CALIFORNIA STATE UNIVERSITY, NORTHRIDGE

How E-government Impacts Customer Service Satisfaction and Employee Efficiency:

The Role of Technology in the Public Sector

A Case Study on Los Angeles County

A graduate project submitted in partial fulfillment of the requirements

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By

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Abstract

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Master of Public Administration in Public Sector Management and Leadership

In the twenty-first century, technology is evolving and advancing at a steady pace. The public sector needs to adapt to the digital era when providing services to its citizens. Therefore, e-government is the unavoidable topic within the field of Public Administration. However, e-government can be a double-edged sword for customer service satisfaction and employee efficiency. Scholars have used empirical data to acknowledge the relationship between technology and organizational performance, but very few researches focused on its effects within Los Angeles County. This paper aims to examine the impact of e-government within the public sector on the local government level by analyzing the literature related to the information technology, customer service satisfaction, management's effectiveness, and employee's productivity.

Section 1: Introduction

The New Public Management (NPM) movement inspired public organizations to adopt management practices commonly used by their private-sector counterparts. These practices include developing an organizational structure and improving management processes to improve organizational performance (Walker et al., 2011). Incorporating technology into public service is an example of implementing business practices into government. Another example is applying the customer-service perspective within the public agency (Wagenheim & Reurink, 1991). Therefore, this entire paper uses the word "*citizen*" and "*customers*" interchangeably.

Wagenheim and Reurink (1991) defined customer service as "a management strategy" based on the marketing concept that prioritizes "customer needs, wants, and satisfaction." This definition is based on the concept that providing quality customer service is essential to an organization's effectiveness. Especially within the public sector, where the quality of service can only be measured by customer satisfaction, satisfying their citizens' needs and expectations is the key factor for a government bureau to reach its mission.

The goal of any public agency is to provide quality public service to residents without compromising on efficiency and cost. A customer-driven government organization must also consider the current technological trends and issues within our society to effectively maximize citizen benefits and convenience with minimal turnaround time. For instance, the wave of Baby Boomer retirements calls for innovation and technology to fill the growing void in the workforce (Perry & Buckwalter, 2010). Public agencies are motivated to find creative alternatives to keep up with the evaporation of the labor force and the necessary quality improvements. Therefore, as our community becomes more technologically advanced, public organizations are embracing the

concept of e-government and adapting innovations to improve the overall public service and citizen's satisfaction (Walker et al., 2011).

Local public agencies, such as Los Angeles County, have transitioned to web-based communication and invested in technological upgrades such as re-designing the web interface to be more intuitive and user-friendly, as well as providing step-by-step guidelines and YouTube tutorials for stakeholders. Information technology and innovation have been viewed as ways to increase productivity, service quality, and organizational effectiveness while saving on time and public resources. Electronic government or e-government is the type of reform that is driven by information technology (Carrizales, 2008). E-government is often defined as the citizen's "ability to obtain government services" and access government information electronically and complete transactions "on an anywhere, anytime basis and in conformance with equal access requirement" (Fang, 2002). Holden, Norris, and Fletcher (2003) assembled a list of common characters that defines *e-government*:

- *"electronic and not paper-based and may include the Web, E-mail, fax, telephone, or other electronic means of providing information and delivering services;*
- *available 24 hours per day, seven days per week; and*
- *the provision of information and the delivery of service (of varying types of degree of complexity and integration."*

Similarly, Carrizales (2008) categorized the four functions of e-government: 1) E-organization, 2) E-services, 3) E-partnering, and 4) E-democracy. E-organization refers to the government's internal efficiency and effectiveness; E-services describes the external efficiency and effectiveness in providing services; E-partnering stands for the external efficiency and

effectiveness in working with other organizations; E-democracy is about citizens collaborating with the government in the decision-making process (Carrizales, 2008). This case study focuses primarily on e-organization and e-services functions of e-government.

As the first level of e-government, e-organization is describing the use of technology like e-mail and intranets to achieve internal efficiency. Public organizations have adapted E-mail as the primary form of contact with customers because it enhances and promotes open communication. E-mailing is practical for the following four reasons: 1) the conversation can be saved and documented for later use. Saved E-mails can help public servants quickly recall earlier conversations with customers and respond to inquiries more efficiently; 2) Public service providers would have more time to think of a proper response that minimizes potential issues. For instance, when responding to angry customers, public administrators need to spend some time crafting an appropriate response that will not make matters worse; 3) E-mail is more reliable than postal mail because E-mail delivers almost instantaneously while postal mail has a chance of getting lost; 4) the response time for an E-mail appears to be shorter than the wait time over the phone. In other words, E-mail has less of a response-time pressure than phone conversations.

