

WAGE INEQUALITY DUE TO ACCESS TO
TECHNOLOGY

A Thesis Presented to the Faculty
of
California State University, Stanislaus

In Partial Fulfillment
of the Requirements for the Degree
of Master of Social Work

By
Raquel Cabrera
September 2017

CERTIFICATION OF APPROVAL

WAGE INEQUALITY DUE TO ACCESS TO
TECHNOLOGY

by
Raquel Cabrera

Signed Certification of Approval page
is on file with the University Library

Dr. John Garcia
Professor of Social Work

Date

Dr. Robin Ringstad
Professor of Social Work

Date

© 2017

Raquel Cabrera
ALL RIGHTS RESERVED

DEDICATION

This work is dedicated to the two most important people in my life, my children, Brianna and Jesse. Both of you have truly been the driving forces that have given me the strength to accomplish what I thought was the impossible. I hope you know that there is nothing in this world you cannot accomplish with hard work and dedication. Remember not only the success at the end but the hard work it will take to get you there. Believe in yourself and always pursue your dreams.

Love you forever and always,

Mom

ACKNOWLEDGEMENTS

First, I would like to express my sincere gratitude and appreciation to Professor Chuck Floyd for guiding and assisting me through this process. Not only are you an amazing example of a wonderful human being but you exemplify the true meaning of what a Professor should be. I will forever be grateful for that.

To my professor Dr. Garcia, thank for your time and attention. Your ideas, feedback and support have been truly invaluable. I am so very grateful for your willingness to constantly go above and beyond. This would not have been possible without you.

And a very heartfelt Thank you to Cathrin. You supported me throughout this process and encouraged me when things got tough. You always kept in touch with me and had a genuine concern for my well-being. Thank you for playing such an important role throughout my journey.

I would especially like to thank my amazing friend Shari for her support and constant encouragement over the years. You have been such an inspiration to me. You always believed in me and have stood by my side through it all. Thank you for being a part of my life because you have been the greatest friend anyone could ask for.

TABLE OF CONTENTS

	PAGE
Dedication	iv
Acknowledgements	v
List of Tables	viii
Abstract	ix
CHAPTER	
I. Introduction	1
Statement of the Problem	1
Statement of the Purpose	2
Significance of the Study	3
II. Literature Review	5
Access to Technology and Digital Divide	7
The Digital Divide and Skill-Based Technological Change	10
Closing the Digital Divide and the Unified Theory of Acceptance and Use of Technology	12
Technological or Institutional Changes and the Digital Divide ..	13
Citizenry’s Acceptance and Usage of New Technologies	16
Conclusion	20
III. Methodology	23
Overview	23
Research Design	24
Sampling Plan	25
Instrumentation	26
Data Collection	27
Data Analysis	28
Protection Human Subjects	29
IV. Results	31
Demographics	31

Findings.....	32
Negative Impact on the increase in wage inequality	33
Positive impact on the increase in wage inequality	39
Increase in the wage inequality from the change in labor union practices	43
Summary.....	47
 V. Discussion	 49
Benefits and disadvantages of technology-based practices	51
Perspectives on labor union practices and wage inequality	57
Implications.....	61
Practice.....	61
Policy	62
Future Research	63
Conclusion	64
 References.....	 68
 Appendices	
A. Definition of terms.....	80
B. Interview guide	81

LIST OF TABLES

TABLE	PAGE
1. Breakdown of the participants demographics.....	32
2. Breakdown of the themes addressing RQ1.....	33
3. Breakdown of the themes addressing RQ2.....	42

ABSTRACT

The general problem is that wage inequality remains high between high wage and low-income earners. The purpose of this qualitative case study was to explore the role of local government agencies or officials in implementing technology-based policies and programs to minimize wage inequality. The study was exploratory in nature and utilized qualitative methodology to collect data from interviews with government employees who hold different levels of employment, such as new hires up to workers representing management. However, all participants work in the labor sector. Specifically, the interviewees have been part of the policy-making committees on some level. The researcher gained subjects through past peer relationships by utilizing the snowball effect. Moreover, this researcher has conducted semi-structured interviews to further the data by using five participants. After organizing the data, the researcher performed Yin's (2013) five-phased method for analyzing a case study.

CHAPTER I

INTRODUCTION

Statement of the Problem

The general problem is that wage inequality remains significant between high wage and low-income earners (Appleton, Song, & Xia, 2014; Broecke, Quintini, & Vandeweyer, 2015; Reich, 2014; Western & Rosenfeld, 2011). Workers at the 90th percentile have an income of at least five times more compared to the income of workers at the 10th percentile (Broecke et al., 2015). Evidence suggests that a decrease of wages in the United States coincided with the decline in labor union practices. Moreover, at least 20% of the growth in wage inequality occurred between upper and lower class workers (Western & Rosenfeld, 2011). However, with the shift in technology, labor markets have increased the demand for technology-based jobs, which employers usually offer to the middle third of the wage earners, suppressing the demand for those in the bottom wage distribution level (e.g., low level skilled workers) (Mishel, Schmitt, & Shierholz, 2013; Van Reenen, 2011).

Although a major contributor to wage inequality, technology may also represent a contributor to closing or minimizing the wage gap through programs and policy changes that develop in alignment with technology-use (Mishel et al., 2013). Researchers have said that government involvement remains highly influential in effective policy change (Mishel et al., 2013). However, the role of local government agencies or officials in implementing technology-based policies and programs to minimize wage inequality has not yet been explored.

Statement of Purpose

The purpose of this qualitative case study was to explore the role of local government agencies or officials in implementing technology-based policies and programs to minimize wage inequality. The study was exploratory in nature and utilized a qualitative methodology to collect data via interviews with government employees who held different levels of employment, such as new hires up to workers representing management. However, all participants must have started their employment in the labor sector. Specifically, the interviewees were a part of policy-making committees on some level. The researcher utilized the snowball effect, gaining subjects through past peer relationships.. This researcher conducted semi-structured interviews with least five participants. The major questions that guided this study included:

1. How do local government agencies or officials react (as reflected through the government's relevant policies and programs) to the increase in wage inequality brought about by technology-based shift in demand?
2. How do local government agencies or officials react (as reflected through the government's relevant policies and programs) to the increase in wage inequality from the change in labor union practices?

Definition of Terms

Labor laws. Labor laws refer to the rules and regulations that the government set to ensure that the proper labor procedures and ethics are conducted and upheld (Mishel et al., 2013).

Labor union. Labor unions are employees' organizations that they themselves have founded, operated, monitored, and supervised. The goal of a labor union is to uphold the rights of employees to minimize unfair supervision and practices of an employer or the management (Western & Rosenfeld, 2011).

Wage inequality. Wage inequality refers to a gap in salaries received by the members of the top 10% of the income bracket in relation to the salaries received by the bottom 10% of the income bracket (Appleton et al., 2014).

Significance of Study

This study was important because the findings may help social workers understand the root causes of income inequality and stagnant wage growth. The study may also prepare those in the social work profession, especially when engaging in political and policy advocacy, to better comprehend the needs of those they serve. Accomplishing the purpose of this study was important as it matched the objectives of social workers in terms of recognizing how policies can influence communities and the historical context within which leadership created the current policies. By understanding the role that unions played in supporting workers in the past, social workers can use the findings from the study to advocate for equal access to those

same kinds of worker protection and foster structural change in the economy to address the underlying problem of income inequality.

The findings of the study may also contribute to practice in the field of social work by enabling social workers to continue to educate themselves and seek to understand the nature of social and economic problems. Researchers have shown that the poverty gap has widened and many families are being affected by the cycle of poverty (Mishel et al., 2013). Many individuals on the low end of the socio-economic scale face injustices and remain helpless to change their circumstances. Social workers need to develop policies and programs that will allow them to understand and address issues of societal injustice. Through this research, future researchers may gain ideas of extending the research base regarding promotion of wage equality. One must research the various policies and programs available to improve the lives of the individuals, families, and communities now and in the future. Social workers promote social justice, social change, and challenge social injustice. Therefore, it remains imperative for this study or studies like this to help drive social workers to positive change for the huge wage disparities between the upper and middle/lower class.

CHAPTER II

LITERATURE REVIEW

Researchers have studied the growing and widening wage inequalities between various social classes for decades (Autor, 2014; Autor & Dorn, 2013; Bonica, McCarty, Poole, & Rosenthal, 2013; Elsby, Hobijn, & Sahin, 2013; Nau, 2013; vom Lehn, 2014). Many researchers point to the fact that these problems remain pressing. Moreover, if the public, the government, and the private corporate sectors do not evolve available policies, then the labor and wage inequalities may reach a crisis point in the United States and worldwide (Stockhammer, 2015; Wisman, 2012). A common theme in the current literature, investigated by numerous researchers, was the role technology can play in governmental initiatives and programs to address the huge divides in wage, income, and labor inequalities (Atasoy, 2013; Behaghel & Moschion, 2012; Colombo, Croce, & Grilli, 2012; Dolan, 2016; Garnero, Stephan, & Rycx, 2014; Hanushek, Schwerdt, Wiederhold, & Woessmann, 2015).

The specific problem addressed by this study was that the role of local government agencies or officials in implementing technology-based policies and programs to minimize wage inequality has not yet been explored. This can occur by exploring the role of local government agency officials and their attempts to implement technology-based policies and programs to minimize economic and wage inequalities. Furthermore, the present study explored ways to reduce the negative effects on society from the large wage gap that the U.S. economy has created. This

researcher also explored whether the government can fill the void with the rapidly declining power and influence of worker unions and developing shifts and changes in technology. This helped explain why increases in wage inequalities have become a present economic issue.

The first section of this literature review presents a discussion and analysis of public access to technology and a growing digital divide between the lower and higher socioeconomic classes. The second section presents and analyzes the specific reasons why technological change represents a fundamental cause of the digital divide (i.e., skill-based technological change [SBTC]). The third section focuses on attempts to understand, address, and potentially solve the causes of the digital divide through the unified theory of the acceptance and use of technology. The fourth section addresses the decline in labor unions, its relationships to technological changes, and how the evolution of unions lead to issues associated with labor and wage inequalities nationwide and throughout the world. The fifth and final section presents and discusses the role of the government in the citizenry's proper and effective uses of technology. A conclusion is also provided that synthesizes arguments throughout the most recent research covered in this literature review. It also provides arguments that effectively and successfully address the problems and purposes of the present study, possible solutions to closing gaps in the literature, and may enrich the scholarly knowledge available on the topic.

Access to Technology and the Digital Divide

Labor economists have warned of monumental changes in the nature of work and labor since the advent of computerization and the automation of factory, manufacturing, and other job sectors (Kristal, 2013; Kristal & Cohen, 2015, 2016; Krueger, 2012). Their concern included that the computerized mechanization of jobs formally performed by human beings, especially routine work skills, would replace human workers. In fact, thousands of workers were displaced by computerized machines, and forced to find other work, which began around the 1950s (Marchant, Stevens, & Hennessy, 2014; Mishel et al., 2013; Rotman, 2013).

With the advent of the Internet, another labor problem arose that extended beyond labor into the social and cultural world. As corporations and businesses came on-line, personalized computers became a common fixture in middle to upper income families, and the Information Technology (IT) revolutions began in schools. A digital divide occurred. The digital divide is a concept that some socio-economic classes of people had access to the Internet while some did not have access (Lee, Park, & Hwang, 2015). Lower socioeconomic status families and their school children became disadvantaged by this situation (Lee et al., 2015; Uphoff, Pickett, Cabieses, Small, & Wright, 2013; van Deursen & Van Dijk, 2014). This created not only a shift in labor practices, but also a cognitive divide between the different social classes and a disparity among educational tactics used by teachers. Scholars referred to this situation as a case of the *haves* (high socioeconomic status) and *have-nots* (low socioeconomic status) (van Deursen & Van Dijk, 2014).

