debit/credit cards (Pew Research Center's Internet & American Life Project 2014). A study by PayPal reveals nearly one in four Canadians between the ages of 18 to 24 prefer carrying a smartphone over a wallet. Three quarters of Canadians reported they were unable to pay for something, as they were not carrying any cash (CNW-Newswire 2013). Studies by Visa show that Americans are twice as likely to carry a phone as opposed to cash. People between ages 18 to 34 are four times more likely to carry a phone than to

carry cash (Rommann 2014). Indicative statistics highlight the social contextual problem for the busking culture in the digital age, leading to the conclusion that the future of busking lies in the hands of young patrons and digital wallets as payments continue to become electronic and smart mobile devices evolve to become the hub of our financial transactions.

One in ten Americans has made charitable contributions by text message through mobile phone (Pew Research Center's Internet & American Life Project 2014). Traditional models of charitable giving are rapidly evolving into a new paradigm for donor engagement, with smartphones and other mobile devices at the core of how people connect with their favourite causes. According to a survey by eMarketing, the digital research and marketing company reported, that mobile payment adoption will top fifty eight billion dollars by 2017 from one billion in 2013 (eMarketer 2013). Mobile wallets have been available in Japan for more than six years now with over seventy million smartphone users enjoying a tap and go functionality (Fitzpatrick 2012). By using mobile devices for payments, transactions become faster and more convenient as users can simply tap and pay. Carrying a single mobile device with all your payment applications and banking information makes it easier to carry and less bulky compared to the old fashioned traditional wallet. PayPal president, David Marcus, calls it "Money 3.0" (Rommann 2014). The inventor of Casio Digital Diary mentioned in one of his interviews, "paper money will disappear as transactions become digitized in the next three decades" (Chatterjee 2010). This has already become evident, as government organizations, businesses and private sectors

are showing their interest by adopting new forms of digital payment trends (A.M.Al-Khouri 2014).

Today, "Cashless transactions are on the rise and commerce is trending away from paper based money and coins" (Strauss 2013). Due to new digital payment options instrumented through smartphones, it is worth observing the impact on art practices such as busking since their reliance for survival is primarily based on hard cash and spare change. It would also be worth noting the critical uncertainties affecting urban spaces and our local art community. They could possibly face greater challenges for generating a decent income in the foreseeable future if the use of cash gradually falls and digital payment systems lead to dominate the way forward. Of the sampled buskers, a few showed profound concerns in the drop in their daily income, which they have noticed over the last few years including (Peter Jarvis, circus performer; Dennis Charlemagne & Michael Green, subway buskers interview by the author, December 2014) forcing them to search for part time jobs. Some buskers are already accepting cashless donations through a smart device called 'Square'. This device plugs into a mobile device and donations can be accepted by swiping a credit or debit card (Ashanti 2014). This solution works well for buskers that are looking to increase their revenue stream and facilitates patrons carrying no cash. Another concern worth noting is the fact that CDs and DVDs have become obsolete in the digital world. They are trending towards digitalized formats, which can either be easily streamed or downloaded through various portals, such as iTunes, Spotify, YouTube etc. Buskers and Street performers in urban spaces that sell merchandise such as music albums on CD's, would also have to find alternative methods to sell

their merchandise online as we move towards a cashless society embedded in an enmeshed digital network.

The evolution of Internet has provided another layer to mobile commerce that supports many alternative methods of mobile payment technology. Two decades ago, where the magnetic strip revolutionized payment by plastic cards (credit/debit), today it is shifting to near-field communication (NFC) and other fast-evolving technologies such as Beacons that are facilitating the movement of payment in mobile technologies (Rommann, 2014). Some of the major players in payment applications include, PayPal, Brain Tree (a subsidiary of PayPal), Stripe, Google Wallet, Apple Pay, Soft Card and CurrentC. Besides these payment applications, hardware technologies such as, Wocket, Square and Coin are also emerging to supplement payment services. Bitcoin is the world's first decentralized digital cryptocurrency, which is taking users to a whole new virtual spectrum (Taylor 2013).

For digital payment technologies, security and trust is a critical concern for both consumers and service providers, as both parties must keep confidential information intact. Mobile wallets offer a more secure interface in comparison with computers as mobile wallets are generally less vulnerable to compromise (Herzberg 2003). Another advantage of mobile wallets is that users can view their balance, log information, as well as receive receipts of payments on their smart phones. Some researchers suggest, "tangibility of cash increases awareness of actual transaction costs that can affect emotions, judgements and behaviour" (Khan 2009, 26). Payments through digital technologies remove us from tangible currency of notes

and coins, resulting in those emotions and feelings potentially being lost in the process.

The traditional gesture of dropping contributions to buskers and street performers is a beautiful way by which patrons show their appreciation to the artist. However, it is evident that there might be a need for a social tool for buskers in the foreseeable future that caters to digital methods of donating to them in the advent of a cashless society.

2.7 A Hybrid Community for Buskers & Patrons

Howard Rheingold claimed in his book *Smart Mobs*, that within the next decade the world would be saturated with an invisible mesh of smart sensors, wires and tiny microprocessors that would enable communication through these smart sensors controlled with a singular mobile device at the convenience of our fingertips (Rheingold 2003). Rheingold's prediction was accurate as the world we live in today, smart mobile devices enable us to navigate, interact and communicate at a much faster pace. The growth of smart mobile devices augmented with Internet and integrated with global positioning system (GPS) has broken all boundaries between physical and digital spaces as the presence of location awareness in smart phones is increasingly dominant. In recent years, with the evolution of Internet enabled smartphone devices, attention has dramatically shifted from static to mobile interfaces bringing social networks into physical spaces defined as hybrid spaces (De Souza e Silva 2006). "Hybrid spaces are mobile spaces, created by the constant movement of users that carry portable devices continuously connected to the

Internet and to other users" (De Souza e Silva 2006, 262). Hybrid spaces merged with physical and digital spaces in a social environment create mobility of users that can encourage freedom of speech and allow vivid imagination to flow. These smart location sensitive devices have enabled people to build larger virtual communities where people can easily navigate, locate, and share ideas instantly through online social media networks. These new modes of technology have enabled social interactions through cross-virtual platforms of communities fused with social networks. Rheingold mentions, "Like every previous leap in technological power, the new convergence of wireless computation social communication will enable to improve life and liberty in some ways and to degrade it in others" (Rheingold 2003, xviii). The liberating fact of using virtual communities is that one does not need any formal training to be a part of the online community and is free and open for all with the exception of those who cannot simply afford it. These virtual communities enable social microinteractions and create meaningful connections between strangers. In context to the busking culture, these social microinteractions instigated via a mobile app could lead to building a new form of virtual community for buskers and patrons that could be socially and culturally beneficial for both.

The rapid growth of Internet has amplified the development of virtual communities that offer an environment where people can exchange information, share experiences or express their feeling towards a community's subject matter (De Valck et al 2009, 189). Individuals joining these online networks become the driving force behind converting these social network-based platforms to virtual communities. In recent years, virtual communities have revolutionized the concept

of community in terms of space and neighbourhoods in relationship to social networks (Wellman and Gulia 1997, 2).

With the ubiquitous presence of technology dispersed in our environment "personal area networks enable the creation of proximately-aware applications in support of face-to-face collaboration" (Rheingold 2003, 171). These smart devices that support face-to-face interactions instrumented by our smartphones enable "virtual, social and physical worlds to collide, merge, and coordinate" (Rheingold 2003, xviii) with one another. Such applications include Radio Frequency Identification, most commonly referred as RFID tags, Bluetooth Low Energy Beacons (BLE), Near Field Communication (NFC) and Global positioning Systems (GPS).

These hybrid communities of virtual, social and physical are channelled through smart mobile applications from users' mobile devices. One such example includes Uber, which serves as a social virtual platform fused with the physical world. This mobile app has devised a community by linking people who want to drive customers to those looking for a ride, by simply requesting it to their location. This mobile app, integrated with GPS, can enable users to search for a driver near his/her location, which in turn notifies the driver for passenger pickup. Another example of a mixed reality mobile app is Lorax. Lorax enables users to find exclusive deals by supporting local cafes in their community with paying through your smartphone. This mobile app is integrated with Bluetooth and GPS to allow check-in and payments. Mobile applications like these create an interactive tangible experience through these virtual platforms that are instrumented through our smartphones.

A mobile app for buskers and patrons could function as a peer-to-peer social micro donation tool bridging the virtual and physical world together for contributing, locating and supporting nearby buskers throughout the city. The future of hybrid communities is connected through groups and networks that contribute in making these communities powerful and active. For such an application to positively impact the busking community it would be imperative to create awareness for this social tool in a way that could result in forming a new kind of virtual community designed to cater the needs of buskers and their patrons.

Chapter 3 - Research Approach

This chapter focuses on both primary and secondary questions to be addressed and the rationale to support them. The research method is illustrated to provide the foundation of the study. An ethnographic approach was commenced by analyzing the outcomes of online surveys and semi-structured interviews with both buskers and patrons.

3.1 Research Questions

This research study takes the form of an anthropological perspective and the questions this study seeks to investigate are:

Primary Question:

- How might mobile technology be used as a tool for augmenting methods of making monetary and non-monetary contributions to buskers?

Secondary Questions:

- How are patrons connected to buskers and how do they value or impact urban spaces?

- What are the implications of a cashless society in context to the busking culture?

- Are interventions of digital technology better or worse for the busking culture?

- Is there a need for a mobile app for buskers and patrons?

3.2 Methods

In order to explore these research questions, this study utilizes ethnographic explorations and prototyping techniques. An anthropological approach is used for identifying the contextual problem in the busking culture in relation to an advent of a cashless society. A combination of conceptual framework, ethnographic study and prototyping is used to investigate busking culture to gather insights and core needs from both buskers and patrons. Multiple iterations were developed for the mobile application; given the nature of work, this study follows a "Human-Centered Design process for Interactive Systems" (HCI) (ISO 9241-420, 2011) to demonstrate that users' perspectives are valued and reflected upon. Human-Centred Design is mostly considered as primary research with key end users. This research process has reflected on some key points in understanding the context of navigation for users in the mobile app, their environment and the tasks completed per scenario for each section. End users were involved throughout the iteration process to ensure the design and flow of the mobile app is in accordance with their needs.
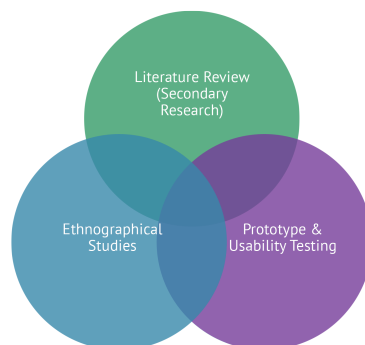
Figure 1 Research Methods

The above Venn diagram represents my process for synthesizing these research methods used for this study.

3.2.1 Ethnography

Ethnographic methods were used to investigate the cultural phenomena surrounding the busking community that included qualitative design exploration techniques through deep understanding of social interactions, behaviours and perceptions. As a process in ethnographic studies, most traditional tools for carrying out fieldwork includes in-depth data collection through participant observation, recording (audio/video), interviews and surveys. Ethnography arose within the discipline of anthropology, which can be traced back to cultural anthropological studies that originated in early 20th century (Creswell 2006, 69), as a means "to grasp the native's point of view, his relationship to life, to realize his vision of the world" (Malinowski 1922, 25). Understanding the world from the participant's point of view is extremely important for a designer. Classical ethnography for collecting data from fieldwork can be time consuming and strenuous and can take months or even years of immersion to understand the full depth in groups or communities. Therefore, this study used an approach of a 'purposeful sampling strategy' (Creswell 2006, 76) to decipher selected data that was most relevant to the study. Because of the 'purposeful sampling strategy', the data is condensed which helps the researcher to articulate the implications of design and formulate a perception.

Principally, the tools employed for this fieldwork are based on interviews and online surveys with buskers and patrons along with participant observation and a video documentation at Scotiabank BuskerFest, Toronto in August 2014. At the festival, I observed performances and participants as part of the audience. In

addition to the festival, I also conducted field visit observations at designated busking locations at both indoor and outdoor venues.

With informed consent from participants, two separate online surveys were employed to gather insights from buskers and patrons. In the online survey for buskers, forty buskers participated and shared their opinions on current donation status, as well as their connection with social media. The online survey for patrons, was completed by fifty-five people who confirmed their current payment methods and their association with social media in context to the busking culture. To gain a deeper understanding of users' viewpoints, I initiated in-person interviews and usability testing with seven buskers. Interviews and usability testing were also conducted with ten patrons, to gather insights on the medium fidelity mobile app prototype. These interviews were accompanied by semi-structured questions and user test tasks for the second and third prototype testing, which each took approximately an hour to complete. To my surprise, the results generated from observations, online surveys, interviews and usability testing proved to be rather remarkable.

During my interview with buskers, they shared numerous informal experiences from their everyday busking routine, which provided insights on busking culture, the various forms of currency exchanged and interactions between other buskers and their patrons. In order to recruit additional buskers for interviews and usability tests, I used a technique called snowballing. Snowballing is a method used by asking a participant to refer or recommend other participants for the study (Crabtree & Miller, 1992). I found this method more productive for this study as

reference from one busker to another was comparatively more cooperative than directly contacting buskers through their websites or Facebook pages. The experiences shared by buskers in their interviews may be subjective and vary from busker to busker depending upon each busker's category. Feedback from interviews held with patrons was extremely enlightening and usability tests conducted with them provided an in-depth analysis of whether there is a need for such a tool and what features of the app would engage them to use it in the future. These ethnographic studies helped formulate possible solutions to proceed with the contextual research problem for iterating the prototypes that best suits the needs of both buskers and patrons.

3.2.2 Prototyping

Prototyping was used as a technique to test the idea for the mobile app Hatter with key end users for making better design decisions, exploring functionalities and refining specifications prior to final delivery. Through user testing with prototypes, researchers or designers can evaluate "human expectation against the designed artefact in question, determining whether something is useful, usable and desirable"(Hanington & Martin 2012, 74).

In order to explore the contextual problem investigated in this research, three prototypes were developed and tested with key end users, taking into consideration the secondary research on subject matter and results from the ethnographic study. Upon conducting usability testing with both these prototypes, I received some exceptional insights and feedback along with a few criticisms, which helped me to

better articulate my analysis and consolidate the prototype in context to my research question.

3.2.3 Usability Testing

With the help of usability testing on prototypes, projects can be observed and evaluated through the lens of the user's experience. User test tasks were developed for the second and third prototype in order to take users through various tasks during the usability-testing phase. Test tasks are brief narratives used for usability testing to guide users through short journeys that are prearranged to achieve results based on the actual navigation flow in the design. With the help of these tasks, I was able to gauge some minor problems in design and functionality on the basis of users' reaction and feedback. These design iterations were conceptualized for further evaluation for this study.

It is worth noting that ethnographic studies have become a common approach to HCI research and design, adopted as an "encounter between social sciences and technological consideration" (Dourish 2006, 543) that can shape the design of the prototype. Usability testing for a human-centred design process is a critical component for this study as implementing users' feedback into the prototypes permitted room for new possibilities to emerge.