The term *E-services* refers to public services provided or information available over websites that are accessible to the public. Many government entities are maintaining at least one website that distributes information to their residents or other constituents. Providing important and relevant information to customers, such a list of answers to "frequently asked questions" can save time on unnecessary phone calls or eliminate office visits.

Furthermore, many public agencies are slowly transitioning their service request forms from paper-format to online application, which some scholars believe, has emerged as a low-

maintenance and cost-effective way to provide public services (D'Agostino et al., 2011). While a majority of local governments are only providing non-transactional services (Coursey & Norris, 2008), some agencies are allowing citizens to pay for services online.

Many scholars agree that information technology, such as web-based communication and interaction, has been proven to improve management and productivity (Kleis et al., 2012). However, whether the concept of e-government improves customer service satisfaction and employee efficiency remains unclear. In addition, very few researches have focused on the local government's implementation of new technology in relation to the adaptation of new policies and processes. The goal of this research is to find a correlation between technology, productivity, and service. Using the case study of Los Angeles County, we shall discover the impact of E-government within the local public agency.

This paper aims to answer the questions: **"How does E-government function on a local government level? How does technology affect public servants' work performance? How does technology influence public service quality and customer (citizens') satisfaction? What are the technological issues that the public sector may not have considered in building its E-platform?"**

Section 2: Literature Review

The purpose of E-government using new technology is to achieve efficiency, increase the public's access to services (Xu, 2012), and improve human life (Arfeen and Khan, 2009). The concept is that *innovation* can help enhance the quality of public services and advance the public sector's problem-solving capability (Damanpour and Schneider, 2009). A study on technology and sustainability has categorized innovation activities into seven stages: invention, selection, initial adoption, production, adaptation, widespread use, and retirement (Anadon et al., 2016). Other researchers have organized the various types of innovation within E-government: process, administrative process, technological process, product or service, governance, and conceptual (De Vries et al., 2016). This paper focuses on the process, production, and service innovations.

Technology Use in Public Service

The usage of technology for public service is a double-edged sword. Some researchers are optimistic about the technology's ability to transform the public sector and the quality of services it provides. For instance, Walker, Damanpour, and Devece (2011) claimed to have found a "positive relationship between technology and organizational performance." Bromberg and Manoharan (2015) also suggested that technology "has the potential to impact many aspects of government" in a positive way that increases effectiveness and efficiency. The idea that technology allows public agencies to "do more with less" makes E-government an attractive upgrade within the public sector (D'Agostino et al., 2011). Researchers, such as Perry and Buckwalter (2010), expressed their confidence that "demographic, social, political, and technological changes" will improve public service.

On the other hand, some scholars are more pessimistic about the effects of technology within government organizations. They expressed concerns that technology creates socioeconomic barriers that exclude people who are not heavy internet users (Scott, 2006), such as the poor, the elderly, and the disabled. Social class or income status affects customers' accessibility to government services, which contradicts with the public sector's goal of service equality. For example, households with higher incomes are more likely to have access to computers and the internet than low-income families (Ho, 2002). According to the Pew Research Center, although rural Americans have shown signs of adapting to the digital technology, with two-thirds of them having broadband internet, the "digital gap between rural and nonrural" Americans continues to exist (Perrin, 2019). Another survey shows that ten percent of Americans are not adopting the internet, with low-income families and seniors as major groups that tend to stay offline (Anderson et al., 2019).

Other critics have challenged the usefulness of studies that focuses on the "theoretical approaches and empirical scales" from technology-oriented models by arguing that the previous research method limits the practicality of the research results (Wirtz et al., 2016). These researchers remain skeptical (Van Der Meer et al., 2014) towards the belief that technology is the cure for every single pre-existing issue in the local government. Moreover, Van Der Meer and colleagues (2014) concluded that the current E-Government is limited to one-way communication, so some customers might prefer to communicate over the phone or in-person for more government-citizen interactions. Through email and websites, customers are usually uncertain about the wait-time for an agency's response. They might feel that they can get a faster response through in-person interaction.