Researchers first articulated the concept of a digital divide (i.e., a widening gap between those with access to Internet and those without) during the 1990s when it became a problem not only for labor, but also for socio-economic and cultural life (Rogers, 2016). Economists identified wage, income, educational, and other inequities as a real problem. The divide especially affected minorities, including those in the lower socioeconomic classes and other marginalized groups (Nemer, 2015; Subramoney, 2014). One of the foremost scientific authorities on the impact of the Information and Communications Technologies (ICT) on society stated, “Information technology, and the ability to use it and adapt it, is the critical factor in generating and accessing wealth, power, and knowledge in our time” (Castells, 1998, p. 20). As developments in ICT advanced and became much more sophisticated, the skills and knowledge needed to effectively use ICT as a work tool also became more sophisticated as well.

The first wave of the ICT revolution displaced blue-collar workers because machines took over jobs that performed routine tasks (e.g., assembly line). However, the second wave of the ICT revolution created a great demand for laborers to have the skills and cognitive abilities needed to use IT as an everyday work tool. In other words, rapid advances in ICT sophistication created a greater need for labor with the appropriate skills that, in turn, created a gap in wage and income inequalities between those workers who had these skills and those who did not. This occurred because the educated, middle class went through the proper schooling to train them in ICT work.

However, these problems have evolved to include not only an individual's access to ICT, but to also include one's cognitive skills and knowledge (Dolan, 2016; Rogers, 2016; Subramoney, 2014). This, in turn, has created another form of socio-economic injustice, including wage and labor inequities, because a disproportionate number of higher paying jobs went to those skilled in ICT. Moreover, those same groups who faced inequities with the initial digital divide were also impacted by the second wave (Goos, Manning, & Salomons, 2014; Hanley, 2014; Hanushek et al., 2015; Im, Hong, & Kang, 2011; King, 2013; Marchant et al., 2014; vom Lehn, 2014). As Subramoney (2014) stated, "the Digital Divide... continues to remain one of the biggest social challenges to confront the human race in modern times" (para. 9).

The first wave of digital inequality was conceptualized as a problem of access (Hanushek et al., 2015). To close the gap between the digital-haves and the digital-have-nots, scholars, practitioners, and policy makers responded to the first wave by developing and implementing massive programs across the United States to supply ICT (e.g., computers, tablets, iPhones, social media, etc.) to schools and businesses. This occurred so that as many students and workers as possible had access to the Internet. In fact, in the 1990s, Vice President Al Gore developed initiatives, including the formation of the National Research Education Network (NREN), and promised the citizenry that the goal remained for everyone to have access to the Internet (Cancro, 2016). This occurred in response to problems associated with the digital divide. Access represented the problem; therefore, providing access seemed to entail the solution (Michaels, Natraj, & Van Reenen, 2014). Some researchers in the

literature referred to this as a Third Industrial Revolution, while others referred to it as the Information Age (Michaels et al., 2014). All of these concepts and metaphors are designed to express the latest monumental impact that developing technologies have on human life.

For many scholars, the major cause of income and wage inequality in the first wave was access to technology, especially ICT (Cancro, 2016; Nemer, 2015; Rogers, 2016). The second wave of digital inequality, on the other hand, was conceptualized as a problem of skills (Autor, 2014; Broecke et al., 2015; Dolan, 2016; Fairlie, 2012). Researchers determined that access to computers was not enough. Therefore, by the beginning of the 21st century, the most common explanation for income and wage inequality centered on students' and workers' cognitive abilities to maximize their utilization of ICT. From that knowledge base, students and workers developed skills and abilities that placed them on a different level of wage earnings compared to those who did not have these digital tools to advance their careers (Kristal & Cohen, 2016).

The Digital Divide and Skill-Based Technological Change

Different researchers articulated various concepts to provide a name for the phenomenon that ICT technological development caused major wage, income, and social inequalities. The most commonly accepted name given to the problem was Skill-Based Technological Change, (SBTC) (Hanley, 2014). However, others used the term *skill-biased* technological change (Autor, 2014) and routine-based technological change (RBTC) (Goos et al., 2014). More specifically, economists saw SBTC as a major shift in the technologies of production that correlated with

employers choosing ICT-skilled laborers and workers over those unskilled in ICT (Autor, 2014; Goos et al., 2014). As ICT technology advanced, occupational trends shifted from unskilled to skilled labor, increasing the demand for those tech-savvy workers who had the education and skills to use ICT effectively. This, in turn, caused wage and labor inequalities because of the higher pay awarded to those with *brains* being preferred in the job market to those unskilled, *brawn* laborers (Autor & Dorn, 2013; Mishel et al., 2013). A noticeable rise in employment of, and demand for, those with ICT skills occurred. Numerous, prominent labor economists calculated that technological development and change led to an approximately 40% increase in wage and labor inequalities (Autor & Dorn, 2013; Baum-Snow & Pavan, 2013; Guvenen, Kuruscu, & Ozkan, 2013; Mishel et al., 2013).

Researchers connected the remarkable, focused intensification of wage premiums to people with higher education, more advanced skills, and increased cognitive abilities. Researchers mostly associated these with a boom in demand and subsequent increased supply of jobs for those at the top of the socioeconomic bracket and a diminishment of jobs in the middle bracket. In turn, this developed into a polarization of jobs where the demand for the highly-skilled surged, while jobs and occupations at the middle did not experience the same surge (Autor & Dorn, 2013; Cortes, 2014; Goos et al., 2014; Smith, 2013; vom Lehn, 2014). In effect, the increases in the demand and supply of ICT-skilled workers had a negative impact on wage and labor equalities. Autor (2014) also observed that such inequalities, while certainly having an effect in economic costs to the national and regional economies,

were also associated with social costs. The entire focus on SBTC as the fundamental cause of wage inequalities is labeled as the *canonical* viewpoint because of its wide acceptance (Autor, 2014).

Closing the Digital Divide and the Unified Theory of Acceptance and Use of Technology

Many scholars and practitioners working under the umbrella of the canonical model have expressed concern about the ease or difficulty of public access and use of technology, especially ICT (Venkatesh, Thong, & Xu, 2012). At present, the dominant paradigm includes the unified theory of acceptance and use of technology 2.0 (UTAUT2) (Venkatesh et al., 2012). UTAUT2, originally developed by Venkatesh et al. (2012), derived from synthesizing and consolidating eight different theoretical models primarily derived from psychology, sociology, and philosophy. UTAUT2 is an empirically-grounded theory, which attempts to model and explain the key motivating factors that lead people to use ICT and their subsequent behavior with respect to ICT usage.

UTAUT2 proposes that peoples' intentions and behavior regarding ICT can be explained by applying four major concepts. These concepts include (a) performance expectancy, (b) effort expectancy, (c) social influence, and (d) facilitating conditions (Venkatesh et al., 2012). In addition to these four constructs, researchers hypothesized that certain key factors (e.g., gender, age, and experience) might moderate the impact felt from the four major concepts of user intention and behavior. Researchers have tested the validity and reliability of UTAUT2 and confirmed its

reliability (Sugarhood, Wherton, Procter, Hinder, & Greenhalgh, 2013; Tsai & LaRose, 2015; Venkatesh et al., 2012).

Different scholars have used UTAUT2 in various fields of research in relation to the use of the Internet. Escobar-Rodriguez and Carvajal-Trujillo (2014) have explored online purchasing of tickets based on the UTAUT2 model. Specifically, Escobar-Rodriguez and Carvajal-Trujillo conducted the study to extend the UTAUT2 model and explore different implications of user acceptance within the context of online airfare ticketing purchases. In another study, Zhou (2012) explored the acceptance and usage of location-based services within the context of privacy risk. In the field of medicine, Jeng and Tzeng (2012) explored the acceptance and use of technology within the operations of clinics. Specifically, Jeng and Tzeng explored the acceptance and usage of a decision support system in healthcare among medical professionals. In this current study, the researcher explored the acceptance and usage of the different technology-based policies and programs within government agencies based on the perceptions of government officials. Using the UTAUT2, the topic of the current study was explored in terms of acceptance and usage of government officials, employees and other users of the different technology-based policies and programs in the government.

Technological or Institutional Changes and the Digital Divide

Rather than focusing on technology alone, some economists have focused on additional causes of the problem of wage inequalities in the United States since the 1970s. For example, researchers confirmed the fact that developing ICT caused a

higher demand for technologically-skilled workers up until the 2000s (Elsby et al., 2013). They further provided empirical evidence to show that continued ICT development, access, and skills, after the 2000s, did *not* seem to account for all of the data related to worker demands and wage inequalities in the United States (Elsby et al., 2013). Nevertheless, the shift in trends showed that despite changes in the demand and wage premium associated with technically-skilled workers, employees still lack in terms of acceptance and use of technology, which is the key solution to the problems associated with the digital divide; thus, increasing the deficit in labor skills and wage inequalities.

Critics of the SBTC explanation have pointed to a variety of other factors that also seemed responsible for the rise in wage and labor inequalities, including a decline in the real minimum wage, globalization and international trade, rising immigration, and the decline in collective bargaining (Broecke et al., 2015; Kristal & Cohen, 2016; Mishel, 2012). According to Mishel (2012), the real hourly wage (i.e., wage and benefits) rose only 10.7% between the 1970s and the 2000s, leading the researcher to refer to the previous 10 years as the “lost decade” of wage growth (p. 1). Mishel reiterate the growing problems of job polarization; however, the results of the report showed that the wearing away of the power and reach of unionization had a substantial impact on recent downward trends in wage inequities in occupations, work, and labor. The conclusions of the results also suggested the reasons for the weakening of union power occurred because of a decline in the bargaining power of unions. Moreover, this represented the unions’ inability to set labor standards that

typically exerted some control over employees' bargaining power to raise their wages (Kristal & Cohen, 2015, 2016; Mishel, 2012).

At present, approximately only 13% of workers make up the union laborers; a number halved since the 1970s (Rios-Avila & Hirsch, 2014). Researchers associate the decline in numbers with government policies of laissez-faire economics and the destabilization of union power, including deregulation of corporations, globalization, and a weakened minimum wage. This may have occurred because of lessened opportunities for workers' collective bargaining rights for wages. For example, Rios-Avila and Hirsch (2014) showed that weakening union power, worker collective bargaining, and diminished union membership was similar in multiple developed nations, including the United States, Bolivia, and Chile.

Unions have historically played a crucial role in addressing discrepancies and negotiations over wages, worker benefits, and other rights claimed by employees. Unions were also a complementary force that ensured employees were paid commensurate with the work they performed. At the same time, executives and top management's wages remained largely in check by the power of the unions. However, along with the decline in unions, there has been a rising increase in wages and income of those at the top corporations and businesses (i.e., the Chief Executive Officers [CEO]). In fact, according to Mishel (2012), income for CEOs rose dramatically with the decrease of union power. For instance, in the 1970s, CEOs received approximately 40 times more in wages than the average employee. In the 2000s, the divergence in wages increased, with the top managers receiving 350 times

more in comparison to the average worker. Since unions did not protect workers and business productivity increased, workers' pay stayed the same (Broecke et al., 2015; Jacobs & Myers, 2014). However, the CEOs were the only ones benefiting from increased productivity (Broecke et al., 2015; Jacobs & Myers, 2014; King, 2013; Mishel, 2012; Rios-Avila & Hirsch, 2014). In other words, employees worked harder for less wages, while CEOs' wages heightened exponentially as soon as the unions lost power.