Chapter 4 - Field Research

In the scope of field research, an ethnographic approach was adopted which included observations, interviews and online surveys with both buskers and patrons. The evaluation of outcomes that resulted from this process combined with secondary research via relevant literature review, guided me in the needs analysis and ideation for a social app for the busking community.

4.1 Interviews with Buskers

In total, I interviewed and carried out usability testing with seven buskers. In the interest of adopting a more cohesive approach to my research, the interviews listed here only represent those buskers that participated in the usability test. The criterion for selecting these buskers was to highlight the diversity of the individuals who are a part of the busking culture. Interviews with each busker were approximately an hour long, conducted using semi-structured questions, in various coffee shops in the Greater Toronto Area. The semi-structured questions were derived from the contextual research of my study and their focus ranged from the subjects' everyday busking experiences, to their interactions with patrons, various forms of contributions, prevalent donation implications for busking culture and lastly if there is a need for a mobile app that could facilitate patrons via an alternative method of contributing to buskers.

4.1.1 Participants

Silver Elvis (Peter Jarvis)

I interviewed Silver Elvis on August 22, 2014 in downtown Toronto. He is based in the city and has thirty years of experience in the corporate entertainment business, mainly television and film. Besides the corporate world, he now has almost fifteen years of busking experience performing Elvis statue acts in different parts of Toronto. While performing his statue acts, which typically last for a duration of 3-5 hours, Silver Elvis has observed some behavioural patterns in people. He noticed while performing at a shopping mall, some women would donate to him while their children played in the atrium. Paraphrasing Silver Elvis's comments, 'these women would dig in all the way to the bottom of their bags and unload their change in my container with mostly very small change'. He mentioned that this type of donation creates an adverse effect on buskers, since the donation received is not in acknowledgement of the performance, but is contributed for convenience. It is worth pointing out that contributions made by patrons through a mobile app could be a solution for not carrying all that change.

On one occasion, Silver Elvis was asked to perform at the grand opening of one of the Starbucks in Toronto. Since the Starbucks's manager did not have enough funds to hire an entertainer but still wanted to attract new customers, he offered Silver Elvis $300 worth of coffee instead in exchange for his performance. This form of exchange, called the barter system, can benefit both buskers and people by bringing them together in urban spaces. In Silver Elvis's case, he benefitted from this

occasion in a number of ways. Besides receiving free coffee and donations from patrons and new customers, he also got publicity and social credibility for his art practice in social spheres, both offline and online. Lastly, Silver Elvis confirmed that he has seen a tremendous drop in his donations in the last few years and that on many occasions people passing by have inquired if he accepts donations through debit or credit card, as they had no change, but still wanted to contribute.

Peter Cavanagh (The Sidewalk Crusaders)

I have been working closely with Peter Cavanagh and conducted his interview at a café in downtown Toronto on November 28, 2014. Peter is a young musician who plays the saxophone, clarinet and flute in a number of outdoor locations in Toronto. He formed a band 'The Sidewalk Crusaders' in 2012, which now has many followers. The band enjoys busking, as they are able to connect with people together based on the commonality that they share through their music and choreographed performances. This leads to a positive environment resulting from a stronger connection being established between buskers and patrons. This connection makes patrons want to promote them on social media networks, which in turn adds credibility and value to the band. Peter mentioned that apart from patrons donating coins and bills, they also receive many other items from patrons such as food, drinks, coupons and so forth.

According to Peter, smart phones have not had an unfavourable impact on busking culture. However, he has noticed, passers-by engaged on their phones pay little or no attention to their performance and therefore, do not donate or acknowledge their performance. For the most part, they have found smartphones to

be very beneficial in that they give patrons access to social media platforms on the go, which in turn helps reach out to people on a broader scale than would have been possible otherwise.

He liked the idea of a busking app and suggested a feature where buskers could quickly and easily tell their patrons when and where they plan to play. A busker could zoom in on and click on a certain location, and everyone "following" the busker on the app would immediately know where the busker would be playing. Peter expressed, if the app had this feature, buskers would also get into fewer conflicts with each other. As a busker would know ahead of time where another busker would be playing. Peter found that quite often, with his group, they would decide to meet at a pitch, and once they got there would find out that another busker had already claimed the pitch before them. By buskers giving each other advance notice through the busking mobile app, the busking community would not waste time getting to a pitch, to find out that it is already taken. He thought this idea would benefit the culture of the city, as people would be able to easily see their favourite buskers, which would more than likely lead to larger crowds and a greater and growing appreciation of the arts.

Fire Guy (Brant Mathews)

Fire Guy is a very influential figure in the busking community of Toronto, with twenty-one years of experience performing circus acts, recruiting buskers through his own talent agency as well as organizing busking festivals. I interviewed him on January 16, 2015. He thought the idea for a mobile app for buskers was timely and original and remarked, "You are helping buskers put more in their hats".

He believes that everyone now has smartphones and as people start to use their smartphones as wallets, there is definitely less change in their pockets. So it stands to reason that there needs to be a uniform phone cash distribution system for small cash so that donating money to buskers is easy. If this app is only busker centric, the chance for enough people adopting it might be less, however this could be used as a template for a way of giving small charitable donations; something that is less formal than PayPal and more formal than cash, where there is no technological barrier. "I would like to see a day where someone comes up to me and taps using their phone and $5 dollars go straight to my bank account. I think in 5-10 years this type of thing won't be as novel".

For Fire Guy, as a circus show, the main question is how to get a collection of people to come up to his hat and put in contributions or create a peak moment in the show when everyone comes together to bring money into the hat. "How quick is it when you have a 5-dollar bill, walk up to hat and throw it in? Pretty quick eh. How quick and easy is it when you walk up with your smartphone device and tap? Does the performer do a uniformed call to action? New technology is bringing in new behaviours such as the 'selfie posture'. No one knew it few years ago and now everyone does it. So maybe there could be a song played when donation is made, or a reward or points system."

The idea of using buskers is good as it is a pseudo charitable donation. "The best of any industry takes care of themselves; if this is a blanket solution for the subway performers who rely on the dollar here and there from passers-by for their livelihood, they could possibly get evacuated with the loss of currency or benefit

from this mobile app." Fire Guy felt there was a need to pursue an alternative method for donation to buskers. However, having pursued a donation mechanism facilitated by QR codes in the past, he has seen failure and resistance from performers who felt that their earnings would be reported in the system, which in turn would make them liable for taxes. He personally hasn't noticed a large drop in his earnings, however, he confirmed that people have told him a number of times that they need to go to the ATM machine before they can contribute, so there is a need for this mobile app.

George Mckenna

George has been busking for the last five years as he feels passionate about it and finds busking liberating. He started busking when he came across another busker, who was playing the drums at Dundas Square, hit it off with him and got hooked on busking. I interviewed George on January 16, 2015 at a café close to Bathurst and Bloor.

"There is a massive need for a mobile app for buskers as we are like diamonds in the rough. With the right kind of networking skills, buskers that are talented can be cultivated into society where they are contributing to society and getting something back. People think buskers are beggars, when they are not. There is a huge merit behind what you are aiming to do." Since the outrageous growth of smart phones he has noticed an increase in the donations he receives. However, he feels that people take pictures or make videos but don't upload them on social media networks. "It would be great if there was a way to integrate a social media

component into the busking mobile app you are creating which in turn could help in connecting people walking by (enthusiasts) who capture performers."

Michael Green

Michael Green is a subway musician in his mid 50's who has been playing the guitar at various subway stations in Toronto for the last twelve years. I interviewed Michael on February 10, 2015 at the Bloor subway station. He stumbled into his career as a busker when he lost his job as an ironworker. "It was completely unintentional," Michael emphasized. When he was younger he used to jam in a metal band, but was always in the background. When he started busking it took him a while to get used to performing in public; playing live in front of a massive crowd of people takes great confidence. It also took him about a year to understand that he is not a panhandler, but a busker.

While busking at subway stations, Michael encounters numerous people from all walks of life. Today he received a hammer and a rope from a patron, in his words, "the patron liked my music but didn't have any spare change so in exchange he offered a hammer, tools and a rope." Every single day is different from the other, full of surprises. He felt that children enjoy his music the most as they don't have any preconceived notions about the songs and when they start dancing to them it is priceless for him.

Michael felt that there is a need for an app like this but that it would probably be more useful sometime in the future, as it did not seem to be imperative at the moment. Having said that, he has seen a slight drop in his donations in the last few years, albeit not a significant one. He mentioned the drop could also be due to the

economy of the city, for instance when the economy crashed in 2008 or when SARS happened in the 2000's. He concluded by saying, "or maybe it could just be because of the advent of a cashless society."

In Michael's experience he doesn't find smartphones to be an obstacle for his busking business. He said, "People usually take their earplugs out to listen to us and if they do, there is a higher chance for them to donate to us." When I briefed Michael on the project concept, one of the features that resonated with him was the idea of using this mobile app to find other buskers playing in the city, which he thought would help him plan his day.

Bella Magic (Giordana Huphries)

Bella Magic is a young magician and illusionist, who started her career performing musical variety acts for burlesque shows, however since she did not feel comfortable stripping, she found another way to peruse her passion and soon discovered herself immersed in the world of busking culture. She ended up falling in love with the art of circus performing, mainly juggling and magic and since then it has become meditation for her.

I interviewed Bella on March 19, 2015 at Ontario College of Art and Design (OCADU). Besides street and festival busking for the last two years, she also performs at birthday parties, nightclubs and corporate events. She finds busking on the street of Toronto elevating as it creates new opportunities to promote her talent and collect money. In the last two years of busking, she has not seen a significant drop and receives an average of $2 per person. However Bella confirmed that a

handful of experienced buskers have expressed a significant drop in their daily donation. She mentioned buskers that used to make $600 now make $200 a day.

Bella has come across many passers-by while she performed who had no cash to contribute and wanted to donate later. She feels a mobile busking app could facilitate those patrons not carrying any cash and also give them an option to donate later, if they liked the show. She concluded by saying, circus performers always ask for donations at the end of the show and some of them also include by saying if you don't have any cash, use the ATM nearby by pointing to one. Bella mentioned, "if I was to use this mobile app I would create awareness for it in my "hat line" at the end of the show and let people know, hey if you don't have any cash use this app to donate. Bella feels that in the near future the use of money will not exist as everything is moving towards cashless payments, so there would be a need for this tool in the busking community.

Kevin Cato

Kevin has been busking professionally for the last 4 years now. He plays the saxophone and doubles on flute at Toronto's subway stations as well as at outdoor locations. I interviewed Kevin on March 19, 2015 at the Scarborough Town Centre. Kevin is extremely talented and runs an online music academy by name of Duetto that helps connects professional musicians and students that are seeking to learn music.

Kevin explained that in his busking experience he has not seen a drop in his donations and receives $1 on average per person. He keeps iterating his songs and performances, finding new ways to engage with his patrons to interact with. Having

said that, he mentioned that he has heard other buskers complain regarding a drop in their donations recently. Lastly, Kevin agreed there is a need for a mobile app to facilitate patrons through an alternative method of donating to buskers as in the distant future cash transactions will fade away and plastic and mobile payment will become more dominant. He also stated that if the presto card was introduced on all subway stations of Toronto, this could result in creating an even bigger challenge for subway buskers in the future.

4.2 Interviews with Patrons

I invited ten patrons in total out of which the first five patrons participated in the testing for prototype #2 and the latter half tested the prototype #3. These participants were selected from diverse backgrounds, age and gender for an interview session and usability test. The criteria for selecting these participants for the interview were to highlight the diversity in the group of participants. These participants were also shortlisted, as they have contributed to buskers in one form or the other in the past. Interviews with each patron were approximately an hour long, accompanied with semi-structured questions that took place at participant's residence and work places in the Greater Toronto Area. The semi-structured questions were rooted from the contextual research of my study and the inquiry ranged from their brief background, to their preferred method of payment, the form of contributions made towards buskers and lastly if there is a need for a mobile app that could facilitate patrons with an alternative method of contributing to buskers.

4.2.1 Participants

Valerie Kang

Valerie is close to 40's, married with no kids. I interviewed Valerie at her residence in Rosedale on January 31, 2014. She expressed passion for music and current pursuit towards learning the piano and singing. Valerie and her husband are both aspiring musicians and love supporting artists and local musicians in the community. Her usual commute from Rosedale involvess taking the subway and streetcar to College and Yonge, where she goes for her yoga classes. During her commute, she comes across various buskers that she enjoys listening or watching, as they are a source of inspiration to her. She tries making it a point to contribute to buskers each time she sees them, but mostly does not have cash or is scared taking her wallet out on the street. One of the reasons why she loves supporting buskers is because the performances are live and unscripted.

Her preferred method of payment is a debit card and she never carries cash unless she needs to withdraw cash for a specific purpose such as buying subway TTC tokens. Besides making phone calls and texting, Valerie uses her smartphone for online purchases, even though she is not much of an online shopper, she has bought Cineplex movie tickets through their app and books and music from amazon's app which is linked directly to her credit card through her Google account. She also used social media networks mostly Facebook and Instagram to post pictures, but has never promoted buskers as she did not know that they existed on these platforms.

Valerie loved the idea of using a mobile app for buskers in order to continue supporting and contributing to buskers regardless of carrying little or no cash as she felt saver going this route, rather than taking out her wallet. She mentioned it's just like keeping up with the times'. A valid concern Valerie shared was that she would feel more comfortable donating to buskers once she had seen them rather than donating to someone she had never seen before. For example, she always comes across a musical street performer on most days while commuting to her yoga classes and would love to contribute and follow him through his journey.

Ali Sardar

Ali is in his late 20's. His profession by trade is engineering, but he is pursuing his passion as a multimedia artist and life coach. I interviewed him at his apartment, which is close to Queen and Gladstone Avenue on February 2, 2015. His interest lies in narrating stories through different mediums such as photography, art, poetry, music, video and now clothing. In his everyday life his primary and preferred method of payment is through his credit card and carries little to no cash. Ali shared his compassion for street performers and artists as he enjoys listening to them and in turn share their stories on social media networks. On one occasion, he interviewed a woman playing the guitar in the subway station and shared her story on Facebook, which got a lot of attention from people.

Ali liked the idea of using a mobile busking app regardless of carrying his wallet to be able to explore different buskers in the city based on his personal preference in order to contribute accordingly.

Adriana Moran

Adriana is in her early 20's and is originally from Venezuela, living and exploring Toronto since 2011. I interviewed Adriana at her apartment at Yonge and Sheppard on January 31, 2015. She is a professional recruiting assistant and commutes to work by subway every day. The commute for her is not the best part in her day, since it is slow and cramped. However, it makes her day when she hears a song a busker is playing that she is familiar with. This aspect helps uplift her day bit. "I don't contribute to buskers all the time as I don't carry cash but whenever I do, I like supporting them by contributing with whatever little change that I have." She rarely carries cash unless she feels the need to withdraw for a specific purpose, as she doesn't see it as a necessity as most places accept credit card. She has used her smartphone to make online purchases but never used it at a point of sale terminal to make a purchase.

She has donated to some buskers in Toronto that have captured her attention but has found buskers in Europe more appealing hence she has felt the urge to stop and donate. Adriana has never used social media to post pictures or videos of buskers however she has either commented or liked pictures/videos posted by her friends as well as shared them with other friends. She liked the idea of using a mobile busking app to promote and contribute to buskers. Even though she mentioned she would prefer to use cash to donate to buskers, however the app would come handy if she didn't have cash and really liked a performance. She said it might be worth giving it a shot.