Status and Trend of E-Government

The internet has reinvented the way local governments communicate and interact with their residents (Lowatcharin and Menifield, 2015). Space-consuming hard copy documents are converted into digital files for convenient storage and distribution, allowing government agencies to free up office space. Public organizations can now easily and quickly disseminate digital information to the public, which the public can access at any time on their electronic devices, such as personal computers or smartphones. Citizens can e-mail their local public officials to ask questions at their convenience. In general, the government agency's website usage is an essential "indicator of whether or not the government is generally fulfilling citizen expectations" (Welch et al., 2005). A study in England has found a positive link between technological innovation and public service quality (Salge et al., 2012). Undeniably, the reduction of the workforce (Perry and Buckwalter, 2010) and the trending advancement in technology made e-government an inevitable transition for public agencies as people expect the government to have more information and services available online (Lowatcharin and Menifield, 2015).

Transparency, Public Trust and Customer Service Satisfaction

More information translates to a higher level of government transparency. Transparency refers to the government or the public sector disclosing information to stakeholders, allowing them to understand and monitor its operation or performance (Porumbescu, 2015) for the purpose of gaining public trust (Grimmelikhuijsen et al., 2013). Lowatcharin and Menifield (2015) further defined transparency from two perspectives, *outside-in* and *inside-out*. As they explained, "an outside-in perspective, focusing on the seeking role of external entities, and an

inside-out perspective, highlighting the responsibility of the organization to inform and open up"
(Lowatcharin and Menifield, 2015).

Nonetheless, some researchers suggest that "while government web site satisfaction is positively associated, individuals with more concern about the responsiveness of government are less satisfied" (Welch et al., 2005). Welch and colleague (2005) also stated that people who want to interact with their local government agencies would go to these websites, but they are often disappointed after the interaction. Customers may be expecting more advance functions than what many government websites currently offer. The research further concludes that people are pleased with the concept of e-government transactions, but their needs have not yet been met through online portals (Welch et al., 2005). The result is an indication that e-government remains underdeveloped for many public agencies.

While some experts have warned that providing too much or unnecessary information can lead to confusion and reduce public's trust (Porumbescu, 2015), a majority of prior researches seem to agree that a positive correlation exists between government transparency and public trust (Kim & Lee, 2012) or that "users of local government web sites are more likely to trust local governments" (Tolbert & Mossberger, 2006). Soonhee Kim and Jooho Lee (2012) developed a theoretical model of the process of e-participation and analyzed the impacts of the e-participation process on participants trust in government. The model consists of 5 dimensions of the e-participation process: 1) satisfaction with e-participation applications, 2) satisfaction with government responsiveness to e-participant, 3) citizens' development through the participation, 4) perceived influence on decision making, and 5) assessment of government transparency. (Kim and Lee, 2012).

Many people consider government transparency as the key to public trust and better governance (Grimmelikhuijsen et al., 2013) because transparency promotes the government's accountability (Lowatcharin & Menifield, 2015). Specifically, a public agency can demonstrate its dedication to providing quality public service by keeping citizens informed and allowing them to provide feedback. As stated by Welch and colleagues, "allowing citizens to monitor agency activities and decisions may engender greater trust" (Welch et al., 2005). Customers will learn to trust their local government when they feel that their interests are prioritized. Kim and Lee's (2012) study also shows that the quality of government's responsiveness is positively related to customer satisfaction. Furthermore, Welch and his team (2005) discovered that there exists a positive association between citizens' trust and their satisfaction. Transparency leads to public trust, and public trust increases citizen's satisfaction.

The Cost of Advancement

However, gaining trust and customer satisfaction with technology comes at a price. E-government initiatives are expensive, and those costs cannot be absorbed in the County's municipal budget (Bromberg & Manoharan, 2015). Therefore, less populated cities or counties that have "a lower per capita income" or receive lower funds are less likely to invest money in a user-friendly website for their residents due to their budget constraints (Ho, 2002). Additionally, technology is continuously evolving. Public agencies that rely on technology to function will find themselves having a constant need to update software or even upgrade their systems to keep up with the public's demands, which leads to costly maintenances. Complete dependence on a specific technology may also be counterproductive when any software or hardware fails and stops working.