In the end, the question on most scholars' minds is not unilateral, in that the cause of wage inequalities is *either* technology *or* a decline in unionization. Rather, most studies in the literature lead to conclusions that the causes of wage inequalities are much more likely a combination of *both* technology *and* the decapitation of national union power. Moreover, most scholars also agree that one of the best options that provides the most promise for reducing the wage gap is technology. This represents why nations have invested billions of dollars in developing and implementing critical ICT and broadband Internet infrastructure globally (i.e., the wires, electricity, satellites, etc.). This has occurred so that the different government agencies, economic entities, as well as the defensive or military arm of the nation, can have access to, and benefit from, ICT and the Internet, financially (i.e., higher wages) and socially (i.e., a more solid, familial, economic grounding).

Citizenry's Acceptance and Usage of New Technologies

Electronic government (e-government) initiatives include strategies for employing the Internet to connect and establish communications between various

government services and the citizenry. The U.S. White House's Office of E-Government and Technology defined e-government as:

The utilization of Information Technology (IT), Information and Communication Technologies (ICT s), and other web-based telecommunication technologies to improve and/or enhance on the efficiency and effectiveness of service delivery in the public sector. (United States Government, 1914, para. 2)

In fact, as many researchers have shown, e-Government plays a central role in trying to close the digital divide gap between different socio-economic classes in the U.S. as well as countries worldwide (Clifford, Young, & Hu, 2013; Linders, 2012; Magro, 2012; Norris & Reddick, 2013; Snead & Wright, 2013; Taylor, 2014; Venkatesh, Sykes, & Venkatraman, 2014).

The present literature reflects a common theme when it comes to e-government. Researchers have posited that e-government has not lived up to the expectations (Norris & Reddick, 2013; Snead & Wright, 2013). A comprehensive study compared the earlier predictions of e-government with empirical data collected from two surveys of government officials from local governments across the country (Norris & Reddick, 2013). The results of the study showed that U.S. e-government initiatives have not lived up to their earlier promises. The findings suggested that e-government implementation has only developed incrementally. Furthermore, the communications through local government portals have only occurred one-way, from government to the citizenry, and not vice versa. One of the reasons for this includes

the sluggish models of public administration and complex hierarchies that make communications overly complex (Norris & Reddick, 2013). Snead and Wright (2013) identified major gaps in the scholarly e-government literature. The problems included gaps in the research on the topics and themes covered, which the results showed as too narrow and methodologically weak.

Numerous scholars have argued for the necessity of decreasing the digital divide because they have recognized the importance of having crucial computer and ICT skills (Atasoy, 2013; Autor & Dorn, 2013; Colombo et al., 2012; Fairlie, 2012; Forman, Goldfarb, & Greenstein, 2012; Galperin & Fernanda, 2014; Kolko, 2012). Governments are also cognizant of the digital divide and its negative impact on labor, jobs, wages, and income. Galperin and Fernanda (2014) investigated U.S. governmental policies and financial investments in computer and Internet technologies in attempts to close the digital divide and at the same time address the wide gaps in wage distributions between the three major socioeconomic classes. In fact, the U.S. government's stated goals and principles in their investments and initiatives are two-fold. The first expressed goal of e-government programs, such as those sponsored by the White House's Office of E-Government and Technology, includes confronting problems directly with economic growth, rising unemployment, and decreased industrial and business productivity nationwide. The second expressed goal is to "close the digital divide by subsidizing deployment of broadband in unserved and underserved areas" (Galperin & Fernanda, 2014, p. 1).

Scholars have discovered that in the private sector major gaps exist between the promises of corporate investments in ICT to increase productivity and the results from studies and practices. These lessons from the private sector and the complex set of relations between technologies, corporations, and the labor market can provide scholars and practitioners with information about how much investment must occur to improve national infrastructures (Linders, 2012; Lin, Fofanah, & Liang, 2011; Magro, 2012; Nasri, 2014; Norris & Reddick, 2013; Snead & Wright, 2013). In fact, the promise to increase productivity was so strong that a 2011 United Nations report called on governments worldwide to “make strong investments in broadband Internet infrastructure and promote ICT and Internet adoption by the people to reap the economic and social benefits that broadband brings” (United Nations Broadband Commission, 2011, para. 5).

In this context, researchers (Galperin & Fernanda, 2014; Linders, 2012; Lin et al., 2011; Snead & Wright, 2013) have stated that governments worldwide must invest in widespread broadband and Internet access. Forman et al. (2012) reported that by 2013, over 135 countries had spent billions on the development and implementation of broadband Internet infrastructure designs and policies. These designs and policies implemented practices and technologies to help alleviate economic and labor problems of the low social classes.

One example of these policies is Vive Digital, Columbia’s ambitious ongoing investment, development, and implementation for creating a massive national Internet superhighway, bringing broadband Internet access to low-income households, and

offering a host of e-government services (Atasoy, 2013). One impressive policy of Vive Digital includes its strong commitment to not only access, but also huge investments in training programs for Columbian citizens. To provide some sense of the size of Vive Digital, Atasoy (2013) estimated that the Columbian government's investments equated to U.S. \$2.25 billion, which is incidentally 0.62% of the Columbian country's gross domestic product.

Atasoy (2013) demonstrated that a population's access to broadband Internet access correlates with an approximate 1.8% increase in the employment rate, showing higher positive impacts in rural areas compared to urban areas. The causes of this effect were traced to gains in employment, which resulted from increasing scales of labor demand within businesses and corporations, coupled with corresponding growth in the labor force. These studies have provided strong indirect evidence that corporate and governmental ICT and Internet technologies can have a positive effect on decreasing wage inequalities in large sectors of the country. In other words, increases in broadband technology access may lead to increases in the labor skills, which often may result in higher wages, particularly for the disaffected.

Conclusion

The wage gap that presently exists, and has existed for some time, has been shown to represent problematic risks for governments and populations worldwide. Statistics have shown that workers in the top 10% of the income earners generate an income as much as 5 times more than the rest of the struggling 90% of the U.S. population combined. Such massive wage inequalities between upper and lower

income families may undermine any sense of U.S. democratic equality of opportunity (Alvaredo, Atkinson, Piketty, & Saez, 2013; Reich, 2011). This massive rise in wage and labor inequalities also coincides with the decline in labor union power, policies, and practices. Unions played a role in buffering the risks that economic and technological shifts posed to the economy and wages of families and nations. With the diminishment in labor unions, the government needs to address the problem and provide policies that attempt to close income inequalities at all costs (Muller, 2013).

In addition to the loss of union support, rapid developments and changes in technology have also contributed to the ongoing wage inequalities between the lower and upper classes and families. In fact, sociologists and labor leaders have long warned that technology has the power to replace human workers, influencing the labor market and subsequent inequalities in wages. The digital divide that exists between those that have full and complete access to computers and the Internet and those that do not has greatly exacerbated the problem.

Furthermore, the literature also reflects additional problems showing that access is not enough. Having access is a necessary component, but it is not sufficient. Numerous researchers have investigated the role SBTC had on labor in general and individual workers' wages in particular. In fact, SBTC has substantially contributed to the digital divide, and both phenomena have mutual impacts on one another. These kinds of problems have led scholars and practitioners to study the relationships between ICT and Internet technologies.

UTAUT2 studies have also pointed to the roles that e-government initiatives, strategies, and implementations could play as the government attempts to seriously address the chronic wage inequalities across the United States. The situation remains dire and borders on a potential and real crisis as the ever widening wage gaps causes more employees to work longer hours simply to keep up with the current cost of living. Therefore, there are many studies in the literature that have called for more research into the problems identified, discussed, analyzed, and synthesized in this literature review.

CHAPTER III

METHODOLOGY

Overview

Researchers have shown a widening income gap over the past few decades. This ever increasing wage gap has caused more employees to have to work longer hours to supplement their incomes and keep up with the cost of living, as wages have not kept pace with rising costs. Often, workers, and what has become known as the working poor, do not qualify for government services. The lack of protections from unions increases the tendencies of workers to become unwilling or unable to protest for better pay or working conditions.

The purpose of this qualitative case study was to explore the role of local government agencies or officials in implementing technology-based policies and programs to minimize wage inequality. The study was exploratory in nature and utilized a qualitative methodology to collect data from interviews with government employees who held different levels of employment such as new hires up to workers representing management. However, all participants had worked in the labor sector. Specifically, the interviewees had been part of policy-making committees on some level. The researcher gained subjects through past peer relationships and the snowball effect. Semi-structured interviews were conducted with five participants. The major questions that guided this study included:

1. How do local government officials react (as reflected through relevant policies and programs) to the increase in wage inequality brought about by technology-based shift in demand?
2. How do local government officials react (as reflected through relevant policies and programs) to the increase in wage inequality from the change in labor union practices?

Research Design

To fulfill the purpose of the study and address the questions of the study, the researcher used a qualitative case study research design. Using a qualitative methodology was aligned with the requirements for this study because it allowed for understanding the experiences and perceptions of individuals regarding a phenomenon. The exploration about the phenomenon remained within the context of dynamics of a community or organization, socioeconomic status, history, and culture (Marshall & Rossman, 2014). In the case of this completed study, the phenomenon of interest included the implementation of technology-based policies and programs as a reaction to increasing wage inequality as a consequence of technology-shift and changes in labor union policies. Unlike research using quantitative methodologies, a qualitative methodology allows for the investigation of a specified phenomenon in a deeper, more profound manner within its uncontrolled environment (Mitchell & Jolley, 2012). Moreover, a qualitative methodology allows readers to access rich data, especially when interviews are used for data gathering (Moretti et al., 2011).

A case study was the appropriate approach for this study because the purpose and research questions were focused on studying perceptions of individuals in a social group, which included members or officers of local government agencies (Yin, 2013).

Yin (2013) proposed four criteria in choosing a case study approach:

- The research question of the study begin with how or why questions;
- The participants' behavior (e.g., decisions, actions, and perceptions) cannot be altered or controlled for experimentation purposes;
- Conditions within the environment of the participant and related to the phenomenon are considered; and
- No clear boundaries exist to the phenomenon being explored.

Given these criteria for selecting a case study design, all are aligned with the purpose and research questions of this completed study.

Sampling Plan

Having used a qualitative case study research design, the target population consisted of government employees who held different rankings, such as those recently hired and workers representing management positions. The sample consisted of five government officials in the field of labor laws and policies. Specifically, the interviewees were a part of a policy-making committee on some level.

The researcher gained participants through purposive sampling. Barratt, Choi, and Li (2011) claimed that those who are recruited using purposive sampling are more willing to provide detailed and relevant information that the researcher will use as data for the study. To recruit participants using purposive sampling, the researcher

contacted different government agencies that were related to the field of labor laws and policies through personal connections and the social network of the researcher. The researcher had connections with people within some relevant agencies to the study. These individuals were contacted through telephone to ask for possible recommendations for participants in the study and their respective contact information. Upon obtaining the contact information, the researcher called or personally visited at least seven people from the list to invite them as participants of the study. Those who expressed interest were asked to provide their business or work email address where the formal invitation were sent. The email included a discussion of the nature of the study and the reason for the invitation. Those who were interested in participating were personally visited to ask them to read and sign two copies of an informed consent form. Upon signing, the participant had to provide one signed copy to the researcher. Upon receiving the signed consent form, the researcher conducted the interview.

Instrumentation

The main instrument that was used for this study was an interview guide. The researcher chose to use semi-structured interviews in collecting data for this study because it ensured the alignment of questions with the topic while having a sense of flexibility. With this method, the researcher asked follow-up and relevant questions based on the answers of the participant during the interview. The interview protocol contained a list of relevant questions that the researcher used in the interviews; questions that were paralleled and in line with the research questions. Despite having

an interview protocol, the researcher asked other questions (e.g., follow-up questions) so that there was a deeper understanding of the answers from participants.