Sadaf Khan

Sadaf is in her late 20's and works in banking sector as a credit analyst. She has been working in this field for the last 5 years. I interviewed Sadaf at her apartment at King and Bathurst on February 2, 2015. She loves exploring the city, listening to music and trying out different cuisines. One of the things she enjoys most is meeting all sorts of new people from different walks of life, which include meeting street performers. Her favourite part of taking the subway is that she gets to hear some of the most beautiful music travelling through those tunnels.

Sadaf tries donating to buskers but cannot as often as she would like to since she does not carry cash very frequently. Her preferred method of payment is using a debit card and her secondary option is using her smartphone for making purchases through apps, as opposed to cash, since she feels tangible cash tends to be spent more generously and keeping track of it is hard. She would like to reward buskers for their talent and efforts more often, but not having any cash makes her hesitant to stand at the busker's location and not able to contribute. Since there is no guarantee she will have cash all the time, she confirmed she would like to use a mobile busking app to reward buskers, so she can enjoy street performances without feeling guilty of not being able to contribute.

Khayyam Hamidi

Khayyam is in his early 30's and works in risk control at a bank in the financial district area of Toronto. He usually takes the underground path for his commute to work in the winters and does not come across many buskers in that area. However,

he sees a lot of buskers during the summer time when he is above ground. Typically he sees a lot of buskers at the Harbour Front Center, Yonge and Dundas and at the Trinity Bellwoods Park. He likes donating to buskers only if the acts are powerful enough. He also mentioned that sometimes he feels obliged to donate to buskers as walking off during a performance and not paying for their services just doesn't feel right to him.

Most of the time he is unable to donate to buskers, as he doesn't have the right domination of money to donate or, often, no money at all in his wallet. His preferred method of donation is either through a debit or credit card. He emphasized that when carrying cash, he definitely donates to buskers out of sympathy or appreciation for the act. Mostly he donates out of sympathy, as he firmly believes that street performers should be rewarded for their services.

Khayyam also uses the Starbucks app on his smartphone to pay for coffee. Besides this he has also used his credit card preloaded on his smartphone for buying apps through the Google play store. He liked the idea of using a mobile busking app, but he also mentioned it depends on the quality of buskers on this app and what would be in it for the patrons.

Richard Borbridge

Richard is in his mid 30's and has been living in Toronto for the last 4 years after he moved from Vancouver. He is currently in his last year of Digital Futures Graduate Program at Ontario College of Art & Design (OCADU) and I interviewed Richard at our school's studio on March 18, 2015. Richard is an urban designer and working in transportation and transit planning. Depending on the weather, he either commutes

via subway or rides his bicycle to work. Richard explained, typically in the mornings he doesn't come across as many buskers, as he sees them performing either in the evenings or the weekends. Richard not only loves music and plays, but also actively participate in choirs as well as other extracurricular musical activities.

Richard's preferred method of payment is through his credit card, however he carries a change purse that has his transit tokens and spare change. He uses multiple banking apps frequently to pay for bills, as well as the Starbucks app to pay for his coffee and food. Richard likes supporting buskers by contributing to them at least once a month. He has never used social media platforms to promote buskers before, however, he has used these networks to promote structured performance events, plays, and choirs, etc. After explaining the project context to Richard, he liked the idea for mobile busking app, keeping in consideration the cashless component of society, which he thought, contributes to a strong reason to exist. After the interview Richard participated in the usability test for the third and final prototype.

Darryl Bank

Darryl is in his early 30's and works as a program coordinator at OCADU. He has been living in the Junction area of Toronto for the last 8 years. I interviewed Darryl at the OCADU graduate office on March 18, 2015. He usually commutes via subway and occasionally rides his bike to travel to places. Darryl mentioned he occasionally comes across subway buskers and doesn't donate to them on regular basis as he finds the subway station environment suffocating and that he is more inclined to donate to buskers at outdoor venues.

Darryl's preferred method of payment is through his debit card even though he carries a combination of spare change and bills. After I explained the project concept to Darryl, he thought this app serves as a good promotional tool for patrons, as well as for buskers to generate additional revenue. He found the idea interesting and different. He mentioned that, people are always curious to try new things that could help enrich other communities.

Brian Desrosiers – Tam

Brian is in his mid 30's and works as a university administrator at OCADU. I interviewed him on March 19, 2015 at his office. He lives close to the Main Street Subway station and travels mostly by buses and the subway. During these commutes, Brian often encounters subway buskers that he enjoys listening to, especially the one on Main Street subway station who plays the steel drums, since Brain hardly carries any cash, he mostly nods or smiles at him, as he passes by.

Brian prefers paying through electronic method by using his debit or credit card. Due to not having sufficient amount of cash all the time, he tends to donate a few bucks to buskers on days he has some spare change, which clearly depends on if he has enjoyed the music or performance. Brian emphasized a mobile busking app would help facilitate people like him who don't carry cash but want to contribute to buskers. It could function as a useful tool to carry in your smartphone.

Alice Brummell

Alice is in late 30's and works as a university administrator at OCADU with a background in Fine Arts. I interviewed Alice on March 19, 2015 at her office. She travels mostly via subway and sometimes rides her bike to commute depending on the weather. Alice has certain appreciation and love for music as her daughter is deaf and she used to play instruments herself as well in the past. She comes across buskers at the Osgoode subway station and contributes to them on regular basis.

Alice's preferred method of payment is a combination of cash and debit. As she carries cash frequently she likes supporting buskers by contributing a hand full of change at least once a week. Even though Alice carries cash quite often, she saw the merit in producing a mobile app for the busking community.

David Tate

David is in his mid 40's from Jamaica and living in Toronto as an immigrant for the last three years. By profession, he is a mechanical engineer and currently working as superintendent for a condo property in North York. He occasionally drives his car to work or commutes via subway or bus. Frequently, he comes in contact with buskers in the city who resonate with him and in turn he likes contributing to them on regular basis, as he feels they break the monotony in his everyday life.

David preferred method of payment is cash. He also uses his smart phone for buying things online and paying for bills through bank apps. David envisioned that the mobile busking app has a potential to promote these buskers that patrons

could use to harness talent in a more efficient manner, by recruiting these performers for corporate events, birthday parties and other events.

4.3 Online Survey – Buskers

An online survey was created for buskers through an online survey software platform called "FluidSurveys". This survey was targeted towards buskers from all around the globe in order to reach a larger audience and an affirmative consensus in the busking community. Total of forty buskers responded through the survey with a completion rate of 98%. Out of these forty buskers, thirty-two were street performers, six were subway performers and six practiced both street and subway busking. The objective of the survey was to gauge an overall assessment by asking eleven multiple-choice questions. The first half of the section probed questions on busker's monetary outcomes ranging from; if busking is their sole means of income, the smart mobile devices they use, an average amount a patron donates to them, in their busking experience, if they have seen a drop due to smartphones and other electronic payments such as credit/debit card, their interest in adopting a mobile busking app for generating additional donations and selling their merchandize through this online platform. The second half of the survey, focused on outcomes from buskers ranging from; current methods of promoting themselves, whether buskers would like the idea of patrons promoting them through sentiments shared through the app, if buskers would be interested in sending loyal patrons digital gifts in the form of songs, pictures etc. Lastly their current method of following other buskers in the community and if buskers would be interested in sharing the app with their friends.

All these questions were relevant to scope out the affects on buskers with the advent of a cashless society and analyze the value of social networks that can empower buskers.

4.3.1 Online Survey Results – Buskers

The results received from the online survey were extremely valuable with a few surprise elements that bought conformity towards the ideation of this project. From the responses shared, (42%) buskers established as busking being their sole means of income whereas the remaining (58%) buskers have other jobs besides busking such as performing gigs at pubs or teaching music. While (48.6%) buskers responded with an average of $1 donation received per patron and minority responded receiving $2, $3 and also $5. With the rapid growth of mobile commerce and dominant use of debit/credit cards, (30%) buskers noticed a slight drop in their donations due to these technological interventions. The surprise element perceived through the survey was the fact that (74%) buskers showed interest in adopting to a mobile busking app to generate additional revenue by receiving digital donations from patrons on the go and (21%) responded they might adopt (maybe). The most popular mobile device among buskers was an Android phone as (57%) buskers responded to that, followed by an iPhone. Another interesting finding through the survey was (54%) buskers were interested in selling their merchandize through the mobile busking app. Currently, (80%) buskers use Facebook to promote themselves, followed by (57%) that use their personal websites. Approximately, (8%) buskers liked the idea of patrons donating to them through social currency in the form of sentiments and only

(23%) buskers did not care. If the question was positioned differently, by stating it would help increase their ratings through those sentiments, there was a possibility the results could have been much higher. Another, surprise element that was uncovered from the survey was that (62%) buskers liked the idea of sending digital gifts to loyal patrons. At present (77%) buskers follow other buskers through Facebook and others through their personal websites, twitter and emails. Majority of buskers (62%) showed interests in promoting or sharing this app in the busking community. Survey results for buskers can be found in appendix A attached below.

4.4 Online Survey – Patrons

An online survey was created for patrons through an online survey software platform called 'FluidSurveys'. The survey was targeted towards patrons specifically in Toronto in order to obtain a point of view from a larger pool of local supporters and contributors of street performers in the community. In total, fifty-five patrons responded through the survey with a completion rate of 100%. The age group targeted in the survey ranged from 18 to 54 with age 30-36 was predominant from the responses received. Even though the survey was distributed on various social media networks (60%) of responses received were from females. The objective of the survey was to gauge an overall assessment by asking twelve multiple-choice questions. The first few questions in the survey were generic which included questions regarding patron's compassion and contribution towards street performers, the mobile device patrons carry and their preferred method of payment, if patrons would like using a mobile app to support and donate to buskers on the go. The latter

half of the survey determined some responses based on patrons interest in using a mobile app to donate. These questions pertained to patrons' preference of donating to buskers either at busker's location or donating remotely, patrons' choice for payment service and preferred connection for donating to buskers, whether patrons would be interested in donating sentiments to buskers and follow them in the city. In addition, would patrons be interested in receiving digital gifts in the forms of songs, pictures, etc from buskers. Lastly, if patrons would be interested in promoting buskers through social media networks and if patrons would like to share this app with their friends. These questions were relevant for understanding patron's perspective on the scope of the project in order to reflect back, while developing the prototype and identify key functionalities for the mobile busking app.

4.4.1 Online Survey Results – Patrons

The results received from this survey were ground-breaking that identified some core preferences and interests that were shared through the survey. The survey results demonstrated some interesting findings such as (94%) people enjoy music or street performances in the city and (93%) people confirmed that they have donated to buskers and street performers in the past. As for the mobile device patrons' carry, (52%) confirmed iPhone followed by Android phones. An interesting statistic that emerged from the survey was participants preferred choice of payment method with approximately (80%) of people selected paying through electronic means including debit/credit cards with a tap or wave function. The other (20%) of people preferred cash. One of the most surprising response which I have referred to as ground-

breaking were the confirmation of adopting a mobile app for donating to buskers as (59%) participants responded 'yes'. (89%) of participants responded to donate to buskers at their location and the remaining half from either away from the location or from home. The most desirable payment service was using a credit card as (45%) of participants agreed to donate to buskers using this payment service and others preferred PayPal or debit card. It was also delightful to discover, (66%) participants liked the idea of donating digital sentiments to buskers in the form of social currency. However, participants did not show keen interest in receiving digital gifts from buskers as (61%) of participants said 'no'. In fact one of the participants even commented, "A thank you message for listening and supporting should be suffice". Another eye opener were the results received from the question whether patrons would like to find/follow buskers in their city through a mobile app, (66%) participants said 'yes' and the other half wasn't interested. (75%) participants liked the idea of promoting buskers through a mobile app on social media networks with (81%) participants were keen on sharing this app with their friends. Survey results for patrons can be found in appendix B attached below.

4.5 Analysis

This is a combined analysis from the survey results acknowledged from buskers and patrons. The objective of analyzing the results is to highlight key points to identify areas of relevance that overlap with both buskers and patrons. Through the survey, it was identified both buskers and patrons are smartphone users and the only difference was their smartphone operating system (OS). Both majority of buskers

and patrons showed interest towards adopting a new form of mobile application that would help buskers generate additional donations and facilitate patrons to continue contributing to buskers for their efforts. Since it is common for most buskers to engage online with social media platforms in order to promote themselves, majority of patrons showed interests towards finding or following buskers in their city. Even though very few buskers were keen on receiving digital donations in the form of sentiments (i.e love, kiss, star)most patrons were in favour of sharing their appreciation. However most patrons were not so interested in receiving digital gifts in return for donating to buskers and on contrary buskers showed interests in sending their loyal patrons with gifts. Majority of buskers and patrons agreed to share the app with friends in their community.

The survey results identifies a larger consensus of both buskers and patrons viewpoints towards building a digital donation tool in the form of a mobile application that would cater to busker's revenue stream, as well as growth. Patrons that enjoy music or street performances in the city would continue to donate to buskers regardless of carrying cash. The ideation of creating a mobile app would benefit both buskers and patrons, as it will sustain building better communities and vibrant cities, which would attract tourists and help with the growth of the city's economy.

Chapter 5 – Needs Assessment & Ideation

This chapter focuses on the needs assessment and ideation for a mobile app facilitating buskers to generate added income, as well as enabling patrons with an alternative method to donate and promote their favourite buskers. A brief overview of market analysis is presented to highlight emerging digital payment trends. This would help to reconcile the ideation of a mobile app for buskers and their patrons. The project concept discusses the overview of the mobile app's features and its functions as a social microdonation tool.

5.1 Market Analysis

There are a number of third party payment services that exist today to facilitate individuals and companies in order to create a smooth online transactions for users. These payment services such as PayPal, Brain Tree, Stripe, Skrill, Google Wallet, and Apple Pay ensure a seamless integration with mobile payments and customizable payment flow. Due to these secure, trusted, affordable payment services, and rapid progression of cashless societies, new opportunities have emerged in the form of social microdonation tools that function as an exchange for social currency between peers. Some of the recent social micro donation tools include; Dipjar, Changetip, Flattr and Scan donate.

5.1.1 DipJar

DipJar is a fairly new state of the art tipping mechanism that allows customers in cafes to tip employees brewing their coffees or preparing their sandwiches. A few years ago, many cafes had a tip jar that helped supplement employees' wages by

customers throwing in a few extra bucks. These days majority of people prefer paying through plastic i.e. debit or credit card, as it is efficient and more convenient to carry a single card than a stuffed wallet. This movement of paying with electronic methods has disrupted the lives of many individuals that rely on tips, as cash is no longer the dominant method of paying or contributing. As Pew Research reported, in a few years the most dominant method of paying for things will be through our smartphones, which could also possibly diminish the use of plastic cards.

DipJar is focused towards providing tips to employees that functions as a person to business (P2B) tool whereas the proposed mobile app Hatter functions as a peer-to-peer (P2P) social microdonation tool to provide additional revenue to buskers in the form of digital and social currency by supporting your favourite busker through the mobile app.