Furthermore, the reliance on e-government opens the door for the issue of cybersecurity as more sensitive, and personal information are available online. Cybersecurity incidents, such as data breach, usually leads to "potentially significant losses" (Goss, 2017). Therefore, the public sector must consider "security and privacy" of the information systems to ensure that individual rights and properties are appropriately protected and respected during the implementation of e-government (Fang, 2002). Of course, in this digital age, the cybersecurity issue is not exclusive to government websites. The vulnerability of our personal information is a pre-existing condition. E-government is not the primary host for hackers. The effect of cybersecurity on e-government is significant, but the influence of e-government on cybersecurity is likely negligible.

Technology and Employee Efficiency

While information technology is not a one-size-fits-all solution to problems, technology plays a vital role in the working capacity of an organization. Many government officials "find Internet technology a convenient way to manage their workload" (Welch et al., 2005). For instance, public employees can organize their assigned tasks and keep track of incoming inquiries with basic programs like Microsoft Office. West and Berman (2001) suggested that information technology can strengthen management by improving employee productivity, enhancing government-citizen communication, and identifying new methods to meet customer needs.

Information technology can also enable the employees' capability to multi-task, which is to take on multiple projects simultaneously (Rawley & Simcoe, 2013). Rawley and Simcoe (2013) further explained multi-tasking is positively related to productivity and employee

efficiency but only to a certain extent before the adverse effect kicks in. Of course, a public employee's job performance is not limited to the effects of e-government. For example, adequate training is also an important factor for enhancing work performance and satisfaction of workers (Sattar et al., 2015).

Training Technology with Technology

Information technology can "enhance organizational productivity, but only if it is learned well by employees" (Woldesenbet & Klay, 2016). The benefits of training have been proven by many scholars. Researchers interviewed and surveyed information technology (IT) managers in India and found that additional training leads to an increase in work performance (Bapna et al., 2013). Employee training can help local government workers obtain the skills "to assimilate rapid changes in the workplace while providing increasingly efficient and high-quality service" (Schumaker, 2004). Training for public workers can be separated into three categories: 1) the technology, 2) the role, and 3) organizational policies. Training in technology refers to gaining the technical skills needed to carry out daily job duties. Employees should know how to operate the information system behind e-government effectively. Public workers should also understand their role in the agency. When a worker's "job-related duties are unclear," role ambiguity occurs, which "negatively affects employee job performance" (Caillier, 2010). Implementing advanced technology can be challenging because a real change needs to take root within the organization's culture. The most critical aspect of creating a culture for change is to provide adequate training to staff. Scholars analyzed case studies related to public sector training courses offered in Germany and concluded that training programs are the most useful tools to

establish a new culture within the organization (Schröter & Röber, 2015). Therefore, training on the topic or organizational policies and structure should be a requirement for all employees.

Technology also enhances employee training. Many training courses are now web-based, which saves the employee time and money for not needing to commute. Using e-learning and e-training, management can efficiently conduct organizational-wide training sessions over the internet or intranet and keep track of which employees were trained on a specific subject. The production of video and web training cost less than periodically hiring a professional trainer to train in-person. In addition to its cost-effectiveness, another benefit is the trainees' access flexibility (Ramayah et al., 2012). On the contrary, some researchers found the outcomes of e-learning to be disappointing (Santhanam et al., 2008). When management does not monitor the trainees' learning progress, web-based training can be disastrous and a waste of time.

Employee Recruitment

Another benefit of incorporating technology in the public sector is speeding up the hiring process while promoting workforce diversity. A slow hiring process would create a constant shortage of human resource, which then results in low productivity or efficiency, more workload, and pressure for the remaining staff, decrease in employees' overall job satisfaction. A slow hiring process can also cause the organization to lose high-quality candidates and lower the quality of the workforce. Recruiting public administrators through the internet eliminates the geographical barriers of traditional job recruitment and offers the employment opportunity to any qualifying candidate in the nation. Diversity drives work performance (van Knippenberg et al., 2004), and the increase in production and efficiency is a factor that leads to higher customer service satisfaction.

Technology alone cannot make employees more efficient or more productive or improve work performance. It must be accompanied by other external factors, such as procedures and process. Scholars have concluded in their research that emphasizes organizational processes in public management reforms play an essential role in public agencies. (Walker et al., 2011). Government technology and policy diffusion (Bussell, 2011) are intertwined. However, many public agencies are not incorporating the right policies when they adopt the new technology, and so far, very little research has been conducted on which policies directly influence work performance (Jin et al., 2017). Public organizations may need to streamline the process and change strategies that might counter the positive effects of technology. For instance, applications are easily accessible online, and thus, many citizens might submit several applications for one service. In this case, streamlining the process would eliminate duplicate services and preserve scarce resources (D'Agostino et al., 2011).