The researcher also asked a panel of experts (e.g., faculty members) to review the questions in the interview guide regarding the appropriateness of the content. The expert panel was composed of the two thesis committee members of the researcher. The panel members also reviewed the questions in terms of structure, wording, and content. Based on the panel's comments, the researcher made changes as needed. The development of the validated interview protocol was completed 2 to 3 days after the expert review.

Data Collection

After developing the interview protocol, the researcher conducted data collection. The researcher conducted the interviews in a predetermined room within the agency where the participant worked. The chosen location provided comfortable, convenient, and professional space for the participant. Because the location was familiar to the participants, there was a sense of neutral and safe grounds for both the researcher and the participant. Before conducting the actual interview, the researcher prepared the materials needed (e.g., voice recorder, interview protocol, pens, and papers) and arrived at the location 30 minutes before the scheduled interview time. Upon the arrival of the participant, the researcher greeted the participant to signify the start of the first phase of the interview.

There were three phases in the interviews. The first phase of the interview involved discussion of the flow of the interview. The researcher entertained questions

during this first phase of the interview. Once the first phase was completed, the researcher proceeded with asking the questions from the interview guide, which entailed the second phase of the interview. All interviews were voice recorded, subject to the approval of the participants, as was stated in the informed consent. During the actual interview, the researcher asked follow-up questions to gather more in-depth data for the study. However, the researcher had to keep the connection and alignment to the structure of the interview protocol. After all the questions in the interview guide were asked and no more follow-up questions existed, the researcher ended the interview, which entailed the third phase of the data collection. To end the interview, the researcher told the participant that no more questions existed. This phase included an additional opportunity where the participants could ask questions or clarify information. After that, the researcher thanked the participant for spending time to take part in the interview.

Data Analysis

To organize the data, the researcher transcribed all the interview sessions. After organizing the data, the researcher performed Yin's (2013) five-phased method for analyzing a case study. The first phase of the analysis involved compiling and sorting (to put to order) the transcripts generated from the interviews. The researcher also assigned pseudonyms for each participant. In the second phase, disassembling, the researcher broke the data into smaller and codable fragments. In this phase, the researcher completed the assignment of new labels to the fragments or pieces. The third phase, reassembling, involved using generation of themes (or clusters of codes)

by grouping likened and similar codes together. Assembling and disassembling phases were repeated several times in an alternating manner. During this phase, the researcher kept in mind that the themes must represent direct answers to the research questions of the study. The fourth phase involved using the reassembled material to create a new narrative; hence, interpretation occurred in this phase. The researcher developed interpretations and conclusions during the fifth phase (Yin, 2013).

Protection of Human Subjects

There are several ethical considerations when using human participants in a research study. The researcher must put the participants' rights, welfare, and safety about all personal and scientific concerns into consideration. Before conducting the interviews, all participants receive information about their rights and risks during data collection through an informed consent. The issues that were addressed by the informed consent included confidentiality, data security, and the voluntary nature of participation.

Relevant Institutional Review Board (IRB) and ethical issues for this research study included maintaining participants' confidentiality. To do this, there was no identifiable information (e.g., name, address, identifying mark, etc.) used and data were reported in aggregate form. In addition, the researcher used pseudonyms or numbers instead of names to identify the transcript of participants.

All files were kept in a secured location. All electronic files were password-protected on the personal laptop of the researcher. All physical data (e.g., interview transcripts, handwritten notes, etc.) were kept in a locked cabinet inside the private

office of the researcher. All files will be kept for 1 year after the researcher has finished writing, defending, and revising the study. After 1 year, all data will be destroyed by means of burning, shredding, or permanent deletion.

Participation remained voluntary. All participants incurred no costs or significant risks for being part of the data collection of this study. There were no incentives offered as being part of the study. No participant was forced to be included in this study. There were no consequences for declining the invitation to participate. Moreover, the participants were told they could withdraw at any time without incurring any consequences of any kind. All these considerations were subject to the approval of the IRB of the university prior to conducting the methods for the study.

CHAPTER IV

RESULTS

This chapter contains the findings from the thematic analysis of the interviews with the five participants. The purpose of this qualitative case study was to explore the role of local government agencies or officials in implementing technology-based policies and programs to minimize wage inequality. The thematic analysis allowed the discovery of themes or the formation of meanings from the patterns of responses shared by the participants related to the two overarching research questions:

Research Question 1 (RQ1). How do local government agencies or officials react (as reflected through the government's relevant policies and programs) to the increase in wage inequality brought about by technology-based shift in demand?

Research Question 2 (RQ2). How do local government agencies or officials react (as reflected through the government's relevant policies and programs) to the increase in wage inequality from the change in labor union practices?

The chapter also contains the following sections: demographics, results with the themes and verbatim responses of the participants, and a summary of the study.

Demographics

Participants of the study were five government employees who hold different rankings in their respective agencies and organizations. These participants' professions were an emergency physician assistant, a social worker, a social work supervisor, medical director, and a registered nurse. Their years in their profession

ranged from 1 to 37 years. Table 1 contains the breakdown of the participants' demographics.

Table 1

Breakdown of the participants' demographics

Participant Number	Profession	Years in Profession
Participant 1	Emergency Physician Assistant	20 years
Participant 2	Social Work Supervisor	37+ years
Participant 3	Medical Director	20 years
Participant 4	Registered Nurse	40 years
Participant 5	Social Worker	1+ years

Findings

Research Question 1

The first research question of the study examined how the local government agencies or officials reacted to the increase in wage inequality brought about by technology-based shift in demand. From the qualitative analysis of the interviews, a negative and positive theme for the first question was established. This thematic category reflected the negative and positive influences of technology on the wages of employees. Table 2 contains the breakdown of the components for the first research question.

Table 2

Breakdown of the themes addressing RQ1

Themes	Components	Number of Occurrences
Negative impact on increase in wage disparity	Methods to keep-up with the demands	3
	Access to education and training	
	Increasing support to workers	
Positive impact on the increase in wage disparity	Transition time to develop new skills	
	Limiting the advances of the older generation	2
	Eliminating power	2
Positive impact on the increase in wage disparity	Using inequality to motivate and increase skills	1
	Improved services for companies	1
	Reduction of wage inequality in the long run	1

Negative impact on the increase in wage inequality. For the participants, three different negative effects were observed. Three of the five participants reported

that there is a need to develop methods to keep-up with the demands of technology and fair wages. Currently, there is a great gap with regard to this issue.

This component was the finding that there is a need to develop methods to keep-up with the current demands of technology and secure fair wages for the employees. Three particular methods were identified to address the negative effect of technology: (1) Providing access to education and training on technology; (2) increasing available support to workers; and (3) eliminating manpower due to technology.

Participants 1 and 4, believed that government entities or the companies should work to assist their employees through more education and training. Participant 1 stated that it is ideal to have an equal work and equal pay for all employees. For the participant, the availability of education and training should also motivate the employees to work and acquire new skills. The participant indicated:

I believe that the change would allow for a uniform platform for equal work equal pay possibly at the expense of individual motivation. By providing improved areas to education and training through online services, the individual could learn new skillsets. This would be more of a motivator being that access is now almost universal. The underlying question would be who pays for it.

Participant 4 added that, indeed, technology requires individuals and workers to adapt by learning the needed knowledge and skillsets. The participant shared a personal example where he stated that over the years, he accustomed himself to the various

changes brought by technology. Participant 4 highlighted that he observed how there are many who were unable to learn the needed skills sets. This participant indicated that some people were greatly affected due to the inability to match their skills with the current demands of the workforce, saying:

My reaction to the division that technology has caused in wage inequality would be a basis one, as in my current position I have been able to advance and learn in a world that has changed and I have been able to change with much of the technology with little challenge.

I would say that the growth within technology has caused the wage inequality gap to increase as the advancement in technology driven employment has burst forward in leaps and bounds, it has left many people unable to keep up with changes or to re-enter the workforce at a level of higher pay without the educational platform to qualify for well-paying jobs.

Again, both Participants 1 and 4 expressed the recommendation to increase available support to the workers. Participant 1 simply stated: "This would be more of a motivator being that access is now almost universal. Question would be who pays for it." Participant 4 added that both education and resources are the main contributors to the issue of wage inequality. The participant expressed that if the employees have limited support, then their advancements are controlled as well:

I think that the lack of access to technology based education and financial resources has a part in contributing to wage inequality. If a worker or group of workers are limited in what they can afford to survive they are less likely to

have the resources and have a means for advancement. Adding family commitments may also limit the worker's ability to seek higher paying jobs which usually require a technical or a college degree, which requires money and a time commitment.

Increasing apprenticeships programs would be a more direct way to decrease wage inequality, the issue with this that these programs need to be sponsored jointly by the employer, labor groups, individual employers and/ or employee associations, these programs are paid by the sponsor. Without the sponsor(s) funding or labor unions support, such programs do not exist.

This participant stated:

This is a tough one - however it was said many years ago and it is still true today that any job that can be done by a machine/robot is not worthy of human input. However, we have to think of the 'cost' of replacing human labor with machines. There needs to be a 'transition' time for employees to re-train and/or look for other employment. We should not ban technology just to 'save' jobs. As a matter of course, even though these robotics/computers initially replace humans they also create jobs - someone has to repair these machines and/or program the computers. Additionally, robotics lower costs and frees up human labor/intelligence for hopefully other more productive endeavors.

Participants 2 and 4 found that the advent of technology has resulted in the elimination of the older generation's advancement in the different work fields that

heavily support and rely on technology. Participant 2 explained from experience that the members of the older generation who refuse to adapt to technology are replaced by younger individuals who are technologically inclined: Participant 2 stated:

Well if you mean technology-based changes as in the computer generation then I think there is two different views. One, technology will eliminate the older generation from advancing in the work field. Due to the older generation not having the training in the advancing field as the younger generation is growing up in this area.

Well the majority of the older generation, 55 and older were taught to work with the hands and not so much with their minds. There are the few that have had the opportunity to advance in the positions that they are in but the majority have been pushed out of their positions by younger employees that know more about technology and are willing to accept lower wages due to just starting out in the field.

Participant 4 stated that the younger generation who were born and trained in light of the advancement of technology is also another key factor to the wage inequality experienced today. For Participant 4, the younger generation or the new workers tend to surpass their counterparts who have been in the company of more than 10 or even 20 years. This participant said:

With the rapid advancement in technology keeping up with a younger generation who have been raised with technology at their fingertips is adding to wage inequality within the work force. These new workers tend to enter the

work force at higher rates of pay at a much younger age than their counterparts who have been working for 10-20 years and most likely not being paid at the same rate, nor may they ever be paid at the same rate. Starting at a lower rate with the same percentage of a raise compared to another employee who is paid 50% more than you at hire will perpetually cause the wage gap/inequality to continually grow, the gap will always be there.

The final component that was identified was that workers are faced not only with wage inequality but also, unemployment, in the long run. Two of the five participants shared the same theme. Participant 2 explained how technology has allowed for more effective and productive services for companies. The participant admitted that the obvious wage inequality caused by technology has also led to the defeat of men against computers. The participant stated:

With technology advancements computers have streamlined many jobs. In assembly lines, robots are now assembling parts that humans did in the past. One computer can replace a whole line of employees in a car plant. It only takes a few employees to visually inspect the end product whereas before it took many hands to build such item.

This participant continued:

I struggle with the gross wage inequality. I think if we could go back to unions and job protection we would be able to decrease the inequality. We have allowed big business to control our nation which means that jobs are no

longer protected. The human is lost in all of this and the computer has taken over.