5.1.2 ChangeTip

ChangeTip is a micropayment infrastructure that encourages people to show appreciation and support towards other's work by sending or receiving Bitcoins through a social media account. This in turn helps people generate new streams of revenue for their content published via a tip button and a personal tip page linked to ChangeTip. Since ChangeTip have noticed the impact of a life in an increasingly cashless society has for themselves and others hence envisioning a platform to tip people in need so their work in turn adds value to others. They believe in "tipping as an important first step towards more positive change in the world's financial systems and the behaviours they reward" (ChangeTip 2014).

ChangeTip functions as a social microdonation tool for individuals that are looking to generate revenue for their work. This platform only allows you to send donations through Twitter and in turn users can accept and collect donations by clicking on the link sent by ChangTip. Whereas the mobile busking app Hatter, facilitates users by adding their payment details just once which allows them to donate or share love through this platform to various buskers they come in contact with. These microdonations contributed from patrons are sent to buskers immediately without having to accept an invite to receive donations.

5.1.2 Flattr

Flattr is another microdonation platform to support creators on, various online social media networks, simply by "flattring" the content creator's work by clicking on favourites, like or star it to Flattr. Flattr believes by supporting creators on an open and free Internet, enables creator's growth and nurtures them to continue creating better content for the open and free Internet for users to enjoy. Users can receive or send Flattr contributions by adding funds to their Flattr account, which enables users to Flattr as many times they want in a month by setting a monthly-allocated budget. At the end of the month, budget is divided into as many pieces the user has made microdonations using Flattr. For example, 50 Flattrs will divide your budget into 50 pieces. Keeping in account a 10 Dollars budget is equivalent to 20 cents.

Flattr functions in a similar way to ChangeTip. The major distinction between these two platforms is the mode of payment, as Flattr is integrated to a third party tool that accepts a number of credit card payment options. Flattr works on a

principle of transferring money to creators that users have flattred on the tenth day of the following month. This principle is adopted for the mobile busking application by transferring donations to buskers every first week of the month. Buskers would receive more than 90% of the contributions received from patrons.

5.1.3 ScanDonate

ScanDonate uses an old concept of donating through Quick Response (QR) codes that enables anyone to transfer donations via PayPal from potential donors instantly. Users first have to create a campaign with a unique QR code that allows them to collect donations directly from their PayPal account. Passers-by can donate to individuals by scanning their unique QR code through their smartphone and using their PayPal account. Even though ScanDonate presents a unique idea to generate funds especially for individuals in dispersed communities, this platform was not widely accepted because of the process of scanning a QR code. One of the drawbacks of using this method is that people don't scan QR codes, according to eMarketer "two out of five Americans between the age of 18 to 34 have reported scanning a QR codes only once" (eMarketer 2013). It is likely that QR codes will be supplanted with NFC and RFID tags in next three years (Kelly Lum et al, 2014).

ScanDonate functions as a microdonation tool for individuals seeking to generate increased income through digital technology. These individuals could include homeless people, street artists and performers as well as street vendors. One of the advantages of using ScanDonate is that users can create their own campaign and receive donations directly. The mobile busking app only caters to buskers and

street performers seeking to generate additional revenue and uplifting their image through social media networks.

Microdonation Tools	Functions					
	Online Microdonations	Hardware Micropayment System	Social Media Component	Cryptocurrency	Connectivity	Mobile Platforms
DipJar		✔			Credit Card Reader	
Flattr	✔		✔		Various Social Media platforms	✔
ChangeTip	✔		✔	✔	Twitter	✔
ScanDonate	✔				QR Code	✔
Hatter	✔	✔	✔		NFC/ Bluetooth/ Bluetooth Low Energy Beacons	✔

Table 1 Comparison chart of microdonation tools

5.2 Project Concept Overview

Identifying and evaluating the needs of buskers and patrons through ethnographic studies and secondary research via relevant literature review led to the creation of social microdonation tool called 'Hatter'. The first use of the word 'Hatter' was originated in the late 14th Century (Dictionary.com 2015), which means the art of selling or making hats. The name 'Hatter' was coined for this project with consultation from various buskers and patrons. In the busking context, Hatter refers to 'Making a Big Hat' (Brant Mathews, FireGuy busker interview by author, January 2015) as in the busking culture, buskers often use this term when they have made a lot of donations from patrons.

Hatter is a social mobile application designed to function as a peer-to-peer micro donation tool that creates a meaningful "symbiosis" between local communities, street performers and their patrons. This social application is created through a human-centered design process to facilitate street performers to receive digital micro-donations, as well as social currency through the mobile app integrated with social media networks. The social app is combined with a mix of technologies that can enhance tangible user interactions between street performers and patrons via global positioning system (GPS), near field communication (NFC), Bluetooth low energy beacons (BLE) and Twitter application programming interface (API) integration.

This location sensitive app, integrated with GPS and beacons, would help patrons explore and discover various art and musical performances throughout the city. This feature would also benefit street performers, as it would help them choose an available "pitch" to perform. The mobile app Hatter would enable patrons to donate their contributions to buskers via two donation methods, NFC tap and go or by remotely contributing online from anywhere. Both these two options have an identical outcome by contributing through the app, however NFC tap and go would create a more emotional connection between buskers and patrons, as this gesture of donating to buskers is the closest form of dropping a few bucks in their hat.

There is a social aspect to the application which provides patrons the ability to contribute social currency in various forms of sentiments. Patrons would be able to share their appreciation towards buskers via Twitter that would in turn result in the creation of network effect by promoting and building recognition of performers.

These sentiments shared by patrons to buskers would help increase their star ratings on the social app Hatters which would in turn help other patrons gauge busker's popularity based on these ratings. The rating system is slightly similar to the 'seeding' concept in the busking culture, as both rating and seeding is devised to gauge busker's popularity in the community. The only difference between rating and seeding is that, rating would be prompted through patrons rather than buskers themselves.

Patrons using the app Hatter, would have an incentive towards contributing digital donations and social currencies as they will be rewarded with digital gifts from performers such as songs, screensavers or badges. Loyal patrons would also get status updates to special rankings depending on how frequently they contribute. Since digital donations will be contributed through the mobile app, users would be able to view their log history on their contributions page to ensure the amount of donations are sent or received.

Hatter would enable buskers and patrons to create an online virtual community that would in turn become a hybrid space between physical and virtual space known as 'mixed reality'. This would result in building 'social capital' for buskers and patrons contributing to a good cause and keeping the busking culture alive by providing buskers with a sustainable livelihood.

Chapter 6 – Design Process

This chapter describes the design process followed for 'Hatter', which highlights the evolution of the design and the development in my prototypes. The design process chapter also covers features and functionalities in the mobile app Hatter that were assessed and updated through result outcomes from secondary research, ethnographic studies and usability testing with both buskers and patrons.

6.1 Design

The design process initiated with a storyboard envisioning the user experience by chalking the features and functionalities required for the mobile app Hatter. The benefit for drawing out storyboards is to provide a visual narrative that helps designers to empathize and understand the context in which 'technology or form factor' will be demonstrated (Hanington & Martin 2012, 170).

The next phase in the project was to collect all the design material required to best illustrate the icons used for navigation. My aim was to create universal icons that were easy to understand yet bold and simple with a minimum use of color so the design is appealing to users vision. Graphical User Interface (GUI) is the first component that users mostly gauge, hence it was extremely crucial to focus on the design aspect in this project. I used Adobe Illustrator to draw the icons and Adobe Photoshop for creating the UI for the app. Typeface selected through royalty free font websites that best projected the essence of the project.

6.2 Technology

There are various software and hardware technology components integrated in the mobile app Hatter in order to enhance the overall user experience for buskers and patrons. This mobile application is developed in Java for all Android mobile devices, and has been coded by my friend and colleague Hector Centeno.

As this app has location awareness, global positioning system (GPS) was integrated for macro location-based experience combined with Bluetooth low energy (BLE) smart beacons for advanced micro geofencing that is useful for underground and indoor locations. The combination of these two technologies bridges the gap between physical and virtual world enabling digitally mediated exchange of value for buskers and patrons. The donation method in the app is integrated with Braintree, which is a subsidiary company of PayPal that accepts all types of credit cards and PayPal payments on the go with only one touch. There is another hardware component integrated into the app for contributing donations through a near field communication (NFC) device to stimulate users' experience. The social aspect in this app is integrated with Twitter API in order to connect buskers and patrons through social media networks.

6.2.1 Geo fencing

Figure 2 Notification from Hatter through an Estimote Beacon (Estimote 2015)

Geofencing is a feature that can be integrated with global positioning system or beacons to define a virtual barrier. Bluetooth Low Energy (BLE) beacons were purchased from a company called Estimote that provides an experience of 'real world context for your apps' (Estimote 2015). These tiny beacons are wireless sensors that can be attached to any location or object. These BLE's can in turn create a rich mobile experience by prompting users with customizable messages at indoor or outdoor locations.

These Estimote smart beacons were integrated with the Hatter app to unlock locations such as indoor subway stations and create contextual awareness for patrons. Buskers can now set triggers to pair up with patrons' device using this mobile application, Hatter. Patrons can receive an instant notification from buskers on their device upon entering a defined boundary range. Even if patron's device is locked or the application is not running in the foreground, patrons will still receive

notifications if their Bluetooth is switched on and when their device comes in the range of a beacon. Since all smart beacons broadcast their own identity, patron's device will calculate the distance from each beacon and use this data to estimate its proximity. The exact spatial placement cannot be found with a BLE beacon, only the distance to it. The range of these beacons can be set from as little as 2 inches and as far as 230 feet (approx.70 meters). By buskers adopting this technology, it could help create a sustainable business future for buskers by alluring patrons to contribute on regular basis.

6.2.2 Payment Mechanism

Two-payment mechanism were proposed and created which were integrated in the mobile app to facilitate patrons contribute monetary and non-monetary donations to buskers. One option was routed through the traditional donation scenario by donating to buskers remotely online from anywhere. The other donation system was created through a near field communication (NFC) device, which was developed and integrated with the mobile app Hatter. This method is an attempt to mimic the traditional donation method of tossing a coin in the busker's hat or guitar case.

The near field communication device was built using a NFC breakout board connected to an Arduino Pro Mini and a Bluetooth serial link that could be paired with any mobile device. A NFC reader device was created for patrons to tap or wave their smart phones on the NFC reader for the donations to drop on busker's mobile platform integrated with the Hatter mobile app. NFC chips are embedded in mostly all smart phones and mobile devices today with an exception of few hence the

alternative option for patrons to donate online. A report by IHS technology confirmed in 2014 there were more than four hundred million NFC enabled mobile devices and NFC technology would be embraced in 64% of mobile devices by 2018, up from 18.2 % in 2013 (Don 2014). NFC is a method for low power, wireless communication between mobile devices in close proximity such as smartphones and plastic cards. The gesture of making donations through NFC integrated with Hatter would be a more intimate experience for patrons as buskers would be able to acknowledge their contributions made instantly at their designated pitch.

The payment solution proposed for the mobile app Hatter is called Braintree that accepts debit, credit as well as Bitcoins. Because the mobile app Hatter will be created as Minimum Viable Product (MVP), the integration of the payment service will be faked and only the user experience will be demonstrated. The payment system in the mobile app is designed to function for patrons by adding their payment details either by selecting PayPal or a credit card option. Once payment details are added, patrons are able to make microdonations to buskers on the go. For buskers, it is requested to add either their bank account details or PayPal email address so Hatter can transfer money to them every first week of the month after deducting a small percentage of their donations as a service provider fee. Braintree's V. Zero package is conceivably one of the most feasible, secure and reliable option. Braintree charges a fixed amount of 2.9% plus 30 cents per transaction with no monthly fee, minimum transactions or a setup fee. Hence integrating Braintree to Hatter is a viable solution even though a business analysis has not undertaken in the scope of this project.

6.3 Prototype # 1

The first prototype was developed as an initial experiment to investigate users experience and reaction towards contributing and receiving donations via a mobile app. The purpose of the first prototype was to create a simple prototype that demonstrated the interactivity of social microdonation exchange between buskers and patrons. This prototype was shared at the "expose" in the OCADU gallery, which I found extremely useful due to the critical feedback received from professors and peers. This prototype was also shared with two buskers in order to collect some critical feedback and clarification on some uncertainties in context to the busking culture. The critical feedback led to the ideation of this project by synthesizing outcomes for the formation of this mobile application through a long iterative process.

6.3.1 Development

The first prototype was designed in Adobe Photoshop and developed as a Java application for a low fidelity prototype. There were only four screens that were designed and programmed overall. Two separate user interface were designed to demonstrate the interactive experience for buskers to receive microdonations and for patrons to send donations. The prototype included a login page that consisted of two types of users: buskers and patrons. Once the user logs in as a busker, it takes the user to the busker's interface that consists of a NFC reader icon. The objective for this prototype was to demonstrate the tap or wave gesture from a patron's mobile device, which would in turn activate the NFC reader and a coin would drop, with a

sound of an actual coin dropping on the busker's interface, supported with a notification from the user that contributed. The patron's interface consists of a coin, which with a single tap, is released and dropped on the busker's interface that prompts a thank you notification from the busker. The concept of showing a real Canadian Loonie was to keep the connection alive as real currency is more meaningful and people are also emotionally attached to it (Soman 2001).

6.3.2 Testing at Expose

The experimental mobile app prototype was demonstrated at the expose in OCADU's gallery space in November 2014. After briefing the project, the participants played with the mobile app on both sides of the screen to understand the scope of the project. The busker's user interface was displayed on an Android tablet and patron's user interface was projected on an Android smartphone to differentiate both the users from one another. The overall feedback received on the mobile application from participants was positive.

Some of the feedback concluded that contactless donation eco-system should not require buskers to take their hands off their instruments while performing and it should facilitate patrons as an easy and convenient way of donating to buskers. One of my peers raised a concern regarding the battery life of tablets and that it should be taken under consideration. Another issue that was brought to my attention was keeping in mind different aspects of environment in public spaces such as rain, snow etc. It was also suggested, replacing the tablet with an NFC tag placed on the busker's guitar case or a poster behind them. An important question raised was how

can this social app entice patrons to engage in a social and digital currency exchange, especially in an urban scenario where there are people gathered to see a busker's performance, how would patrons acknowledge the tablet in a big crowd and use it for donation and social interactions? Another point raised was that the app should not just be about giving digital donations, but it should be about celebrating the experience in order for it to be successful. People should know that there is approval, recognition and enjoyment through that exchange. In order to create awareness for patrons to donate on the go, it was advised to decouple different pieces of the transactions and solve them by creating various scenarios, circumstances and types of interactions to project the app to serve a broader scale. Also, how could this social mobile app give an individual donor credit or credibility? Another good piece of advice received from one my peers was to look into a reward system for patrons that could consists of stickers, badges, etc to motivate patrons to donate to buskers and appeal to them in a social community sense so people in return get something back by supporting buskers. It was also suggested not to create a payment system from scratch, as there are number of trusted third party payment systems that already exists. Lastly, I was advised to reconsider the project title name 'Digital Dime' as it didn't feel relevant to the project even though it had a nice alliteration to it. It was advised to look into a more meaningful title without distancing too much from the busking connotation.