E-government Barriers

Evidently, the evolution of e-government has not been finalized. There are many other issues that the local government needs to consider when implementing E-government. Researchers surveyed local governments and found six barriers: 1) security issues, 2) difficulty justifying the return on investment, 3) issues related to convenience fees, 4) a lack of technology or web expertise, 5) privacy issues, and 6) lack of demand (Coursey & Norris, 2008). Some of these challenges are directly related to the organization's performance and customer satisfaction. Therefore, information technology needs to be managed, and understanding the dynamics of e-government is essential to the success of public agencies and their administrators. Besides, there are other obstacles that might undermine the benefits of technology in the public sector and have

adverse effects on productivity, employees' satisfaction and performance of the public agency, which would likely lead to a lower rating of customer satisfaction. For example, the public sector has an undying culture in the workplace, where more capable employees are required to take on more work to pick up the slack of their coworkers while receiving less pay. Often, they are new hires who have not yet exhausted their passion, integrity, and work ethics to go with the trend of doing a minimal amount of work. This type of culture is problematic towards equality, job satisfaction, and productivity because it encourages employees to be lazy.

Section 3: Methodology

The case study, County of Los Angeles, is one of the most populated and diverse counties in the United States (He, Lim, Lecklitner, Olson, & Traube., 2015). Thus, it also has the most extensive county government in the country (Pisano, 2012). We will be using a mixed-methods research design to test our hypotheses. The result of the research on Los Angeles County would provide an overview that represents the public sector in general and helps the agency determine how to improve customer service and employee performance with e-government and employee training.

Hypotheses

- H1 #1 – Technology (E-government) can positively impact customers' satisfaction.

- H1 #2 – Technology can positively impact employee performance.

- H1 #3 – Training on customer service and EPIC-LA has a positive association with customer service satisfaction and employee performance.

- H1 #4 – Public organizations that use the web portal provides better customer service than public agencies that use the paper application.

Null Hypothesis

- HO #1 – Technology has no impact on customers' satisfaction.

- HO #2 – Technology has no impact on employee performance.

- HO #3 – Training on customer service and EPIC-LA has no association with customer service satisfaction or employee performance.

- HO #4 – Public organizations that use paper application does not provide worse customer service than public organizations that use web portal.

<u>Customers' Satisfaction</u>

The dependent variable of this research is customer satisfaction. The independent variables are the usefulness of the new technology (EPIC-LA web interface), employees' performance, customer service training, employees' experience with information technology. We will use quantitative research method to test the hypotheses on ordinal scales. We will assess if each hypothesis is true or false and if each null hypothesis is a practical possibility based on the survey results. In this study, we will focus on customers' responses between a public organization that incorporate e-government transactions (Los Angeles County) with another public agency that has non-transactions web-interface (San Bernardino County). We will also focus on the EPIC-LA workshops provided to citizens and the employees' training on customer service and information technology.

To monitor and improve customer service satisfaction within the Los Angeles County Department of Public Works, we must use customer service surveys to understand the relationship between e-government and customer satisfaction. The customer service surveys would provide a direction for improvements, so the questionnaires should be answered using a Likert scale (Appendix A). Customers will answer a set of questions related to the public service they received and the usefulness of the new web portal. For instance, we plan to ask fifty randomly selected customers to rate their satisfaction towards the service by answering the following statements on a 1-5 scale:

(1-Excellent; 2-Above Average; 3-Average; 4-Below Average; 5-Poor)

1. *How would you rate the overall service you received?*

2. *How would you rate our knowledge related to your request?*

3. *How would you rate our ability to process your request/application in a timely manner?*

4. *How would you rate our professionalism when handling your inquiry?*

5. *How would you rate the new EPIC-LA system and interface?*

6. *How would you rate our responsiveness over e-mail? (If Applicable)*

7. *How was our degree of concern for your problem?*

(1-Strongly Agree; 2-Agree; 3-Neutral; 4-Disagree; 5-Strongly Disagree):