Participant 3 shared an experience where a secretarial position was removed when the staff members were given mobile phones for an easier way of communication. The participant explained that they previously had two secretaries; upon the elimination of one secretary, the other was able to focus on other duties and tasks. Furthermore, this example can pertain to both the negative and positive effects of technology to the workers, as described by the participant:

I know that a secretarial position was eliminated when the staff was given cell phones. The uptake is that staff members are easier to be reached. We had 2 secretaries and when a lay off happened, it was all based on the union seniority. This did not happen right after the cell phones were obtained. It freed the secretaries to focus on other tasks that involved utilization review and submitting information to MediCal and insurance companies for review and eventually payment. I believe patients and families are glad that they can reach a MSW directly and I know the social workers can get the calls they are expecting in a more timely manner.

Positive impact on the increase in wage inequality. The second thematic category was the observed positive impacts on the increase in wage inequality. Also discussed was the probable positive influences of technology on wage inequalities to the employees.

Only one participant indicated the belief or influence of using the factor of inequality to motivate and increase skills. Participant 1 stated that it is just right to pay more if one has greater skillsets than the other. In addition, the change or technology can also be used as a platform to motivate the workers to work harder and learn the new skills that come with technology. This participant stated:

Technology based demand. For this question, I am not sure if you are asking do I think other persons with greater technology expertise should be paid more than those with less expertise. For that question, I would answer it is appropriate to pay more if you bring a greater skill set to the table.

Participant 3 was unsure how technology directly impacts wage inequality. However, the participant reported that the overall services and performance of the organization have developed positively with the presence of technology. This participant stated:

I don't know how technology directly influences wage inequality. The uptake is that services can be more accessible (as in Tele-Med) when there is a shortage of expertise. I know that factories are implementing more technology and jobs have been eliminated due to these advancements. Hopefully, there are less injuries to humans with machines doing repetitive behaviors.

Technology has been an adjunct to providing better services in a more timely fashion. Information can be share readily and be viewed by more than one person at a time rather than waiting for a chart. Reports are more accessible. Information can be faxed

rather than mailed or having to be presented orally. Information with agencies can be tracked and accessed quicker. Past records/history is more readily available with EMRs. I believe technology is a great resource and I don't believe that the need for social workers/RNs, health care professionals diminishes with new treatments, techniques, devices etc.

For Participant 5, the current inequality is just an immediate and inevitable effect of technology along with seeing a reduction of wage inequality in the long run. However, given the proper time and methods of adjustment, workers should then realize that technology is an advantage to the humans. This participant stated:

Again I believe, in the long run, technology would reduce not increase wage inequality. Unfortunately, it probably would initially result in increased unemployment, but workers will have to adjust to the ever-changing job market. We live and work in a capitalistic society, and though capitalism is 'leaps and bounds' above and better than any other economic system yet devised (socialism has been abject failure everywhere it has been tried) it is still far from perfect. Unemployment is one the major drawbacks of capitalism. Even though it is partly blunted by unemployment benefits, it is still one of, if not the most, devastating "cost" of a dynamic economy.

Research Question 2

The second research question was the discussion of the increase in wage inequality from the change in labor union practices. From the thematic analysis of the five transcripts, four components were generated. Three of the five participants

believed that amidst the wage inequalities, the presence of labor unions and their practices make them feel secured and protected. Meanwhile, three other themes were formed to address the second research question. Table 3 contains the findings or themes under the second research question.

Table 3

Breakdown of the theme addressing RQ2

Theme: Increase in wage inequality from the change in labor union practices

Components	Number of Occurrences	Percentage of Occurrences
Feeling more protected with the presence of labor union	3	60%
<i>Having a group that secures the equality of wages</i>		
Needing for labors and unions to act fairly	2	40%
<i>Inability to accept that there are skillset and performance inequalities</i>		
Decrease in the number of unions	1	20%
<i>Limiting the demands and requirements of unions from companies</i>		
Government employees should not join unions	1	20%

Theme 2: Increase in wage inequality from the change in labor union practices.

Participants 2, 3, and 4 reported that they feel secure, as there are labor unions who are fighting for the rights of employees or the achievement of equal wages.

Participant 2 stated that as a union member, he feels that his job is “more protected.”

Participant 2 explained that businesses have so much power over the employees; with the labor union, accountability is present and businesses cannot implement unjust decisions and changes despite the advent of technology. He stated:

I personally feel that as a union member my job is more protected. I feel that because so many unions have left and failed, that more jobs have left and failed. I believe that unions help keep businesses in line and wages more equal. If the business has someone to report to as a whole instead of individuals they are more motivated to do what's right by the wage earner.

They have helped the average employee to hang on to their job and not allowed the business to have so much power over the employee. Unions help prevent the fire at will of the employee. It helps hold the businesses accountable. For example, the business cannot fire the older employee due to age and higher wage and bring in the younger employee and pay them less income and no benefits.

Unions would allow people to be more secure in their jobs and hold businesses more accountable and not allow them to drop wages and benefits at

their will. They would have to put more into the employee which benefits us all and less into big business which benefits a few.

Participant 3 added that unions are present to fight for and defend the workers.

Simply, the participant indicated that the unions' key role is to develop equality and fairness in the relationship of the business organizations and their employees, saying:

I believe Unions came to be to advocate and protect workers. There is power in numbers. Issues can be raised that can draw public attention and awareness. Unions have representatives who can do research on wages, income/profits of the organization. I believe unions assist with developing level playing fields.

Finally, Participant 4 explained that the labor unions are usually active in bargaining and fighting for the equal rights of the employees. However, another issue would be the lack of representation for those not part of the unions; who may also experience wage inequality without being given the chance to speak or fight for their rights. Participant 4 stated:

With labor unions, I would think that they would be more active in securing better wages based on whatever structure they have based on years of experience, entry level status and bargaining through the contracts. Previously the U.S. was more union driven from what I see now, as well as I believe there are less companies that have labor unions within their organizations. I think they could contribute to inequality in the aspect that based on their structure the union has the ability to increase its member's wages and those

employees who are not represented do not have a bargaining unit and, therefore, are at the mercy of the employer.

According to participants 1 and 5, there are members of unions who still find it difficult to accept that there are skillset and performance inequalities; thus, wage differences cannot be fully amended. Participant 1 explained that the labor unions fight for equality, but should realize first that there are individual differences in terms of skillset and performance that must be addressed. Participant 1 stated:

I believe labor unions are very much in agreement with equality at face value but are very unwilling to agree that there are differences in individual workers that must be addressed. Systems that do not reward higher performance create mediocracies. I am referring to doing the least amount of work possible instead of trying to do more.

Participant 5 believed unions had various practices that tended to be unfair to the employers as well. Therefore, participant 5 indicated, unions must first be equal to fully achieve their vision for their members. The participant indicated:

Well, as I said, unions tend to artificially raise wages (and thereby costs) due to the threat of a strike. Also, due to seniority rules, sometimes less competent/productive workers remain on the payroll at inflated wages. However, if unions are fair and free from corruption (rare), they can be a benefit to both employers/employees. Again, if an employer treats his/her employees fairly, unions are not needed. Unfortunately, this is not always the case.

Participant 4 found that over the years, the unions in the United States have decreased due to the policies implemented and the changes in the industries and economy. More specifically, Participant 4 believed that with the change of the unions' role in the companies, they have also been limited in terms of their say and ability to persuade the companies. As a result, a decrease in union membership and participation was reported as well:

I think there has been a decrease in the unions due to the changes in the amount of unionized industries. Over the last 30 decades many manufacturing jobs within the US have declined or changed, which is where many unions were started decades ago. Industry deregulation had also increased competition between organizations and an increase of labor mobility by workers made it more difficult for unions to operate, leading to their decline. Many states have the right to work law which governs, to an extent, what unions can require, which is less than they had previously and thus letting employees choose to either join or decline the union during their employment. With a decrease in union membership by employee choice, unions have had a reduction in the sheer number of participating union members. With lower enrollment the strong hold of previous unions are becoming weaker than in previous decades, as employees no longer look to them as a need.

For Participant 5, it is important that government employees are restricted from creating and joining labor unions. This is because government employees are

paid and supported by the taxpayers; and must work to service these people.

Participant 5 stated:

Another area where government gets involved is state ‘right to work’ laws. These states do not force employees to join/pay unions/dues. This is, of course, quite ironic as one of the main problems with government is unions. *Government employees should not be able to join/form unions.* Government employees work and are paid for by the taxpayers. When it comes to salary/benefit negotiations the people paying the salaries are not anywhere near as involved in the process as in the private sector.

All too often government employees get extremely generous pensions/benefits that when they were initially agreed to by the legislator/mayor whatever, did not seem to be a problem (again public at large mostly unaware of these ‘negotiations/deals’). However, when the benefits eventually came due, the city/state went broke. Good examples are right here in Stockton (which declared bankruptcy not that long ago) and the state of Illinois which now has over \$100 billion pension deficit. Politicians, more concerned with being reelected, tend to be very generous (with other people’s \$) when negotiating with government unions.

Summary

The chapter reports the findings from the thematic analysis of the five interviews with the participants. The purpose of this qualitative case study was,

again, to explore the role of local government agencies or officials in implementing technology-based policies and programs to minimize wage inequality. Through the thematic analysis, two themes, and several other factors were generated to address the two research questions of the study. First, a majority of the participants reported that there is a need to develop methods to keep-up with the demands of technology. In particular, the participants suggested the following: (1) providing access to education and training on technology; (2) increasing available support to the workers; and (3) providing transition time to employees to adjust and develop new skills. Another a majority of the participants reported their feeling of being protected as they have a group that secures the equality of wages. Several other components were formed which all discuss and address the research questions of the study; these components received relatively fewer occurrences than the themes of the study.

The fifth and final chapter of this study contains a discussion of the findings in relation to the theoretical framework and literature. Furthermore, Chapter five also contains the recommendations, implications of findings, and conclusions.

CHAPTER V

DISCUSSION

Wage inequality is a pervasive problem between high-wage and low-income earners (Appleton, Song, & Xia, 2014; Broecke, Quintini, & Vandeweyer 2015). The purpose of this qualitative case study was to examine the role of local government agencies or officials in implementing technology-based policies and programs to minimize wage inequality. The qualitative approach for this study was thematic analysis, which revealed themes and meanings from the responses of the participants. The study was guided by the following research questions:

Research Question 1. How do local government agencies or officials react (as reflected through the government’s relevant policies and programs) to the increase in wage inequality brought about by technology-based shift in demand?

Research Question 2. How do local government agencies or officials react (as reflected through the government’s relevant policies and programs) to the increase in wage inequality from the change in labor union practices?

Results of this study showed two thematic categories emerging from Research Question 1, which reflected the negative and positive influences of technology on wages of the employees. The first thematic category, “Negative impact on the increase in wage inequality,” had three sub-categories, namely: (a) Needing to develop methods to keep up with the demands; (b) Limiting the advances and growth of the older generation; and (c) Eliminating manpower due to technology. The second thematic category, “Positive impact on the increase in wage inequality”, has

three sub-categories, which are: (a) Using the factor of inequality to motivate and increase skills; (b) Experiencing improved and effective services for companies; and (c) Seeing a reduction of wage inequality in the long-run.

Research Question 2 explored the increase in wage inequality from the change in labor union practices. One theme – “Feeling more protected with the presence of labor union” – was revealed, along with three subcategories: (a) Needing for labors and unions to act fairly; (b) Decrease in the number of unions; and (c) Limiting the demands and requirements of unions from companies. Feelings of security and being protected were prevalent in these themes.