6.3.3 Testing with Buskers

For this prototype, I conducted a very basic and informal usability testing with Silver Elvis (Peter Jarvis) and Peter Cavanagh in November 2014. The critique and feedback received from Elvis and Peter was extremely valuable.

6.3.4 Participant Testing

Silver Elvis

Silver Elvis is a statue act performer with almost fifteen years of experience in the busking culture of Toronto. We met Silver Elvis at Second Cup located at the intersection of King and Strachan on November 26, 2014.

After sharing the concept and briefing Elvis about the project, I asked him to log in as a busker user and experience the interactions of the NFC tag reader. He enjoyed seeing the actual one-dollar coin and the sound of the coin drop. Seeing this immediately triggered an idea that he shared with me. He suggested "it would be interesting to charge patrons per camera snapshot if that was somehow linked to the app". Even though the interactions in the app were very limited, he liked the overall experience and found the app fonts and icons to be appropriate. He showed interest in the project and how it would function in the future. Elvis did not like the name Digital Dime for the app as he pointed out, in the busking culture the word dime or coins is not liked among buskers as they expect paper based money from patrons. Towards the end of our session, he referred Fire Guy (Brant Mathews) to me for further consultation on the project, as Fire Guy is considered as an influential figure in the busking community. (See Figure 3)

Figure 3 Testing of Prototype # 1 with Silver Elvis (Peter Jarvis)

Peter Cavanagh

Peter is a young musician who plays the saxophone, clarinet and flute in a number of outdoor locations in Toronto. I invited Peter at Tim Hortons close to Yonge and Bloor on November 28, 2014. Peter sounded excited after I explained him the project concept. He expressed that he would be more than happy to assist me with testing the mobile app.

Upon sharing the mobile app prototype with him, he immediately grasped the concept of using a NFC tap-and-go functionality for receiving donations, however he raised a concern with leaving his mobile device out for patrons to tap and donate, while he performed as it was intrusive and secondly, he mentioned weather could be tricky in Toronto, so exposing your personal mobile device to the

elements, might not be a practical idea as most street and subway performers perform for at least a minimum of 4-5 hours.

Towards the end of our session, we stepped outside and initiated with an experiment. Peter took his saxophone out and started playing at the corner of Yonge and Bloor. I asked a woman passer-by to volunteer with the testing, who pretended to wave at the NFC icon on the busker's user interface as Peter had placed the tablet in his saxophone case. It was interesting to see people's reaction while they passed by as the street as digital coins dropped on Peter's app user interface each time she released the coin from the patron's app interface. This was something unusual for passers-by to experience, as patrons had never come across digital coins situated in a busker's hat or guitar case. (See figure 4)
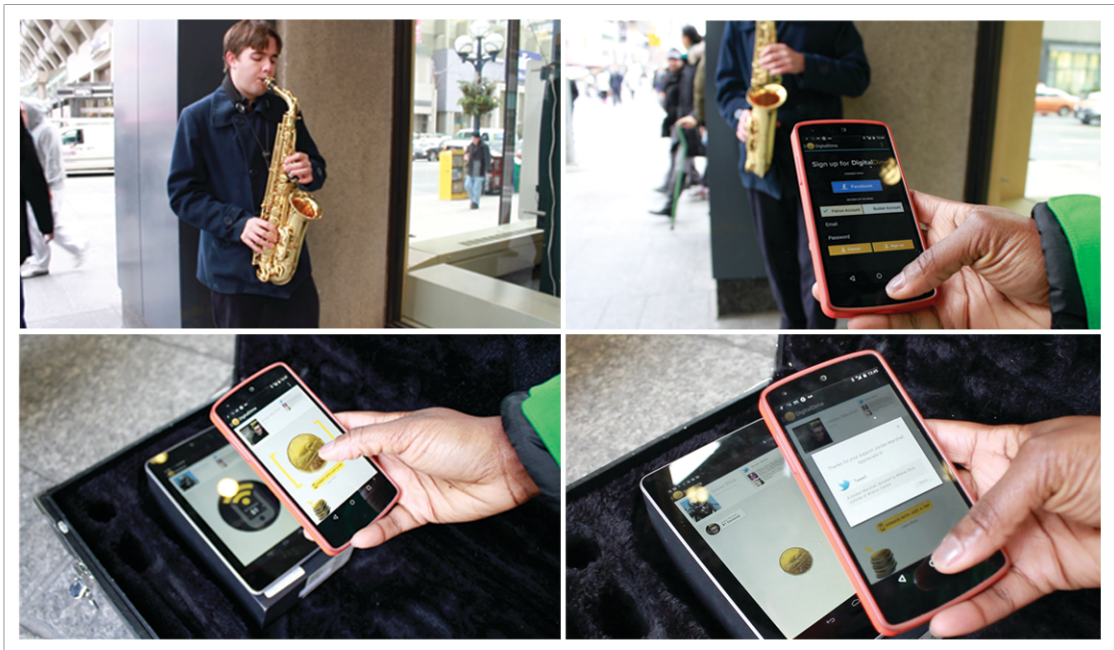

Figure 4 Testing of Prototype #1 with Peter Cavanagh

6.3.5 Analysis

After carefully studying the critical feedback received from the expose, I withdrew from creating the NFC tap and go option using busker's mobile app interface and instead started restructuring the idea of developing a customized NFC device in order to meet buskers' needs. This idea also facilitated the issue concerning busker's mobile device battery, environmental hazards, as well as privacy for buskers as the app stays in close proximity to him.

I started re-evaluating the scope of the project by including additional features for patrons to contribute to buskers by sharing love, kiss, star etc. in order to create an engaging experience for both buskers and patrons integrated with social media networks for a more valuable exchange. This idea also encompassed the need for a star rating system that could inform patrons of buskers' credibility and popularity. For instance, the more patrons shared their love with buskers, the higher the rating a busker could get. This social aspect also created new venues for younger patrons who did not have the money to donate, but still wanted to engage and support buskers in their community.

For a more interactive engaged experience, the idea of integrating beacons with the mobile app was novel. Patrons receiving notifications from buskers in close proximity, would help in building closer ties and trust between buskers and patrons. Another idea that was adopted from the expose was enabling buskers to share digital gifts with loyal patrons.

Both Silver Elvis and Peter's feedback was valid and taken under consideration immediately. Some of Peter's concerns were quite similar to the critical

feedback acknowledged from the expose held at OCADU. Elvis raised an important concern for the app name, which was again parallel to the critique received from the expose. After carefully examining the critique received for the name for the mobile app, I came up with the name 'Hatter' which resonated with majority of buskers and patrons.

6.4 Prototype # 2

The second iteration of the prototype was created considering the feedback received from the expose and the two buskers. My aim was to create a medium fidelity prototype projecting all the various screens in the app for buskers and patrons to experience a fully functional mobile app. This exercise commenced with an in depth usability test with both buskers and patrons to understand the implications of this tool. This prototype was tested with three buskers that included a street musical busker, a circus performer busker and lastly a subway busker. Five patrons were also invited for usability testing to analyze the critical uncertainties and outcomes for creating a medium fidelity mobile app. Through these tests, buskers and patrons were able to share their honest opinions and feedback, which in turn enabled me iterate the design and functionality for creating my last and final prototype.
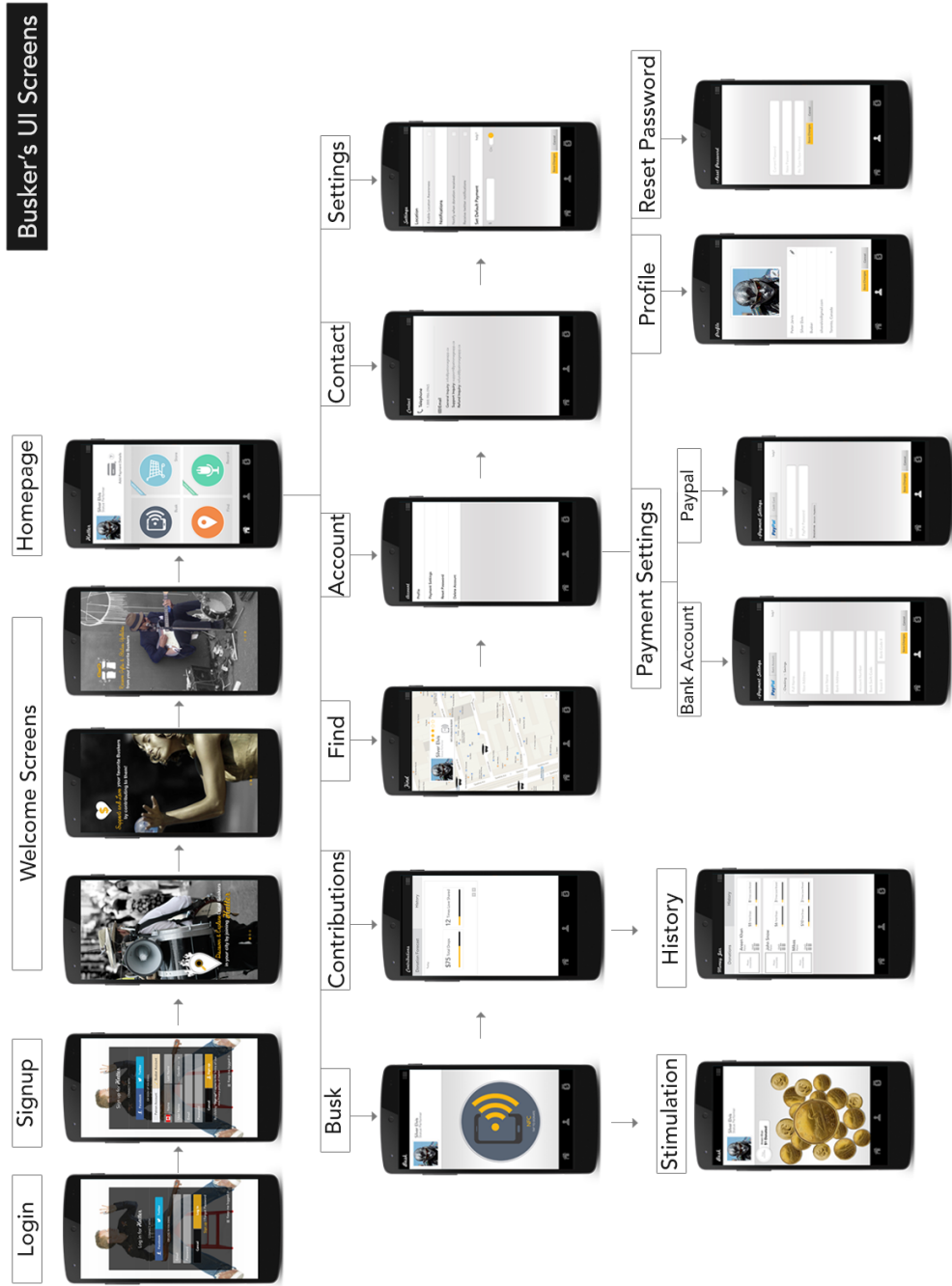
Figure 5 Mobile App Interface for Busker
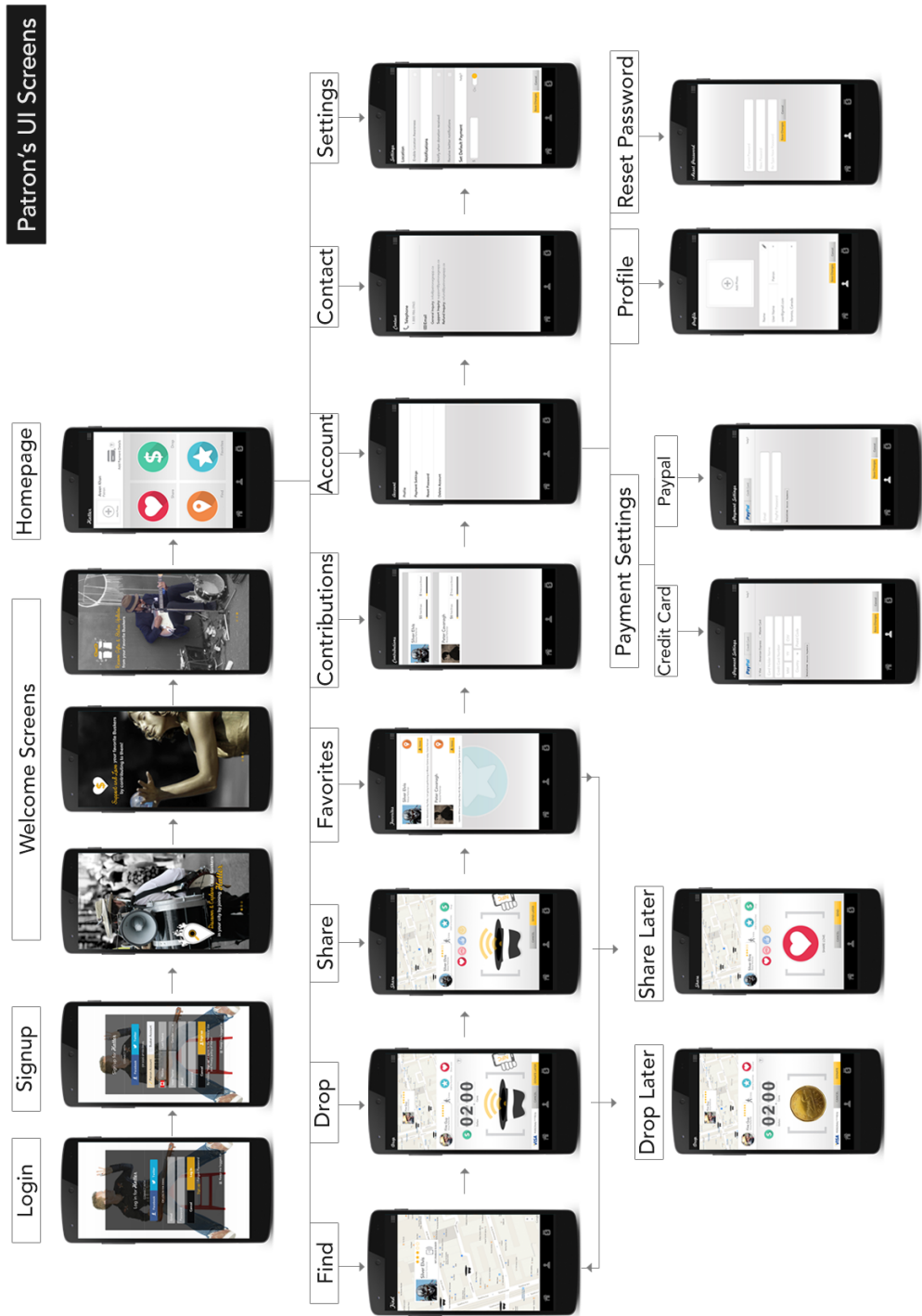
Figure 6 Mobile App Interface for Patron

6.4.1 Development

The prototype was designed in Adobe Photoshop and developed in 'InVisionApp'. InVision is a free open source platform that enables designers to create low to medium fidelity rapid prototypes. This tool provides seamless design communication for web and mobile platforms without requiring any coding.

After designing all the screens in Photoshop for the mobile app Hatter, I exported them in InVision and linked all the pages together. Once all the pages were linked, I applied hotspot on icons that had to be activated for testing purposes. Both buskers and patrons tested this prototype in order to gather insights and evaluation for the mobile app idea. These tests helped improve the overall look and feel, as well as refine the feature specifications in the mobile app.