1. *I prefer communicating through email than over the phone.*

2. *I prefer using EPIC-LA to apply for permits.*

3. *The customer service representative demonstrated knowledge on the EPIC-LA system.*

4. *The customer service representative was aware of my needs.*

5. *EPIC-LA interface is user friendly and intuitive.*

6. *EPIC-LA is an efficient permitting system.*

7. *Additional Comments/ Recommendations*

The second set of questionnaires would be given to employees to determine the adequacy of their technological training, familiarity with technology, and their opinion on the new technology, EPIC-LA. The employee survey will also use a Likert scale (Appendix B). We will ask the employee how much customer service training they received and if the training helped them adapt to the new technology. Fifty employees of the Los Angeles County Department of Public Works will be asked to rate their satisfaction towards the training by answering the following statements on a 1-5 scale:

(1-Excellent; 2-Above Average; 3-Average; 4-Below Average; 5-Poor)

1. How would you rate your overall satisfaction with the new EPIC-LA system?

2. How would you rate EPIC-LA's efficiency?

3. How would you rate EPIC-LA's usefulness for fulfilling your job duties?

4. How would you rate your overall knowledge on the operation of EPIC-LA?

5. How would you rate your overall satisfaction with the customer service/technological training which you received?

6. How would you rate the usefulness of the training program?

7. How would you rate your overall improvement after you received training?

(1-Strongly Agree; 2-Agree; 3-Neutral; 4-Disagree; 5-Strongly Disagree):

1. I would recommend EPIC-LA to my fellow employees.

2. EPIC-LA is an excellent permitting system.

3. EPIC-LA helps me improve my productivity.

4. EPIC-LA helps me provide better customer service.

5. I would recommend this training program to my fellow employees.

6. This training program helps me improve my overall knowledge of new technology.

7. This training program helps me to work more efficiently.

8. This training program helps me provide better customer service.

9. Additional Comments / Recommendations

Employee Performance

The research methodology for this part of the study is qualitative research. We will interview twenty-five supervisors from the Los Angeles County Department of Public Works to rate their subordinates' job performance after the training to determine if these trainings improve employee performance and efficiency (Appendix C). We will then compare their subordinates' measurable productivity (Ratio) and review their Employee Performance Evaluations (Ordinal) before and after the launch of the EPIC-LA web portal. The dependent variable is the employee performance. The independent variables are the usefulness of the new technology, the training provided for the EPIC-LA web interface, and employees' previous experience with technology. The interview questionnaires will be open-ended.

Comparing with Another Government Agency

The County of San Bernardino maintains a website that distributes information to its residents. However, the agency's website lacks the function of online transactions. Applicants will have to apply for services by printing out a paper copy of the application and submit at the County office. The part of the study uses a mixed-methods research design. We seek to collaborate with San Bernardino County to obtain their survey results or interview managers. We will compare the data to see if transactional services make a difference in customer satisfaction.

Section 4: Research Limitations

The research design has several limitations. First, customer service surveys are always filled out voluntarily. Although we will attempt to select fifty customers surveys randomly, we are limited to the citizens' willingness to participate. Many citizens will opt out of the survey, or only provide feedbacks when they are extremely happy or angry towards the service they received. The survey result might be influenced by emotions to contain biases. Second, the sample size is only from one agency within Los Angeles County and San Bernardino County. The research method does not include samples from various agencies throughout the nation. Third, while employee surveys will remain anonymous, some employees might still feel the pressure to agree with the administration's decisions and not answer to the best of their knowledge.

Section 5: Background

The County of Los Angeles is a technologically advanced region that promotes citizen's stability, security, and quality of life. The County's Department of Public Works (DPW) is considered an effective public organization in Los Angeles County because it has been delivering safe infrastructures and services to more than 10 million people in the region. Their mission is to become the most trusted public agency in the region. The engineers in the agency work to provide clean water, flood control, maintenance of roads and sewer system, design and construct bridges and traffic signals, all aimed to improve the quality of life. (dpw.lacounty.gov, 2018).

Department of Public Works used to have a large plan room filled with blueprints of old infrastructures. The agency dedicated a part of its labor force to scan documents and plans. After several years of investment, DPW has successfully eliminated the need for a plan room, freeing up a large area in the basement. The scanned plans and documents were made available to stakeholders through the Department's website. DPW has been relying heavily on email as a primary method of communication with citizens and with fellow employees, but the agency has remained "old fashioned" when dealing with official inquiries or application for a requested service. In other words, DPW was only able to accept paper applications prior to the year 2017. The slow application process and low public official responsiveness prompted the Department to adopt a new web-based platform for citizens to submit applications, requests, inquiries, and complaints.