These results demonstrated how the participants perceived their roles in the increase in wage inequality. Understanding the meaning-making processes of government workers in light of this issue showed how important it is for them to better comprehend the needs of the people that they serve. Findings also showed how the perceptions of government employees are hinged on the recognition of their roles related to wage inequality and policy changes regarding this issue. This also implied the need for better education of social workers regarding the people that they serve and the external forces that affect wage inequality and the rise of technology. The next sections includes an in-depth discussion of the results in light of the current literature on wage inequality. Limitations and recommendations are discussed.

Benefits and Disadvantages of Technology-Based Practices

Research question one aimed to investigate the perception of government officials and agencies to the increase in wage inequality resulting from the increase of usage of technology. The themes that emerged from this research question reflected both the positive and negative impact of technology on the wages of employees. These themes showed both the internal and external forces that influence such perceptions. It can be noted that the theme “Needing to develop methods to keep up with the demands” and its sub-themes reflect the perceived role of government officials and agencies in addressing wage inequalities. On the other hand, the second thematic category – “positive impact on the increase in wage inequality” – reflects how government officials perceive the positive aspects of wage inequality on both the employees and on the government agencies.

The need to develop new methods to address the increase in technology-based practices reflects Hanley’s (2014) notion of Skill-Based Technological Change (SBTC), which generally refers to the phenomenon that technological advancement resulted into drastic wage, income, and social inequalities. Skills relating to ICT are now more in demand, especially with the current shifts in technologies of production (Autor, 2014; Goos et al., 2014). Being tech-savvy is now a plus (Goos et al., 2014). There had been a boom on the demands for ICT-skilled laborers (Autor & Dorn, 2013; Cortes, 2014; Goos et al., 2014; Smith, 2013; vom Lehn, 2014), which also had a negative impact on wage inequalities. The balance between economic costs and social costs changed, favoring cost-effective technologies over manual labor (Autor,

2014). Understandably, participants in this study saw the necessity of increasing access and providing appropriate training so that employees can keep up with the ever-changing paradigm of technology-based practices.

Particularly, the participants believed that government entities have the mandate to provide the training on technology for the employees. Ideally, this will lead to equal work and pay for all employees. This need was highlighted in the account of Participant 1, who said that there should be a platform in which employees could improve their skill set. This would also affect the employees' motivation on learning. Another participant believed that helping employees keep up with the fast-paced shifts in technology should be a major agenda of government entities. To address the gaps in skill sets between non-ICT skilled laborers and ICT skilled workers, the government must initiate strategies that employ technology frameworks to train and educate workers. For instance, electronic government (e-government) initiatives include strategies for employing the Internet to connect and establish communications between various government services and the citizenry (Clifford, Young, & Hu, 2013; Linders, 2012). Many researchers have demonstrated that e-Government plays a central role in trying to close the digital divide gap between different socio-economic classes in the U.S. as well as countries worldwide (Clifford, et al, 2013; Linders, 2012; Magro, 2012; Norris & Reddick, 2013; Snead & Wright, 2013; Taylor, 2014; Venkatesh, Sykes, & Venkatraman, 2014).

Another method identified from the themes that emerged from the study is the need to increase support to the workers (sub-theme 2) and the need for government

agencies to provide transition time for employees to adjust and develop these new skills (sub-theme 3). This also involves monetary support for employees, as ICT training and education are not essentially free despite the almost universal access to the internet. One participant believed that education and resources are not necessarily balanced. This reflects the problem of the gaps between investments and improvement of ICT skills. Previous researchers discovered that in the private sector, there are major differences between how corporations invest in ICT to improve productivity within the company. Scholars have recommended that national agencies could learn from the lessons from the private sector and the complex set of relations between technologies, corporations, and the labor market can provide scholars and practitioners with information about how much investment must occur (Linders, 2012; Lin, Fofanah, & Liang, 2011; Magro, 2012; Nasri, 2014; Norris & Reddick, 2013; Snead & Wright, 2013). Worldwide and widespread access to the Internet can be a solution, but ambitious investments, development, and implementation require commitment from the government agencies (Atasoy, 2013). This is strengthened by the possibility of increases in employment rates when correlated with increased Internet access (Atasoy, 2013). Corporate and governmental ICT and Internet technologies can have a positive effect on decreasing wage inequalities in large sectors of the country.

Due to technological changes in the workplace, the participants perceived that these shifts have made it difficult for the older generations to advance and develop ICT skills. This reflects the phenomenon in which there was a greater demand for

laborers to have skills and cognitive abilities needed to use IT as an everyday work tool. In particular, rapid advances to ICT sophistication result to a greater necessity for labor with the appropriate skills. Thus, this change created a gap in wage and income inequalities between those workers who had these skills and those who did not (Goos, Manning, & Salomons, 2014; Hanley, 2014; Hanushek et al., 2015; Im, Hong, & Kang). Addressing the gap between the ICT skilled and non-ICT skilled workers, scholars, practitioners, and policy makers responded by developing and implementing massive programs across the United States to supply ICT (e.g., computers, tablets, iPhones, social media, etc.) to schools and businesses. This result also showed that the government must develop ICT skills training and education appropriate for older generations, who are more used to manual work and are perceived by the participants to have experienced difficulties in learning ICT skills.

In relation to this, the participants also saw how the rise of technology-based practices in the workplace displaced and eliminated manpower. Workers are not only challenged by wage inequality, but also are susceptible to long-term unemployment due to replacements by machines so that companies minimize cost and maximize labor. One participant discussed a secretarial position which was replaced with telecommunications advanced technology. This account showed the positive and negative aspects of technology. Although, it could be noted that this depends on which perspectives are in question. The removal of a person from the job is indeed a negative effect of technology from the perspective of the employee; however, for the employers, automation and machines are cost-effective solutions. Understanding the

benefits of technology should also involve interrogation and challenging its corresponding negative impact. Problems such as unemployment brought about by technological advances reflected how the ICT revolution has displaced many workers because machines took over jobs that perform routine tasks (Dolan, 2016; Rogers, 2016; Subramoney, 2014).

The effects discussed above mostly focused on the negative aspects of technology-based practices. The study's participants also identified benefits brought about by these technological paradigm shifts in the workplace. Interestingly, these benefits could be seen as coming from different perspectives. First– “Using the factor of inequality to motivate and increase skills” – can be considered as an internal motivational factor brought about by a rather external force (i.e. wage inequality). One participant even stated that it seems justified that people with greater skills are paid more than others. This could also be a motivational platform for employees to work harder to learn the skills that are needed for technology-based practices.

This belief reflected researchers' argument on the wage premium for people with higher education, more advanced skills, and increased cognitive abilities (Autor & Dorn, 2013; Cortes, 2014; Goos et al., 2014; Smith, 2013; vom Lehn, 2014). Nevertheless, the modification in trends showed that despite changes in the demand and wage premium associated with technically-skilled workers, employees still lack in terms of acceptance and use of technology, which is the key solution to the problems associated with the digital divide and increase in labor skills and wage inequalities (Elsby et al., 2013). While this could be seen as a motivation to improve

skills, there are still so many other factors to consider, and the government agencies and employers play a vital role in utilizing their employees by providing more training.

The second and third topic – “Experiencing improved and effective services for companies” and “Seeing a reduction of wage inequality in the long run” – reflect a benefit that generally comes from the perspective of the company or organization. As mentioned, the cost-effectivity of machines and technology-based practices comes at the expense of the employees (Hanushek et al., 2015). Interestingly, from the accounts of the participants, these two themes have capitalistic – and almost defeatist – undertones. The participants believed that given proper time and adjustments, workers would realize the benefits of technology for human activities. They recognized how technological improvements within a company could result to unemployment, but believed it was the duty of the workers to adjust to such effects of technology.

Such perception could be quite problematic given the drastic wage inequality among workers brought about by technology. For many scholars, the major cause of income and wage inequality in the first wave was access to technology, especially ICT (Cancro, 2016; Nemer, 2015; Rogers, 2016). However, access to computers is not enough to address the problems. Refocusing income and wage inequality centered on students’ and workers’ cognitive abilities to maximize ICT services involves inequality of skills and abilities, thereby influencing wage inequality (Kristal & Cohen, 2016). Such notion disregards the fact that wages and demands are

polarized between highly-skilled workers and non-skilled employees with regards to ICT (Autor & Dorn, 2013; Cortes, 2014; Goos et al., 2014; Smith, 2013; vom Lehn, 2014). Autor (2014) also observed that such inequalities, while certainly having an effect in economic costs to the national and regional economies, were also related with social costs.

The themes surrounding the negative and positive impact of technology-based practices on wage inequality involve a discussion of motivations, social costs, and possibly, the capitalistic nature of corporations. With the benefits that come from technology also come pressing issues on wage inequality, polarization of demands and income between skilled and non-skilled laborers, generational gaps in the work place, and the challenge of increased unemployment rates. Government agencies are perceived to play a pivotal role in addressing these issues, especially focused on education and training of workers with regards to technology-based practices and tools. The next section involves a discussion of the perspectives of the participants on how labor union practices could potentially and positively affect wage inequality of employees.

Perspectives on Labor Union Practices and Wage Inequality

Research question two examined the increase in wage inequality from the change in labor union practices. The theme – “Feeling more protected with the presence of labor union” – involves the security and trust of the employees on the practices of labor unions. Labor union practices are seen to enforce accountability on

employers and in businesses. Participants even described labor unions as groups that fight for equality and defend the workers. Despite this, one participant stated that there is a lack of representation for those who are not part of a union. This shows that while the participants believe that the labor unions are necessary in acting as a sort of vanguard against unjust practices and unfair wage from businesses, there is still the challenge on how diverse these labor unions are, and if all marginalized sectors are properly represented and talked about.

However, recent statistics have shown a massive decline in labor union power, policies, and practices, which coincided with the rise in wage and labor inequalities (Muller, 2013). These pressing issues on wage inequalities between the upper and lower income families challenges the democratic society (Alvaredo, Atkinson, Piketty, & Saez, 2013; Reich, 2011). Because unions are perceived to have a buffering role in the economic shifts that technological shifts posed, the diminishment of labor union activities imposes challenges on the government to address such problems and close the gap in wages, as well as create policies that promote equality in income for families (Muller, 2013).

Interestingly though, – “Needing for labor and unions to act fairly” – reflects a cautionary imposition on the labor unions to realize that people must be paid in accordance to their skillset. Participants believe that while wage inequality exists, labor unions do not consider individualistic differences in skills and performance. In addition, one participant stated that labor unions could be unfair to the employers themselves, even citing strikes as an effect of this unfair treatment of the labor unions

to the employers. This reflects how unions are now seen as lacking the ability to set labor standards that typically exerted some control over employees' bargaining power to raise their wages (Kristial & Cohen, 2015; Mishel, 2012). Another notable account on this theme is the preference to meritocracy – that is, one participant argued that the unwillingness of unions to understand individualistic preferences disregards corporate systems that reward high performing individuals. By doing so, unions' fight for equality in wages is undermined by the internal systems of meritocracy in businesses, thus rendering these advocacies almost irrelevant to the employees. This could explain why recent statistics showed a downward trend and wearing away of the power of the unions in wage inequities in work and labor (Muller, 2013). In addition, this could be an angle for consideration in trying to understand how union power was destabilized, including deregulation of corporations, globalization, and a weakened minimum wage.

In relation to this, – “Decrease in the number of unions” – shows how the participants also observed that there is a decrease in the number of unions, which was the result of government policies implemented, changes in industries and economy, and changes in the unions' role in the companies. This reflects the studies on the decline of power and presence of unions in the labor market. This showed that the participants are aware that union presence is decreased, which one participant described as also an employee choice. This is an interesting point of view as it also involves questions on what made employees not join or leave a union group. This

could also be a relevant path of inquiry in understanding how labor unions could be more relevant in a time of rapid technological advancements.