6.4.2 Testing with buskers

Three buskers were invited for the usability testing for prototype #2. Two tests were conducted at cafes in Downtown Toronto and one test was undertaken at the Bloor subway station. After explaining the concept to participants, users had to compete five test tasks that were created to gain insight and feedback. These tasks are stated below as following:

- **Signing up**
- **Configure payment details:**
- **Find a pitch**
- **Ready to Busk**
- **Access log of contributions received**

Apart from these tasks, there were some general semi-structured debriefs regarding the app prototype such as, what part of the mobile app resonated with the participant and what didn't work for them and any suggestions for improving the mobile app. Buskers were also asked if they would be interested in adopting this mobile app as part of their busking experience. These tasks and semi-structured debriefs helped in identifying the problems and analyzing the uncertainties in the app. The feedback obtained from usability testing with buskers was eye opening, which enabled me to iterate as I moved from one participant to the next.

Figure 7 Participants Image – Michael Green at Young and Bloor Station

6.4.3 Busker's Test Results

User Tasks & Feedback	Testing with Buskers (Prototype #2)		
	Fire Guy (Brant Mathews)	George Mckenna	Michael Green
Signup/ Enter Hompage	✔✪	✔✪	✔✪
Configure Payment Details	✔✪	✔✪	✔✪
Finding a Pitch	✔◆	✔◆	✔✪
Ready to Busk	✔✪	✔✪	✔✪
Access log of Contributions Received	✔✪	✔✪	✔✪
Do you like the name Hatter	✪	✪	✪
User friendliness and Over All App experience	✪	✪	✪
Woud you use Hatter to receive contributions	Yes	Yes	Yes
Overall Assessment & Feedback Received	Fire Guy loved the idea of finding a pitch by dropping the hat on the map, which demonstrates your current busking location and also lets other buskers know that the space is occupied. I had proposed a reserve button in the map however Fire Guy opposed to this as he explained that in the busking culture, one shouldn't be able to reserve a spot prior to getting to the pitch as this will create conflicts between buskers. He also liked the concept of buskers being rated by patrons which was forecasted on the map. He emphasized as long at the application is secure and trustworthy, he would like to be a part of it. He loved the simplicity of the app graphics and found it easy to navigate and understand. He felt there was a higher chance for buskers to adopt the app as it is a great tool for them and less for patrons.	George emphasized the need for an app to facilitate buskers as he said we are moving towards a cashless society and a tool like this would change lives for many buskers. He was also willing to adopt this mobile app regardless of maintenance fee charged by Hatter and said that we wouldn't even be making this money if it wasn't for this mobile app. George's opinion regarding reserving the pitch was the same as Fire Guy and he explained this could lead to legal issues. George expressed being able to see and hear the coin drop on the busker's interface was amazing. He also thought the idea for buskers being able to view their ratings and contributions received through the app would enable buskers to keep a track of their performance and income generated. As managing loose change is hard sometimes.	Michael's over all experience of using Hatter was good and he liked the user friendliness of the app. Michael loved the idea of finding a pitch in the city and said this would be a great feature to have if this mobile app actually works and expressed, "let's say if I was coming from Hamilton, I would know I cant go to Bloor and Young if there was already a busker performing there." Michael mentioned, "if buskers were on this app, it would be extremely helpful for all them." Michael understood the concept and was open to the idea of receiving donations from patrons by registering through this mobile app and by using a NFC device. Michael mentioned, the biggest challenge would be to have buskers on this mobile app as a lot of buskers are technologically challenged. Lastly, Michael confirmed even if there was a nominal service fee for Hatter, he would still adopt to it as something is better than getting nothing.
	✔Tasks Achived ✖Tasks Unsuccessful ✪Good ◆Average ⬤Poor		

Table 2 Buskers usability test results of prototype #2

6.4.4 Analysis

The feedback and outcomes gained by testing the second prototype with these buskers was remarkable which provided a much clearer perspective on the

development of the third prototype. All three buskers were able to signup smoothly

and enter the busker's homepage where they all chose to receive payments via their

bank accounts. The idea of reserving a pitch in the city to perform was perceived

negatively by both Fire Guy and George Mckenna, even though they liked the idea

of being able to find or view buskers in the city, which made it easier to find a pitch

to perform. This idea was further refined before continuing usability testing with

other buskers. When the new idea of finding a pitch to perform was presented to

Michael Green, he showed great appreciation for this feature. These tests confirmed,

the user-friendliness presented in the app as all buskers were able to navigate through

various screens swiftly without any major hesitations. All three buskers, showed

interest in adopting to Hatter as means to collect donations through an alternative

method. They also found a need for an app like this, as they all envision the

transition from hard cash to digitalization of payments in the foreseeable future,

which would eventually lead to a cashless society placing their professions at risk.

6.4.5 Testing with patrons

For my second prototype, five patrons were invited for the usability testing. I

initiated user testing with the same five participants that I interviewed earlier. These

tests were conducted at the participant's residences in the Greater Toronto Area and

these tests were accompanied with user tasks to navigate patrons through the app

effectively. After explaining the mobile concept to the participants, it took

approximately 30 minutes to conduct the usability testing. Patrons provided some

extraordinary insights, valuable feedback and critique that enabled me to make

iterations in this prototype leading me to my last and third prototype development phase. These tasks are stated below as following:

- **Signing up**
- **Configure payment details**
- **Find or explore buskers**
- **Contribute to a busker**
- **Add to favourites**
- **Access log of contributions made**

Following these tasks, the users participated in a semi-structured debriefs regarding the app prototype centred on questions such as, what worked for the users and what didn't and if they had any suggestions for improving the app. Patrons were also asked if they would be interested to use this mobile app even if they were carrying cash. These tasks and semi-structured debriefs helped in identifying the problems and analyzing the uncertainties in the app, enabling me to iterate the final prototype.

Figure 8 Participants Images

Top Left: Valerie Kang, Top Right: Ali Sardar
Bottom Left: Sadaf Khan, Bottom Right: Khayyam Hamidi

6.4.5 Patron's Test Results

User Tasks & Feedback	Testing with Patrons (Prototype #2)				
	Valerie Kang	Ali Sardar	Adriana Moran	Sadaf Khan	Khayyam Hamidi
Signup/ Enter Hompage	✔✪	✔✪	✔✪	✔✪	✔✪
Configure Payment Details	✔✪	✔✪	✔✪	✔✪	✔✪
Find or Explore Buskers	✔✪	✔◆	✔✪	✔◆	✔✪
Contribute Digital currency or love to a busker	✔✪	✔✪	✔✪	✔✪	✔✪
Add to Favourites	✔✪	✔✪	✔✪	✔✪	✔✪
Access Log of Contributions Made	✔✪	✔✪	✔✪	✔✪	✔✪
User friendliness and Over All App experience	✪	✪	✪	✪	✪
Do you like the name Hatter	✪	✪	✪	✪	✪
Would use Hatter to contribute to buskers	Yes	Yes	Yes	Yes	Yes
Overall Assessment & Feedback Received	Valerie's overall experience was good, she liked the straightforwardness of the app and found it user friendly. The real coin gave her a feeling of the closeness of dropping a coin in a busker's hat or guitar case. Valerie liked the idea of being able to explore and find buskers within a close proximity range from her location and loved the idea of being able to gauge performers from the stars attached to each buskers as she mentioned this would influence her decision for contributing to buskers.	Ali found the app easy to use in most parts, he stated the functionality that was working is good so far in the rapid prototype. He also said that the icons were self explanatory, layout and fonts were good. He liked the overall look and feel. In conclusion, the only thing Ali didn't like was the fact that he couldn't see an individual busker's profile page for each busker and couldn't select his own experience due to the non-filter feature present in the find page.	Adriana liked the graphics which made it easy to understand and navigate through the app. She liked the fact that patrons can find buskers in near by locations and follow the ones they like. Adriana also mentioned that what she liked most was that patrons are able to share not just money but love as well since it doesn't cost anything to appreciate a busker.	Sadaf mentioned that for someone who is technologically challenged like herself, the app was extremely easy to understand and navigate. She liked the simplicity of the app and said anyone from any sort of background should be able to comprehend using it. Some of the suggestions she gave were, to add a debit option in the add payment module and to enable patrons to find buskers through preferred genre.	Khayyam loved the fact that users can find nearby buskers. He thought it was well executed for a second prototype. He emphasized again how important it is to link it to multiple social media networks for busker and patrons to easily connect. He also suggested to use a 5 star rating module instead of having 3 stars.

✔ Tasks Achived   ✖ Tasks Unsuccessful   ✪ Good   ◆ Average   O Poor

Table 3 Patrons usability test results of prototype #2

6.4.6 Analysis

The feedback received from patrons was extremely valuable as it helped me iterate my prototype, keeping in mind some suggestions and concerns that were most valid. All the participants found the signing up and adding payment details quite straightforward and standard. However Ali, suggested there should be statement for users to acknowledge that their payment details will be secure with Hatter. Majority of the participants commented on the idea of sharing love to buskers and they thought it was a good feature, especially for patrons that are not financially stable. Some participants including Ali, Sadaf, Khyyam did not like the idea of using a Tweet after contributing to buskers as they are all not Twitter users. Khayyam suggested linking the app with multiple social media platforms so users have a choice for sending messages to buskers through various mediums and not just Twitter. Integrating the mobile app with other social media networks was taken into consideration for implementation in the next phase of the app. I received some extremely valuable suggestions from Ali, Sadaf and Khayyam regarding the find page. Ali and Sadaf suggested of incorporating a filter for finding buskers according to patrons' preference, which was incorporated in the final prototype. Khayyam suggested encompassing 5 stars instead of 3 to make the ratings look more authentic. This idea was implemented in the final prototype. All participants were able to find the money jar icon that signified contributions made to buskers except for Ali. They all liked the idea of keeping a track of their contributions whether it was for viewing the amount they donated or the number of times they shared love with buskers.

In conclusion to this analysis, all participants enjoyed their experience of using Hatter and also confirmed their willingness towards using it for contributing to buskers. They all found the app to be user friendly, easy to navigate and appealing. Majority of the participants liked the name Hatter and said that it reminded them of a hat, a magic trick or a magician. These suggestions and feedbacks were taken into consideration moving forward with my third and last prototype.

6.5 Prototype # 3

The goal for the third prototype was to create a Java application for Android OS as a Minimum Viable Product (MVP) and integrate this mobile app with mix technologies such as GPS, NFC, Bluetooth, Bluetooth low energy beacons (BLE) and Twitter API to enhance tangible user interactions between both buskers and patrons. Once the third prototype was complete, I commenced with beta testing internally to ensure the mobile app functions with the hardware devices integrated with the mobile app before initiating usability testing with both buskers and patrons. The purpose of testing the last prototype was to ensure if both buskers and patrons understand the functionality and complexity of the proposed design solution I have created for Hatter. This prototype was tested with three buskers that included a street musical busker, a circus performer busker and lastly a subway busker. Five patrons were also invited for usability testing to analyze the outcomes of this high fidelity mobile app. Since the results were successful, we were ready to commence beta testing with buskers and patrons in the real world.

6.5.1 Development

My friend and colleague Hector Centeno helped with the development of the java mobile application as well as the hardware devices that were used in this project. The hardware device, NFC and BLE were integrated after the mobile application was complete.

In order to program the mobile app as a Java application, the entire user interface screens i.e Patrons and Busker's UI, were replicated from the second prototype. Once the design was imitated in Java, programming the features of the mobile app was initiated by developing the functionality to hardcode GPS locations of buskers from the app's internal database. The location coordinates were set by defining the latitude and longitude in the map, which were later integrated with, find, drop and share page. Once the GPS was enabled, customized markers were placed to pre-set the positioning of three buskers. These markers identified a symbol of a hat upside down to represent buskers that were currently situated in those areas of Toronto. An average distance of 125 meters was calculated for each minute in order to prompt users the proximity of the busker. In the patron's drop page, an Android prebuild widget was customised for the spinner that enabled users to roll the digits with their finger and select a preferred donation amount. In the share page, all the small icons for giving love to buskers were programmed, which facilitated patrons to choose a symbol that best suited them for sharing with a busker. An option to add to favourites was also programmed, which enabled users to add their favourite buskers by simply tapping on the favourite button. A star-rating module was created using a weighted average to calculate the popularity of the busker depending on the number

of times patrons shared appreciation towards a busker. Another feature that was programmed was a contribution counter, which was developed to keep track of monetary and non-monetary donations contributed by patrons and received by buskers.

In the share and drop page, a visual image of a hand holding a smartphone was animated to simulate the experience for the users. When the user tapped either on the hat or the hand, the hand extended and touched the hat. This visual simulation was produced as a demo to showcase the actual gesture, which is required to donate monetary, and non-monetary contributions by tapping the busker's NFC device through patrons' mobile device. Another simulation, created was for the buskers' user interface, which signified a virtual coin drop when a donation was received. This mobile app development took approximately three weeks to complete.

The near field communication (NFC) device was created by using an Adafruit PN532 NFC/RFID breakout board – v1.6. This breakout board was connected to Arduino Pro Mini 328 – 3.3V/8MHz and a Bluetooth serial link by using a Microchip RN42 – XV module adaptor that can be paired with any computer, smartphone or tablet. This compact and versatile Arduino microcontroller was programmed to receive ID information via NFC adaptor and sent via Bluetooth serial link to the busker's mobile device to serve patrons the NFC tap and go monetary and non-monetary payment system through the mobile app Hatter.

In order to create a wireless and seamless experience, a Lithium Ion battery that outputs a nominal 3.7 V at 2000 mAh was used to supply current to the NFC/ Bluetooth/Arduino system. This Lithium Ion battery can be charged with a basic

micro USB Lipo charger at a rate of 500 mA per hour. This charger incorporates a charging circuit, status LED, battery connector and a mini-USB connector. There is a small mounting slot, which allows the charger to be easily embedded into any project. A small 2 Pin JST (PH) connectors was used to connect the Lithium Ion battery to produce good connectivity and high current contact with the battery. Once the connections were completed with the NFC controller breakout board, Arduino Pro Mini and Bluetooth adaptor, they were wired and soldered together in order to create a stronger bond between them. This device was then placed inside a Fedora hat for testing purposes.
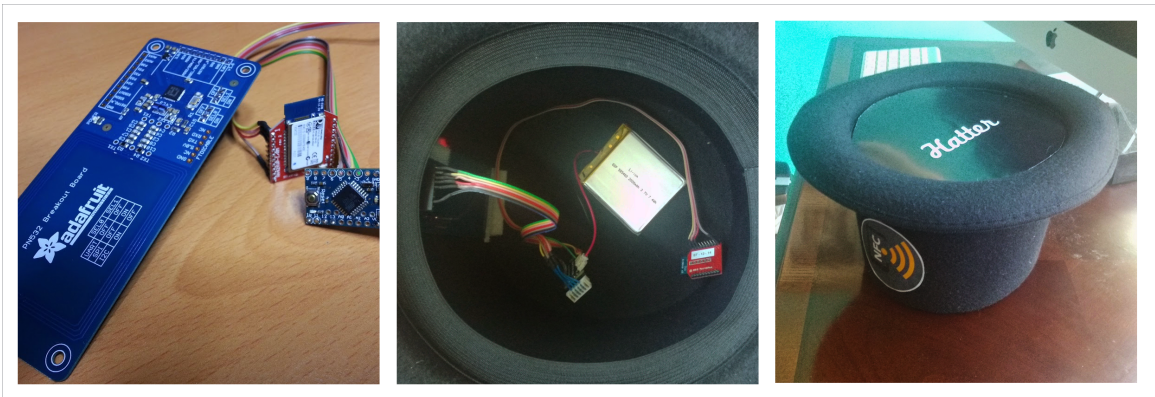
Figure 9: NFC breakout board connected to Arduino Pro Mini and Bluetooth Serial Link

The Estimote Bluetooth beacons were extremely easy to integrate with the mobile app. Since these beacons are beautifully designed passive transmitters, Estimote signals can be picked up by user's smartphone via Bluetooth and an alert message can be broadcasted on the user's device. Three different alert messages were created and customized to represent three buskers for the exhibition. These

messages can identify buskers' Estimote beacons and the proximity is determined by the signal strength.