For a public organization to remain effective, it needs to adapt to the evolving community it serves continuously. In 2017, DPW launched the new e-government web portal, EPIC-LA, which stands for "electronic permitting and inspection in the County of Los Angeles." It was an

official transition from paper applications to online applications. This web portal was created to increase citizens' convenience, raise employee productivity, boost customer satisfaction, save everyone's time, and preserve resources. Applicants no longer need to travel to the office to apply for services. DPW's e-government also allows online transactions. Customers can make payments online with their check or credit card and download their receipts.

In 2018, a year after the transition to a digital permitting system, employees and applicants have been reporting mixed reviews on the new permitting system. Some stakeholders praised the change for its convenience while others complained about the latest online application's web interface being counterintuitive, or the application process remaining slow. Many customers experienced technical issues with the new EPIC-LA system when they apply. These customer responses raise the question, why are the responses inconsistent? We must examine the e-government issues experienced by Department of Public Works to answer that question.

First, while some workers mastered the new technology instantaneously, many employees felt that they did not have enough time to familiarize with the new program or were not fully ready for the transition. Training sessions were provided before the release of the latest web interface, but every trainee learns at a different pace. As a result, several employees struggled to adapt to the new permitting system in time for the official launch. Nevertheless, this struggle was only temporary. As more employees and supervisors received adequate training, they eventually adapted to the new system.

Second, customers need time to adapt to the new application process, especially since the change is not incremental. DPW made its best effort to inform applicants of the upcoming switch, but many customers were not accustomed to the new electronic platform and new

permitting process. They ran into both technical and non-technical issues which require more guidance from public employees. People also have a natural resistance toward change, which can lead to negative biases or complaints.

Third, the services delivered with technology are not entirely inclusive to all residents of Los Angeles County. Many senior citizens are not used to operating computers. Also, people with low-income or at the poverty level are less likely to own computers and may have a difficult time accessing these public services over the web. Many county residents who live in rural areas may also lack adequate access to the internet. Unless they ask their relatives for help, these people are excluded from the target population that technology can reach. Subsequently, the DPW offices do have computers at their public counters, and the agency welcomes any Los Angeles County residents to use these tools.

Fourth, the information technology behind the new permitting system has some software bugs that need to be addressed. Although these system errors are fixable, they are harmful to the efficiency of the web portal, which can potentially decrease employee productivity and customer satisfaction. Supervisors should encourage subordinates to report every encountered issue to the IT service desk so that problems can be discovered and resolved immediately.

Fifth, the permitting process was modified to complement the new e-government. Through EPIC-LA, the overall process was simplified, but some aspects became more complex. For example, due to the capability of the program, applicants are required to submit documents directly through the EPIC-LA portal. Supplemental documents are no longer accepted through e-mail, which creates an extra step for the customers if they already submitted the items through e-mail. Implementing any change can be challenging because a real change needs to take root within the organization's culture.

Conclusion

Public agencies face many challenges when adopting new technology. Some of these challenges are directly related to the organization's performance and customer satisfaction. Therefore, information technology needs to be managed, and understanding the dynamics of e-government is essential to the success of public agencies and their administrators. Keeping a positive attitude is the key to making a successful transition in e-government. The DPW's management held an optimistic position during the transformation, and all employees received training on how to use the new technology. The prediction is that technological issues will reduce over time as the system improves, and citizens become more accustomed to new technology. The most critical aspect of creating a culture for change is to provide adequate training to staff. We recommend the digitized government to hire more technical support personnel to help public workers resolve technological issues with the new e-government interface. We also recommend agencies to develop cybersecurity awareness programs for public employees and constituents.