“Limiting the demands and requirements of unions from companies” – involves the perception that government employees must not join labor unions. This is quite interesting as it questions the overlapping roles of unions and government agencies. As emphasized by one participant, government employees are mandated to serve the people, so they must not join labor unions. Labor unions, on the other hand, aim to uphold the rights of employees to minimize unfair supervision and practices of an employer or the management (Western & Rosenfeld, 2011). This challenges the nuancing of the meanings of “service” between government employees and union members. In fact, researchers associate the decrease in numbers of labor unions with government policies of laissez-faire economics and the destabilization of union power (Rios-Avila & Hirsch, 2014). Another fact is that unions have also played a role in ensuring that employees were paid commensurate with the work they perform, and that the wages of upper management were largely in check because of the power of the unions (Mishel, 2012). CEOs’ wages increased dramatically with the decline of union power, (Mishel, 2012). The need for limiting the power of unions is incongruent with the growth of wage inequalities between regular employees and management. It also begs to question how the participants see this as a necessity when historically, union activities and power have ensured that employees are paid accordingly.

The perceptions of labor union activities on wage inequality touch upon issues of the relevance of labor unions in this time of rapid technological advancement. Such perceptions also involve the position of labor unions in the history of wage inequalities in the work place. The meanings of service, and how it is understood, are also important in understanding government employees' participation in union activities. The next section involves a discussion of the implications of the results of this study.

Implications

The results of the present study contributed to the growing body of literature on the perceptions of work inequality and technological advancement. Looking into these perceptions is important in understanding how government employees and social workers navigate their experiences vis-à-vis technological advancement and government policies on such changes. The themes that emerged from this qualitative case study provided empirical evidence to recognize the roots of inequality and stagnant wage growth.

Practice. The results from this study could be beneficial for social workers in understanding the sources of wage inequalities in the labor market. Being able to recognize the root causes would help social work practitioners develop and implement solutions accordingly and based on empirical evidence. Social workers could be empowered by educating themselves and enabling themselves to actively look into the nature of social and economic problems.

The findings of this study may also help social work practitioners in properly situating themselves in social and economic issues. It is vital for social workers to understand their role amidst these issues to be able to act on their mandate. The results also provide insights to lay the ground work for improving and finding ways to meet the needs of employees. For example, social workers may use these insights to take advantage of the benefits of technology to strengthen collaborative interventions and protocols to support the employees and improve work quality.

In light of the results, the current study also offered evidence-based knowledge on the perception of social workers on technology-based practices. The shifting landscape of businesses to catch up to the ever-growing technologies poses immense pressure on social workers to focus on the benefits while addressing the disadvantages. Nuancing meanings of “service” could also be beneficial for social workers, as this could possibly ground their work as more focused on their constituents.

Policy. The results of the current study also offer insights on the effectiveness of policies in the workplace. These show how policies affect communities and the historical context within which leadership created the current policies. By recognizing the role and relevance of labor unions in the fight against inequality, current policies could employ these findings to be utilized in the mandate to provide equal access and opportunities for workers.

Social workers and policy makers must also take into consideration the difference in socio-economic status of employees. Past researchers showed how the wage gap between the upper class and middle and lower classes has widened in light of technological advancements. In addition, generational gaps must also be addressed by changes in policies, and allow those who are not skilled in ICT to have a leeway for adjusting to the growing need and demand for technology-based skills. Doing so could help lessen the wage gap of employees, and could also target other areas of quality of work life among employees.

Future Research. In light of the results of the current study, these findings can be applied different contexts. Results of the study showed that there are negative and positive impacts involved in technology-based practices on wage inequality. Such issues include overlaps of motivations, social costs, and possibly, the capitalistic nature of corporations. With the benefits that come from technology also comes pressing issues on wage inequality, polarization of demands and income between skilled and non-skilled laborers, generational gaps in the work place, and the challenge of increased unemployment rates. Government agencies are perceived to play a pivotal role in addressing these issues, especially focused on education and training of workers with regards to technology-based practices and tools.

Future research could utilize these areas to further understand how these factors are interconnected in the discussion on wage inequality. Evidence suggests that a decrease of wages in the United States coincided with the decline in labor union practices (Western & Rosenfeld, 2011). Drawing from these arguments from past

researchers, future studies could employ quantitative research designs to understand the correlations of these factors. Regression analyses could also help in recognizing the cause-effect relationships of these themes. These findings could also be theoretically applied to different interventions and programs for social workers. Understanding root causes is important, indeed, but what needs to be done is to comprehend how these causes are interrelated. Quantitative studies could provide knowledge on these salient relationships.

In addition, the findings also showed how perceptions about labor union activities on wage inequality are also related to issues on the role of labor unions in this time of rapid technological advancement. The meanings of service, and how it is understood, are also important in understanding government employees' participation in union activities. Future researchers are recommended to look into how social workers understand their role in the rise of technology-based practices and its impact on laborers. A qualitative research design can be employed to examine and nuance the meanings of service for government employees and services. Other perspectives such as from the laborers themselves could help in bridging the research gaps on wage inequality in the digital age.

Conclusion

Wage inequality is a pressing problem for social workers and the employees themselves. The purpose of this qualitative case study was to examine the role of local government agencies or officials in implementing technology-based policies and

programs to minimize wage inequality. The qualitative approach for this study was thematic analysis, which revealed themes and meanings from the responses of the participants. Results of the study showed two thematic categories and sub-themes reflecting the negative and positive influences of technology on wages of the employees. Results also showed themes related to labor unions, specifically feelings of security and being protected were prevalent.

The themes surrounding the negative and positive impact of technology-based practices on wage inequality involved a discussion of motivations, social costs, and possibly, the capitalistic nature of corporations. With the benefits that come from technology also came pressing issues on wage inequality, polarization of demands and income between skilled and non-skilled laborers, generational gaps in the work place, and the challenge of increased unemployment rates. On the other hand, the perceptions on labor union activities on wage inequality touch upon issues on the relevance of labor unions in this time of rapid technological advancement. Such perceptions also involve the position of labor unions in the history of wage inequalities in the work place. These results demonstrated how the participants perceive their role in the increase in wage inequality.

The results of the present study contributed to the growing body of literature on the perceptions of work inequality and technological advancement. This could be beneficial in understanding how government employees and social workers navigate their experiences amidst the improvements in technology and its effect on labor and work. The themes that emerged from this qualitative case study provided insights on

the root causes of these problems from the perspective of government employees.

Future researchers ought to use the insights from this study to further knowledge the role of government employees in addressing wage gaps in this technological age.

REFERENCES

REFERENCES

- Akerman, A., Helpman, E., Itskhoki, O., Muendler, M-A., & Redding, S. (2013). Sources of wage inequality. *The American Economic Review*, *103*(3), 214-219. <http://dx.doi.org/10.1257/aer.103.3.214>
- Alvaredo, F., Atkinson, A. B., Piketty, T., & Saez, E. (2013). The top 1 percent in international and historical perspective. *Journal of Economic Perspectives*, *27*(1), 3-20. doi:10.1257/jep.27.3.3
- Appleton, S., Song, L., & Xia, Q. (2014). Understanding urban wage inequality in China 1988–2008: Evidence from quantile analysis. *World Development*, *62*(1), 1-13. doi:10.1016/j.worlddev.2014.04.005
- Autor, D. H. (2014). Skills, education, and the rise of earnings inequality among the ‘other 99 percent.’ *Science*, *344*(6186), 843-851. doi:10.1126/science.1251868
- Autor, D. H., & Dorn, D. (2013). The growth of low-skill service jobs and the polarization of the US labor market. *American Economic Review*. *103*(1), 1553-1597. doi:10.1257/aer.103.5.1553
- Atasoy, H. (2013). The Effects of broadband internet expansion on labor market outcomes. *Industrial and Labor Relations Review*, *66*(2), 315-345. doi:10.1177/001979391306600202
- Barratt, M., Choi, T. Y., & Li, M. (2011). Qualitative case studies in operations management: Trends, research outcomes, and future research implications. *Journal of Operations Management*, *29*(4), 329-342.

- Baum-Snow, N., & Pavan, R. (2013). Inequality and city size. *The Review of Economics and Statistics*, 95(5), 1535-1548. doi:10.1162/REST_a_00328
- Behaghel, L., & Moschion, J. (2012). *Skilled labor supply, IT-based technical change and job instability*. Bonn, Germany: Institute for the Study of Labor.
- Bonica, A., McCarty, N., Poole, K. T., & Rosenthal, H. (2013). Why hasn't democracy slowed rising inequality?. *Journal of Economic Perspectives*, 27(1), 103-124. doi:10.1257/jep.27.3.103
- Broecke, S., Quintini, G., & Vandeweyer, M. (2015). Why is wage inequality so high in the United States? Pitching cognitive skills against institutions (once again). *Center for Economic Papers*, 15(18), 1-30.
<http://dx.doi.org/10.2139/ssrn.2655613>
- Cancro, P. (2016). The dark (ish) side of digitization: Information equity and the digital divide. *The Serials Librarian*, 71(1), 1-6.
doi:10.1080/0361526X.2016.1157424
- Castells, M. (1998). *End of millennium* (Vol. 3). Malden, MA: Blackwell.
- Clifford, L. R., Young, E., & Hu, Z. (2013). Comparing hybrid services in the United States and China. *International Journal of Information Systems in the Service Sector*, 5(1), 27-36. doi:10.4018/jiss.2013010102
- Colombo, M., Croce, A., & Grilli, L. (2012). ICT services and small businesses' productivity gains: An analysis of the adoption of broadband internet technology. *Information Economics and Policy*, 25(3), 171-189.
doi:10.1016/j.infoecopol.2012.11.001

- Corak, M. (2013). Income inequality, equality of opportunity, and intergenerational mobility. *Journal of Economic Perspectives*, 27, 79–102.
doi:10.1257/jep.27.3.79.
- Cortes, G. M. (2014). Where have the middle-wage workers gone? A study of polarization using panel data. *Journal of Labor Economics*, 34(1), 63-105.
Retrieved from <http://www.journals.uchicago.edu/toc/jole/current>
- Dolan, J. E. (2016). Splicing the divide: A review of research on the evolving digital divide among K–12 students. *Journal of Research on Technology in Education*, 48(1), 16-37. doi:10.1080/15391523.2015.1103147
- Elsby, M. W., Hobijn, B., & Şahin, A. (2013). The decline of the US labor share. *Brookings Papers on Economic Activity*, 2013(2), 1-63.
doi:10.1353/eca.2013.0016
- Escobar-Rodríguez, T., & Carvajal-Trujillo, E. (2014). Online purchasing tickets for low cost carriers: An application of the unified theory of acceptance and use of technology (UTAUT2) model. *Tourism Management*, 43, 70-88.
- Fairlie, R. W. (2012). The effects of home access to technology on computer skills: Evidence from a field experiment. *Information Economics and Policy*, 24(1), 243-253.
- Forman, C., Goldfarb, A., & Greenstein, S. (2012). The internet and local wages: A puzzle. *American Economic Review*, 102(1), 556-575. Retrieved from <https://www.aeaweb.org/journals/aer>