For testing the third prototype, buskers and patrons were recruited for the usability test in order to evaluate the working functionality of the NFC device and beacons with the mobile app. However the design function of the app remained the same as the second prototype. This last and final test provided insights that indicated proof of concept for this project and identified some challenges that could be further refined in the future.

6.5.2 Testing with Buskers

Two buskers were invited to test the third prototype, which included testing the NFC device and beacons that were configured with the mobile app. One-usability test was conducted at the school premises and the other test was undertaken at the Scarborough Town Centre. Once the mobile app concept was described to participants, each test took approximately 30 minutes with the help of user test tasks that guided buskers navigate the through the app swiftly. For testing purposes, a scenario was created for the busker to visualize if he was performing in real time with his hat situated next to him that displayed a NFC Icon. These tests provided some valuable insights and feedback, which were documented through audio recording as well as written notes. These tasks are stated below as following:

- **Signing up**
- **Configure payment details**
- **Find a pitch**
- **Ready to Busk**

- **Access log of contributions received**

Apart from these tasks there were some general semi-structured debriefs regarding the app prototype such as, their overall experience of using the app and whether they would adopt to a mobile busking app in the future. These tasks and semi-structured debriefs helped in tweaking and finalizing the app.

Figure 10 Participants Images – Left: Bella Magic, Right: Kevin Cato

6.5.3 Busker's Test Results

User Tasks & Feedback	Testing with Buskers (Prototype #3)	
	Giordana Huphries (Bella Magic)	Kevin Cato
Signup/ Enter Hompage	✓⭐	✓⭐
Configure Payment Details	✓⭐	✓⭐
Finding a Pitch	✓⭐	✓⭐
Ready to Busk	✓⭐	✓⭐
Access log of Contributions Received	✓⭐	✓⭐
NFC Tap Function	✓⭐	✓⭐
User friendliness and Over All App experience	⭐	⭐
Would you use Hatter to receive contributions	Yes	Yes
Overall Assessment & Feedback Received	Bella loved the concept and for the last few years she has been thinking of an alternative solution of payment catering to buskers. She found the app easy to navigate and mentioned that since it has only been two years since shes been performing, she would adopt to the mobile app once she becomes better at her tricks in order to collect donations via NFC tap.She loved the coin drop feature which displayed on her busk screen however she did not feel the need to display the screen to her audience. She also mentioned an app like this would be extremely useful for busker festivals.	Kevin found the mobile app intuitive and easy to navigate. He found finding a pitch extremely useful for buskers. Kevin found the coin drop sound and image reassuring however said he would use this feature for himself and not display it to his audience. He loved the easy accessibility of collecting donations through a NFC tap function. He expressed he would use a sign to indicate this alternative payment solution. .
✓Tasks Achived ✗Tasks Unsuccessful ⭐Good ◆Average ○Poor		

Table 4 Buskers usability test results of prototype#3

6.5.4 Analysis

The overall feedback received from the two buskers was extremely positive. They both found all the features necessary and useful especially the feature of finding a pitch. Through these test, it was acknowledged that NFC tap function was appreciated the most for a quick and accessible alternative solution for receiving donations. By conducting these test, it was confirmed that both these buskers were keen on adopting to an alternative solution for collecting donations.

Both participants were eager to use this tool and were also willing to pay a maintenance fee for using the app and purchasing the NFC device and Beacons. Since this idea was created using a creative approach, cost factor of app development and hardware devices were not evaluated in this study. In future, a business model will be created in order to analyze cost factors. This idea could be further explored and new features could be added in the next development phases for the mobile app Hatter.

6.5.5 Testing with Patrons

I invited five patrons in order to test the third prototype. These tests with participants were conducted mostly at Ontario College of Art and Design University (OCADU) with the exception of one test, which was conducted outside of the school premises. These tests were accompanied with user tasks to navigate patrons through the app effectively, which were exactly the same as the second prototype. After explaining the project concept to the participants, it approximately took 30 minutes each to conduct the usability test. For testing purposes, a scenario was

created for the patron to visualize a busker performing with his hat situated next to him that displayed a NFC icon on the side of the hat. A tablet was also present which represented busker's device in order to display a visual display of donations received. Both hat and tablet were present in real time in order for participants to experience the tactile and sensory hand gesture of NFC tap and go. Patrons provided some valuable feedback and critique that enabled me to make a few iterations in this prototype leading me expand and fine-tune my last and final prototype for the grad exhibition. These tasks are stated below as following:

- **Signing up**
- **Configure payment details**
- **Find or explore buskers**
- **Contribute to a busker**
- **Add to favourites**
- **Access log of contributions made**

Following these tasks, the users participated in a semi-structured debriefs regarding the app prototype centred on questions such as, if the NFC tap and go function was easily identified and if it coincided with the mobile app interface and the actual hat. If beacons were helpful in identifying buskers through a pop up notification. Patrons were also asked for an overall assessment and feedback from their experience of using this app. The feedback provided by patrons demonstrated the relative precision needed for this project in order to support this mobile apps' potential in the real world. By using these feedback and positive critique in

consideration enabled me to iterate my final prototype further for the grad exhibition, as well as for the real world.

6.5.6 Patron's Test Results

User Tasks & Feedback	Testing with Patrons (Prototype #3)				
	Richard Borbridge	Darryl Bank	Brian Desrosiers – Tam	Alice Brummell	David Tate
Signup/ Enter Hompage	✔⭐	✔⭐	✔⭐	✔⭐	✔⭐
Configure Payment Details	✔⭐	✔⭐	✔⭐	✔⭐	✔⭐
Find or Explore Buskers	✔⭐	✔⭐	✔⭐	✔⭐	✔⭐
Contribute to a Busker using NFC Tap	✖⭐	✔⭐	✖⭐	✔⭐	✖⭐
Add to Favourites	✔⭐	✔⭐	✔⭐	✔⭐	✔⭐
Access Log of Contributions Made	✔⭐	✔⭐	✔⭐	✔⭐	✔⭐
Use of Beacon notificatons	⭐	⭐	⭐	⭐	⭐
User friendliness and Over All App experience	⭐	⭐	⭐	⭐	⭐
Would you use Hatter to contribute to buskers	Yes	Yes	Yes	Yes	Yes
Overall Assessment & Feedback Received	Richard found the idea conceptually strong. Having a hat is good idea which ties to existing behaviors and has enough familiarity in the interface and doesn't take a lot to figure out. Richard suggested to place the NFC icon on the inside top opening of the hat as this would be the closest gesture to the traditional way of donating.	Darryl found the concept easy to understand and mentioned there is no need to over explain that you can use this mobile app as a peer-to-peer microdonation tool as a support system for the busking community.	Brian found the concept easy to use & understand. He felt a sensory type of confirmation when he heard the coins drop by tapping the NFC icon. Brian was a bit confused regarding the angle in which he had to tap the NFC icon and was unable to identify the sweet spot despite of the NFC logo.	Alice found the over all concept easy to grasp. She made an instant visual connection with the NFC icon and was able to carry out the action without any hesitation.	David loved the over all concept and expressed giving love to buskers was a novel idea as facilitates people that don't have money but can still want to help by giving buskers motivation through love. His initial reaction took time to understand where to tap on the NFC icon on the hat. Once he performed the task, he got the tap and angle accurate.
✔Tasks Achived ✖Tasks Unsuccessful ⭐Good ◆Average ⬤Poor					

Table 5 Patrons usability test results of prototype#3

Figure 11 Participants Images

Top left: Richard Borbridge, Top center: Darryl Bank, Top right: Brian Desrosiers – Tam
Bottom left: Alice Brummell, Bottom center: David Tate

6.5.7 Analysis

The feedback received from patrons from testing the final prototype projected a seamless experience for everyone that proved to be a successful concept to implement for real world deployment. One of the main confusions for three participants was the NFC tap icon that was placed on the side of the hat. Through suggestions received from participants and test observations, the final prototype was iterated by changing the position of the NFC device and tag. The NFC device was placed inside the hat facing upwards to the opening of the hat. A lid was placed to cover the NFC device and a print sign was pasted on top with a NFC icon labeled 'tap here'. This idea also resonated with the traditional gesture of throwing in a bill or coin in the busker's hat or guitar case. All participants liked the idea of being able to

receive pop up notifications through beacons of nearby buskers, which in turned saved them time from searching them through the map.

One of the elements that struck the most throughout these tests with all five participants was their positivity towards adopting this support system for contributing to buskers, as they all felt a strong need for this tool.

Figure 12 User Experience Diagram

Chapter 7 – Conclusion

This chapter concludes the insights and outcomes discovered through secondary research, ethnographic studies, which were carried out through field research, followed by the formation of prototypes and usability testing feedback received from participants.

7.1 Reflection

This thesis investigated how mobile technology might be used as a tool for augmenting methods of making contributions to buskers. This question was analyzed by breaking it down to smaller components; what kind of impact would the intervention of digital technology channelled through smartphones have on busking culture, the significance of interdependence between buskers and patrons in the busking culture and what is their value in or impact on urban spaces in communities. Lastly, we ask whether or not there is a need for a mobile social app for buskers and patrons. To tackle these research questions and analyze the outcomes for this project, various approaches and methods were applied through secondary research, ethnographic studies, interviews and online surveys from both buskers and patrons.

After completing the secondary research and market analysis the foreseeable impact and effects of a cashless society on cultural activities such as busking are evident. The use of physical cash is declining drastically and the use of digital payments continues to rise due to increasing availability of new digital payment services and products. This research also determined that modern day technologies such as smartphones and other smart mobile devices are beneficial to the busking

culture as they enable buskers and patrons to perform activities on the go. At the very beginning of this research study, it was assumed that mobile technologies might be obstructive to the busking culture. However through thorough research on the subject matter, it was determined that these mobile technologies could also be leveraged to increase social credibility through social media networks for buskers by building recognition from patrons. Through observation and secondary research, it was also identified and confirmed that the relationship between buskers and patrons is one of symbiosis, such that they cannot be separated, as one exists because of the other. The exchange of social currency between buskers and patrons helps build communities both online and offline, which in turn increases cultural and social value in urban spaces by contributing towards making Toronto a vibrant city. This helps to increase tourism, enhance city life and create numerous opportunities for both buskers and patrons.

Interviews and online surveys conducted provided a deeper understanding and perspectives from both buskers and patrons, which clarified a number of uncertainties. The results from the online survey were surprising. It was evident through field research, that the majority of buskers and patrons are willing to adopt a social microdonation tool that would help buskers generate additional revenue and social credibility through a mobile app. These research methods proved to be effective tools for identifying the particular features required within a social mobile app for buskers and patrons, which resulted in the project's success. Three prototypes have been developed to date, which have been guided by the use of a human-centered design process. In accordance with the feedback received from the

usability testing from users i.e. buskers and patrons, the latest technology and user-friendly design interface were kept in consideration when creating these prototypes. The mobile app met its demands effectively considering that the third and final prototype was developed to serve as minimum viable product for the graduate exhibition. The project demonstrated the strength of a social exchange platform to function as a peer-to-peer social microdonation tool, encompassing virtual and tangible properties to create a fully immersive experience for both buskers and patrons. All users i.e buskers and patrons that participated in usability testing are willing to embrace this mobile app for contributing donations via NFC tap and pay and also believed in the need for such a tool in the foreseeable future. Patrons also found the beacons extremely useful for identifying buskers through instant pop-up notifications.

The feedback and outcomes obtained from both buskers and patrons were mostly positive even though a few critical uncertainties remain regarding Hatter's business plan. While a majority of buskers agreed to a service and maintenance fee charged by Hatter, the percentage amount is not calculated in the scope of this research. A social mobile app or an alternative tool similar to this could provide real opportunities for buskers, patrons, and talent agencies. There is a whole world out there that still relies on tangible cash payments and as a loyal citizen, patron or futurist it is our obligation to ensure we preserve our art and culture.

7.2 Challenges

This thesis including secondary research, ethnographic studies through fieldwork and design process, has been a long iterative journey, which encountered a few obstacles along the way. Penetrating into the busking community was rather challenging; while conducting interviews and online surveys, majority of buskers were apprehensive in disclosing their daily, weekly or yearly income. This was mainly because, some buskers do not entirely disclose their income to the government for tax filing purposes as their revenues are generated through donations, which are mostly in cash i.e. spare change.

One of the greatest challenges in the future would be to create a business plan that would factor in the amount buskers on average earn per day or month in order to deduct a viable percentage without discouraging buskers to be a part of this platform. Another challenge would also be to create awareness of Hatter among buskers and patrons and convince them to be a part of this social platform that could be used as an alternative solution to benefit both parties in the future. For the purpose of using such an alternative mobile solution and collecting money from patrons, buskers would need to have a bank account in order to receive money from Hatter, which will be transferred directly in their accounts every first week of the month. This new method of collecting money would create a major social-cultural shift from the traditional way buskers collect payments now a days. Bringing all buskers on board to this platform from diverse backgrounds would be strenuous as some buskers are either technologically challenged or simply believe in the conventional way of earning a living. Trust and security will be two major

components that Hatter would have to carefully measure by securing confidential information on an independent server in order to protect the privacy and integrity for both buskers and patrons. In order, for patrons to join this social mobile app some valuable incentives should be offered to encourage them to join the network.

7.3 Future Directions

This mobile app was designed as a Java application to serve as a minimum viable product (MVP), considering only the most substantial features and functionalities to reflect this thesis's investigation. In future, the mobile app, Hatter, would be developed to cater for all platforms to ensure compatibility with all devices. This mobile application can be expanded to numerous countries where the use of cash is rapidly declining and local art practices are suffering due to the shift to digital payment options.