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Appendix A

Customer Service Survey

Please rate your satisfaction towards the service you received by answering the following questions on a 1-5 scale: (1-Excellent; 2-Above Average; 3-Average; 4-Below Average; 5-Poor)

1. How would you rate the overall service you received?

    o 1   o 2   o 3   o 4   o 5

2. How would you rate our knowledge related to your request?

    o 1   o 2   o 3   o 4   o 5

3. How would you rate our ability to process your request/application in timely manner?

    o 1   o 2   o 3   o 4   o 5

4. How would you rate our professionalism when handling your inquiry?

    o 1   o 2   o 3   o 4   o 5

5. How would you rate the new EPIC-LA system and interface?

    o 1   o 2   o 3   o 4   o 5

6. How would you rate our responsiveness over email? (If Applicable)

    o 1   o 2   o 3   o 4   o 5

7. How was our degree of concern for your problem?

    o 1   o 2   o 3   o 4   o 5

Please answer the following statements using the 1-5 scale: (1-Strongly Agree; 2-Agree; 3-Neutral; 4-Disagree; 5-Strongly Disagree):

1. I prefer communicating through email than over the phone.

       o   1   o   2   o   3   o   4   o   5

2. I prefer using EPIC-LA to apply for permits.

       o   1   o   2   o   3   o   4   o   5

3. The customer service representative demonstrated knowledge on the EPIC-LA system.

       o   1   o   2   o   3   o   4   o   5

4. The customer service representative was aware of my needs.

       o   1   o   2   o   3   o   4   o   5

5. I find the EPIC-LA interface to be user friendly and intuitive.

       o   1   o   2   o   3   o   4   o   5

6. EPIC-LA is an efficient permitting system.

       o   1   o   2   o   3   o   4   o   5

7. Additional Comments/Recommendations

Appendix B

Employee Survey

Please rate your satisfaction towards the EPIC-LA system and the training you received by answering the following questions on a 1-5 scale: (1-Excellent; 2-Above Average; 3-Average; 4-Below Average; 5-Poor)

1. How would you rate the overall satisfaction with the new EPIC-LA system?

     o 1   o 2   o 3   o 4   o 5

2. How would you rate EPIC-LA's efficiency?

     o 1   o 2   o 3   o 4   o 5

3. How would you rate EPIC-LA's usefulness for fulfilling your job duties?

     o 1   o 2   o 3   o 4   o 5

4. How would you rate your overall knowledge on the operation of EPIC-LA?

     o 1   o 2   o 3   o 4   o 5

5. How would you rate your overall satisfaction with the customer service and technological training which your received?

     o 1   o 2   o 3   o 4   o 5

6. How would you rate the usefulness of the training program?

     o 1   o 2   o 3   o 4   o 5

7. How would you rate your overall improvement after you received training?

     o 1   o 2   o 3   o 4   o 5

Please answer the following statements using the 1-5 scale: (1-Strongly Agree; 2-Agree; 3-Neutral; 4-Disagree; 5-Strongly Disagree):

1. I would recommend EPIC-LA to my fellow employees.

  o 1   o 2   o 3   o 4   o 5

2. EPIC-LA is an excellent permitting system.

  o 1   o 2   o 3   o 4   o 5

3. EPIC-LA helps me improves my productivity.

  o 1   o 2   o 3   o 4   o 5

4. EPIC-LA helps me provide better customer service.

  o 1   o 2   o 3   o 4   o 5

5. I would recommend this training program to my fellow employees.

  o 1   o 2   o 3   o 4   o 5

6. This training program helps me improve my overall knowledge of new technology.

  o 1   o 2   o 3   o 4   o 5

7. This training program helps me to work more efficiently.

  o 1   o 2   o 3   o 4   o 5

8. This training program helps me provide better customer service.

  o 1   o 2   o 3   o 4   o 5

9. Additional Comments / Recommendations

Appendix C

Interview Questions for Supervisors

General questions:

1. What is your opinion on the usefulness of e-government in providing public service?

2. What do you think of the EPIC-LA portal and its function within the e-government?

3. Does EPIC-LA have potential or room for improvements?

For each selected subordinate, please answer the following questions:

1. Does the new technology improve your subordinate's overall productivity or efficiency?

2. Does the new technology improve the customer service he or she provides?

3. Does the training improve your subordinate's overall productivity or efficiency?

4. Does the training improve the customer service he or she provides?

5. Please indicate your gender: Male / Female / Prefer to not answer

6. Please tell us your age range:

| 18-24 | 25-34 | 35-44 | 45-54 | 55 -64 | 65 or older | Prefer to not answer |

7. Please select the ethnicity that best describes you:

| American Indian or Alaskan Native | Asian | Black or African American | Pacific Islander | White | Hispanic or Latino | Prefer to not answer |