- Galperin, H., & Fernanda, V. M. (2014). Connected for development?. *Theory and Evidence about the Impact of Internet Technologies on Poverty Alleviation*, 1-35. <http://dx.doi.org/10.2139/ssrn.2397394>
- Garnero, A., Stephan, K., & Rycx, F. (2014) Minimum wage systems and earnings inequalities: Does institutional diversity matter?. *European Journal of Industrial Relations*, 21(2), 115-130. doi:10.1177/0959680114527034
- Goos, M., Manning, A., & Salomons, A. (2014). Explaining job polarization: Routine-biased technological change and off-shoring. *American Economic Review*, 104(8), 2509-2526. <http://dx.doi.org/10.1257/aer.104.8.2509>
- Güvenen, F., Kuruscu, B., & Ozkan, S. (2013). Taxation of human capital and wage inequality: A cross-country analysis. *The Review of Economic Studies*, 81(2), 818-850. doi:10.1093/restud/rdt042
- Hanley, C. (2014). Putting the bias in skill-biased technological change? A relational perspective on White-collar automation at General Electric. *American Behavioral Scientist*, 58(3), 400-415. doi:10.1177/0002764213503339
- Hanushek, E. A., Schwerdt, G., Wiederhold, S., & Woessmann, L. (2015). Returns to skills around the world: Evidence from PIAAC. *European Economic Review*, 73(1), 103-130. doi:10.1016/j.euroecorev.2014.10.006
- Im, I., Hong, S., & Kang, M. S. (2011). An international comparison of technology adoption: Testing the UTAUT2 model. *Information & Management*, 48(1), 1-8. doi:10.1016/j.im.2010.09.001

- Jacobs, D., & Myers, L. (2014). Union strength, neo-liberalism, and inequality. *American Sociological Review*, 79(4), 752-774.
doi:10.1177/0003122414536392
- Jeng, D. J. F., & Tzeng, G. H. (2012). Social influence on the use of clinical decision support systems: revisiting the unified theory of acceptance and use of technology by the fuzzy DEMATEL technique. *Computers & Industrial Engineering*, 62(3), 819-828.
- Kawaguchi, D., & Mori, Y. (2016). Why has wage inequality evolved so differently between Japan and the US? The role of the supply of college-educated workers. *Economics of Education Review*, 52(1), 29-50.
doi:10.1016/j.econedurev.2016.01.002
- King, J. (2013). *Technological change, union decline, and the rise in German wage inequality, 1979–2012*. Trento: Spring Meeting.
- Kolko, J. (2012). Broadband and local growth. *Journal of Urban Economics*, 71(1), 100-113. doi:10.1016/j.jue.2011.07.004
- Kristal, T. (2013). The capitalist machine: computerization, workers' power, and the decline in labor's share within U.S. industries. *American Sociological Review*, 78(3), 361-389. doi:10.1177/0003122413481351
- Kristal, T., & Cohen Y. (2015). What do computers really do? Computerization, fading pay-setting institutions and rising wage inequality. *Research in Social Stratification and Mobility*, 42(1), 33-47. doi:10.1016/j.rssm.2015.07.001

- Kristal, T., & Cohen, Y. (2016). The causes of rising wage inequality: The race between institutions and technology. *Socio-Economic Review*, *14*(1), 1-14.
doi:10.1093/ser/mww006
- Krueger, A. B. (2012). *The rise and consequences of inequality*. Presented on January 12 at the Center for American Progress in Washington, DC.
- Lee, H., Park, N., & Hwang, Y. (2015). A new dimension of the digital divide: Exploring the relationship between broadband connection, smartphone use and communication competence. *Telematics and Informatics*, *32*(1), 45-56.
- Linders, D. (2012). From e-government to we-government: Defining a typology for citizen coproduction in the age of social media. *Social Media in Government - Selections from the 12th Annual International Conference on Digital Government Research*. doi:10.1016/j.giq.2012.06.003.
- Lin, F., Fofanah, S. S., & Liang, D. (2011). Assessing citizen adoption of e-Government initiatives in Gambia: A validation of the technology acceptance model in information systems success. *Government Information Quarterly*, *28*(2), 271-279. doi:10.1016/j.giq.2010.09.004
- Magro, M. J. (2012). A review of social media use in e-government. *Administrative Sciences*, *2*(2), 148-161. doi:10.3390/admsci2020148
- Marchant, G. E., Stevens, Y. A. & Hennessy, J. M. (2014). Technology, unemployment & policy options: Navigating the transition to a better world. *Journal of Evolution and Technology*, *24*(1), 26-44. Retrieved from <http://www.jetpress.org/>

- Marshall, C., & Rossman, G. B. (2014). *Designing qualitative research*. Thousand Oaks, CA: Sage.
- Michaels, G., Natraj, A., & Van Reenen, J. (2014). Has ICT polarized skill demand? Evidence from eleven countries over 25 years. *Review of Economics and Statistics*, 96(1), 60-77. doi:10.1162/REST_a_00366
- Mishel, L. (2012). *Unions, inequality, and faltering middle-class wages*. Washington, DC: Economic Policy Institute.
- Mishel, L., Schmitt, J., & Shierholz, H. (2013). *Assessing the job polarization explanation of growing wage inequality*. Washington, DC: Economic Policy Institute.
- Mitchell, M. L., & Jolley, J. M. (2012). *Research design explained*. Belmont, CA: Wadsworth.
- Moretti, F., van Vliet, L., Bensing, J., Deledda, G., Mazzi, M., Rimondini, M., ... Fletcher, I. (2011). A standardized approach to qualitative content analysis of focus group discussions from different countries. *Patient Education and Counseling*, 82(3), 420-428. doi:10.1016/j.pec.2011.01.005
- Muller, J. Z. (2013). Capitalism and inequality: What the right and the left get wrong. *Foreign Affairs*, 92(2), 30-51. Retrieved from <https://www.foreignaffairs.com/>
- Nasri, W. (2014). Citizens' e-government services adoption: An extension of unified theory of acceptance and use of technology model. *International Journal of Public Administration in the Digital Age (IJPADA)*, 1(2), 80-96. doi:10.4018/ijpada.2014040105

- Nau, M. (2013). Economic elites, investments, and income inequality. *Social Forces*, 92(2), 237-461. doi:10.1093/sf/sot102
- Nemer, D. (2015). From digital divide to digital inclusion and beyond. *The Journal of Community Informatics*, 11(1), 1-12. Retrieved from <http://ci-journal.net/index.php/ciej>
- Norris, D. F., & Reddick, C. G. (2013). Local e-government in the United States: Transformation or incremental change?. *Public Administration Review*, 73(1), 165-175. doi:10.1111/j.1540-6210.2012.02647.x
- Reich, R. B. (2011). *Why inequality is the real cause of our ongoing terrible economy*. Retrieved from <http://www.robertreich.org/post/9789891366/>
- Reich, R. B. (2014). 10 Practical steps to reverse growing inequality. *Nation*, 298(21), 12-30.
- Rios-Avila, F. & Hirsch, B. T. (2014). Unions, wage gaps, and wage dispersion: New evidence from the Americas. *Industrial Relations: A Journal of Economy and Society*, 53(1), 1-27. doi:10.1111/irel.12044
- Rogers, S. E. (2016). Bridging the 21st century digital divide. *TechTrends*, 60(1), 197-199. doi:10.1007/s11528-016-0057-0
- Rotman, D. (2013). How technology is destroying jobs. *Technology Review*, 16(4), 28-35. Retrieved from <https://www.technologyreview.com/>
- Smith, C. L. (2013). The dynamics of labor market polarization. *Finance and Economics Discussion Series*, 57, 1-58.
<http://dx.doi.org/10.2139/ssrn.2348172>

- Snead, J. T., & Wright, E. (2013). E-government research in the United States Government. *Information Quarterly*, 31(1), 129-136.
doi:10.1016/j.giq.2013.07.005
- Stockhammer, E. (2015). Rising inequality as a cause of the present crisis. *Cambridge Journal of Economics*, 39(3), 935-958. doi:10.1093/cje/bet052
- Subramoney. (2014). *Learning from mistakes: Behavioral finance*. Retrieved from <http://www.subramoney.com/2014/11/learning-from-mistakes-behavioral-finance/>
- Sugarhood, P., Wherton, J., Procter, R., Hinder, S., & Greenhalgh, T. (2013). Technology as system innovation: A key informant interview study of the application of the diffusion of innovation model to telecare. *Disability and Rehabilitation: Assistive Technology*, 9(1), 79-87.
doi:10.3109/17483107.2013.823573
- Taylor, N. G. (2014). The circular continuum of agencies, public libraries, and users: A model of e-government in practice. *Government Information Quarterly*, 31(1), S18-S25. doi:10.1016/j.giq.2014.01.004
- Tsai, H. S., & LaRose, B. (2015). Broadband Internet adoption and utilization in the inner city: A comparison of competing theories. *Computers in Human Behavior*, 51(1), 344-355. doi:10.1016/j.chb.2015.04.022
- United Nations Broadband Commission. (2011). *United Nations report: Internet access is a human right*. Retrieved from <http://latimesblogs.latimes.com/technology/2011/06/united-nations-report-internet-access-is-a-human-right.html>

- United States Government. (1914). *Office of e-government and technology*. Retrieved from <http://www.egovt.gov/>
- Uphoff, E. P., Pickett, K. E., Cabieses, B., Small, N., & Wright, J. (2013). A systematic review of the relationships between social capital and socioeconomic inequalities in health: a contribution to understanding the psychosocial pathway of health inequalities. *International journal for equity in health, 12*(1), 1.
- van Deursen, A. J., & Van Dijk, J. A. (2014). The digital divide shifts to differences in usage. *New media & society, 16*(3), 507-526.
- Van Reenen, J. (2011). Wage inequality, technology and trade: 21st century evidence. *Labour Economics, 18*(6), 730-741. doi:10.1016/j.labeco.2011.05.006
- Venkatesh, V., Sykes, T. A., & Venkatraman, S. (2014). Understanding e-government portal use in rural India: Role of demographic and personality characteristics. *Information Systems Journal, 24*(3), 249-369. doi:10.1111/isj.12008
- Venkatesh, V., Thong, J. Y., & Xu, X. (2012). Consumer acceptance and use of information technology: Extending the unified theory of acceptance and use of technology. *MIS Quarterly, 36*(1), 157-178.
- vom Lehn, C. (2014). *Labor market polarization, the decline of routine work, and technological change: A quantitative analysis*. Retrieved from https://www.economicdynamics.org/meetpapers/2015/paper_151.pdf

- Western, B., & Rosenfeld, J. (2011). Unions, norms, and the rise in U.S.: Wage inequality. *American Sociological Review*, 76(4), 513-537.
doi:10.1177/0003122411414817
- Wisman, J. D. (2012). Wage stagnation, rising inequality and the financial crisis of 2008. *Cambridge Journal of Economics*, 37(4), 921-945. doi:10.1093/cje/bes085
- Yin, R. K. (2013). *Case study research: Design and methods*. Thousand Oaks, CA: Sage.
- Zhou, T. (2012). Examining location-based services usage from the perspectives of unified theory of acceptance and use of technology and privacy risk. *Journal of Electronic Commerce Research*, 13(2), 135.

APPENDICES

APPENDIX A

DEFINITION OF TERMS

Labor laws. Labor laws refer to the rules and regulations that the government set to ensure that the proper labor procedures and ethics are conducted and upheld (Mishel et al., 2013).

Labor union. Labor unions are employees' organizations that they themselves have founded, operated, monitored, and supervised. The goal of a labor union is to uphold the rights of employees to minimize unfair supervision and practices of an employer or the management (Western & Rosenfeld, 2011).

Wage inequality. Wage inequality refers to a gap in salaries received by the members of the top 10% of the income bracket in relation to the salaries received by the bottom 10% of the income bracket (Appleton et al., 2014).

APPENDIX B

INTERVIEW GUIDE

Research Question 1 (RQ1). How do local government agencies or officials react (as reflected through the government's relevant policies and programs) to the increase in wage inequality brought about by technology-based shift in demand?

Research Question 2 (RQ2). How do local government agencies or officials react (as reflected through the government's relevant policies and programs) to the increase in wage inequality from the change in labor union practices?