In the future, new payment options would also be expanded such as crytocurrencies like Bitcoin could also be integrated for those patrons and buskers that find the exchange of virtual currency less invasive. An option for preloading digital currency in the app could also be provided to users in the future who feel the need to donate on a monthly or yearly-allocated budget. Instead of simply contributing digital and virtual currency, commodities such as food, drinks, clothing or gift cards could also be exchanged through this platform in the next development phases. This mobile app will be integrated with other social media websites such as Facebook, Instagram, Pinterest etc to create a larger network for patrons to broadcast messages through the app. Additional features could be incorporated in

the mobile app, which would consist of buskers uploading a small audio or video clip of their performance so patrons are able to appreciate their talent and support them remotely. An online market place could be implemented for buskers to sell their merchandize and for patrons to purchase those items through the mobile app. An additional technology could be embedded in the NFC device for those patrons who are not interested in being a part of the mobile app but still want to contribute to buskers. This could be implemented by these patrons simply tapping their debit/credit cards on the buskers' NFC device, which could be situated inside the buskers' hat or guitar case. An appropriate donation amount could be set by the performer. This mobile app could also be developed further to collaborate with the Toronto Transit Commission (TTC) and busker festivals in Toronto. A virtual map of the festival could be embedded in the mobile app to accommodate festival organizers requirements. This would enable patrons to make cashless donations to buskers, navigate through the festival and find times and location of the acts as opposed to the conventional static maps and schedules that are currently distributed at festivals.

The idea for Hatter that has been presented in this thesis can be modified and used as a template to bring people together in geographically dispersed communities, who wish to exchange something of value. In the local community, we can identify highly mobile street vendors such as food trucks, hot dog stands or farmers markets who wish to be able to attract people through a mobile platform such as Hatter, integrated with GPS and beacons, to broadcast their location. If both vendors and consumers were on the same mobile platform this would in turn create

awareness for local vendors and their products. Consumers would be able to find local vendors in their community and make cashless payments through a mobile app that would be linked to vendors and consumers bank accounts via a third party payment tool. This could bridge the gap between local vendors and consumers by enabling them to support each other with the gradual advent of a cashless society. This could also result in the formation of a virtual community of local vendors and consumers that could function as a platform for rating local vendors. The rating system integrated into the mobile application would inform potential consumers of a vendor's product quality or popularity. While these are some of the simpler ideas for the application of this product, it can grow in many directions.

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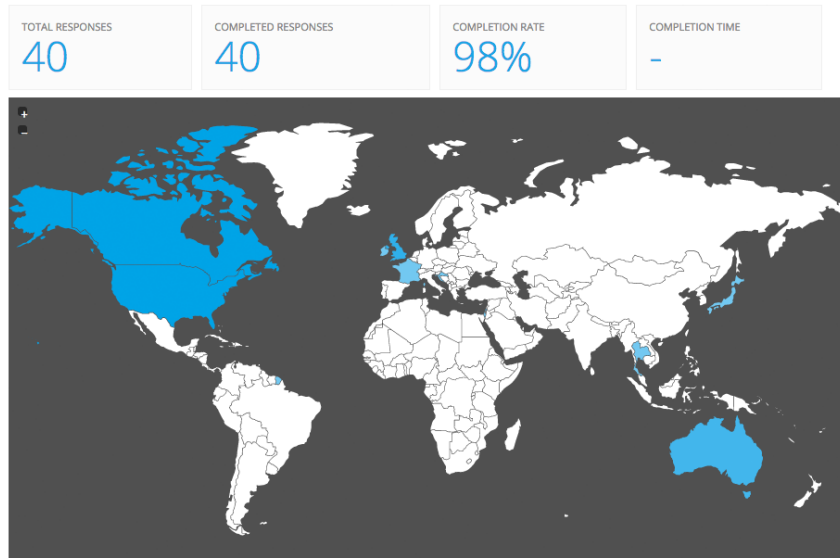
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Appendix A – Online Survey Results – Buskers

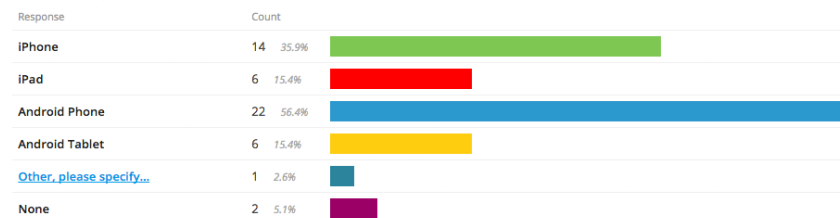*Hatter:* Empowering Buskers through a Social App

Online Survey Results - Buskers

TOTAL RESPONSES	COMPLETED RESPONSES	COMPLETION RATE	COMPLETION TIME
40	40	98%	–

Is busking your sole means of earning income?

Response	Count	
Yes	16	42.1%
No	11	28.9%
Other, please specify...	11	28.9%

Please specify your smart mobile device?

Response	Count	
iPhone	14	35.9%
iPad	6	15.4%
Android Phone	22	56.4%
Android Tablet	6	15.4%
Other, please specify...	1	2.6%
None	2	5.1%

On average what is the amount a person donates to you?

Response	Count	
$1	18	48.6%
$2	5	13.5%
$3	6	16.2%
$4	2	5.4%
$5 and up	3	8.1%
Other, please specify...	3	8.1%
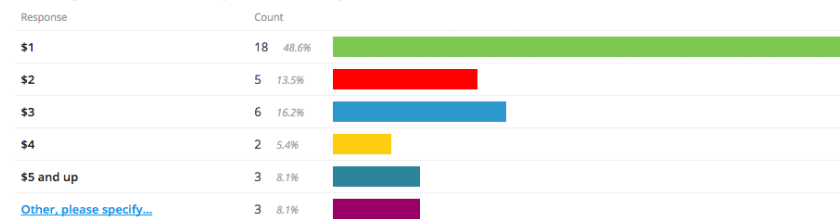
Online Survey Results - Buskers

In your busking experience do you feel your donations have dropped in the last few years due to mobile commerce or debit/credit cards?

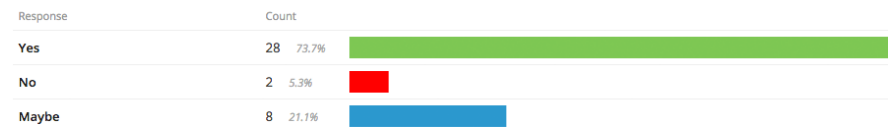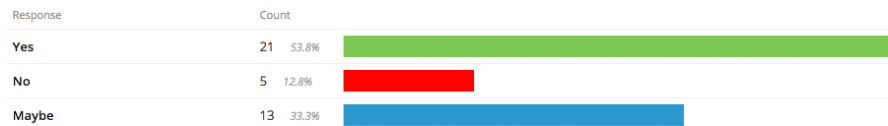| Response	Count	
Yes	9	23.1%
No	19	48.7%
Other, please specify...	11	28.2%

This result is combined with the 'other' comments received from buskers

Would you be in interested in using a busking app that facilitates to generate more revenue by receiving online donations from people on the go?
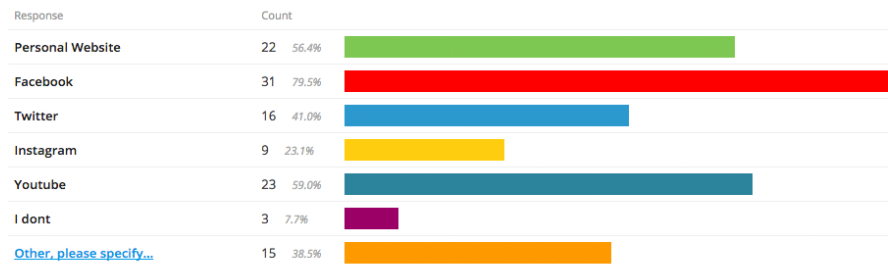
Response	Count	
Yes	28	73.7%
No	2	5.3%
Maybe	8	21.1%

Please note: Percentages have been rounded up

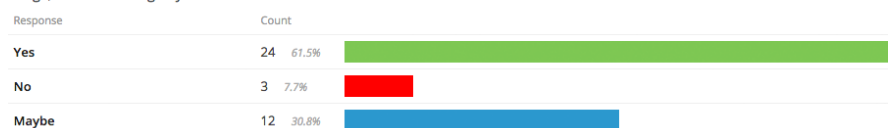Would you be interested in selling your merchandises or products through the busker app?

Response	Count	
Yes	21	53.8%
No	5	12.8%
Maybe	13	33.3%

How do you promote yourself?

Response	Count	
Personal Website	22	56.4%
Facebook	31	79.5%
Twitter	16	41.0%
Instagram	9	23.1%
Youtube	23	59.0%
I dont	3	7.7%
Other, please specify...	15	38.5%

In the busking app would you like the idea of young people donating their appreciation for your talent and skill in a form of a kiss, flower, star, love etc?

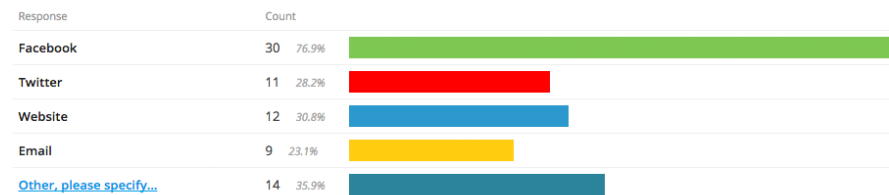| Response	Count	
Yes	8	20.5%
No	8	20.5%
Dont Care	23	59.0%

People donating to you on regular basis would you be interested in sending them an automated email with a downloadable sticker, badge, video or a song of yours?

Response	Count	
Yes	24	61.5%
No	3	7.7%
Maybe	12	30.8%

Online Survey Results - Buskers

How do you follow other buskers in your community?

Response	Count		
Facebook	30	76.9%	
Twitter	11	28.2%	
Website	12	30.8%	
Email	9	23.1%	
Other, please specify...	14	35.9%	

Would you promote and share this app in the busking community?

Response	Count		
Yes	24	61.5%	
No	3	7.7%	
Maybe	12	30.8%	
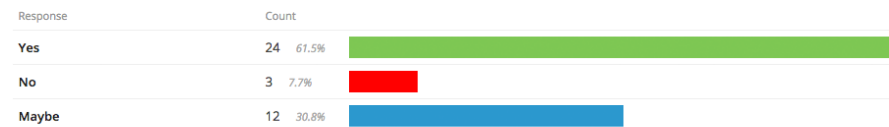
Appendix B – Online Survey Results – Patrons

Hatter: Empowering Buskers through a Social App

Online Survey Results - Patrons

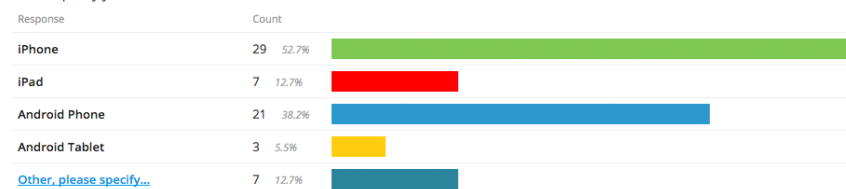| TOTAL RESPONSES	COMPLETED RESPONSES	COMPLETION RATE	COMPLETION TIME
55	55	100%	0:01
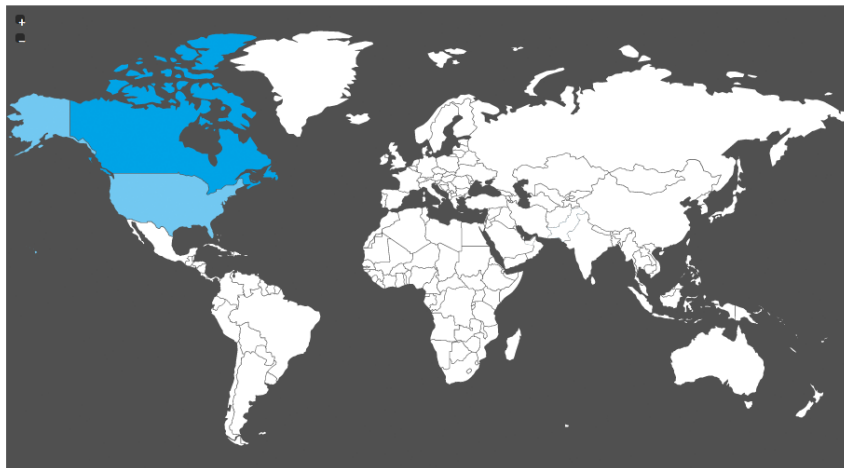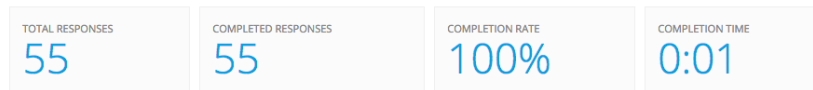
Do you enjoy music or other street performances in the city?

Response	Count	
Yes	52	94.5%
No	3	5.5%

Have you ever donated to a busker/street performer?

Response	Count	
Yes	51	92.7%
No	4	7.3%

Please specify your smart mobile device?

Response	Count	
iPhone	29	52.7%
iPad	7	12.7%
Android Phone	21	38.2%
Android Tablet	3	5.5%
Other, please specify...	7	12.7%

What is your preferred choice of payment?

Response	Count	
Cash	22	57.9%
Debit/Credit Card	19	50.0%
Mobile payments	1	2.6%
Tap/wave	10	26.3%
Other, please specify...	1	2.6%
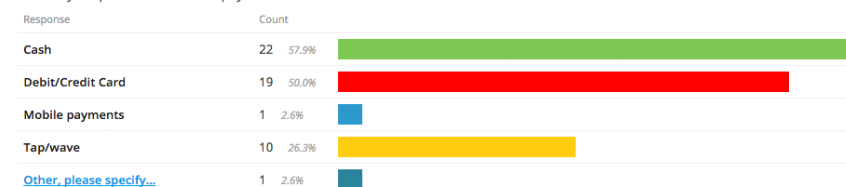
This percentage of Debit/Credit Card and Tap/wave has been combined together - Total 80%

Online Survey Results - Patrons

Would you use a mobile app to donate to buskers on the go?

Response	Count	
Yes	31	57.4%
No	23	42.6%

If yes, how would you prefer to donate?

Response	Count	
At the busker's location	33	89.2%
Away from the busker's location	9	24.3%
From home	6	16.2%
Other, please specify...	3	8.1%
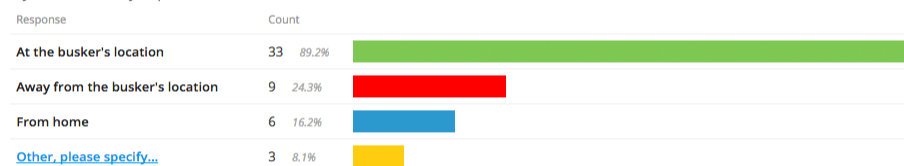
What payment service would you like to use?

Response	Count	
PayPal	17	40.5%
Credit Card	19	45.2%
Other, please specify...	6	14.3%

Would you be interested in donating appreciation to the busker in the form of social currency ? (i.e love, kiss, flower, star etc)

Response	Count	
Yes	36	66.7%
No	18	33.3%

Would you like to find/locate buskers in your community through the app?

Response	Count	
Yes	34	64.2%
No	19	35.8%

Would you like to receive gifts from buskers for donating to them on regular basis?

Response	Count	
Yes	21	38.2%
No	34	61.8%

Would you promote buskers through the app on social media networks?

Response	▲ Count	
Yes	40	75.5%
No	13	24.5%

Would you share this app with your friends?

Response	Count	
Yes	43	81.1%
No	10	18.9%