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E-governance diffusion: COVID-19 as a critical juncture for developmental path dependency; the case of Mexico

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Abstract

This thesis aims to contribute to e-governance studies by combining a framework of critical juncture studies and path dependency theory to evaluate the performance of the e-governance sector in Mexico in the wake of the SARS-COVID-2 crisis. Through the investigation of e-governance policies during the COVID-19 pandemic, this thesis identified key thematic principles for analysis: 1) Access to Internet, 2) Telecommunications Infrastructure, 3) Online Services and Healthcare Information, 4) Human Capacity. Analytical linkages manifested in urban/rural divides, inter-governance partnerships and these played a key part in the analysis. These 4 themes are interlinked with the e-government landscape for Mexico and the study of COVID-19 as a critical juncture presented in this thesis and present some new evidence for further studies. The framework of this thesis, an exploratory mixed methods case study of Mexico, was aided by the inclusion of sources spanning 2018-2020 to craft a more complete picture of the time frame in question and to stress how important the post-COVID-19 period might become for development, and the capacity e-governance has in assisting it. The results of the study revealed extensive path dependency, the thesis deduced that although there were sufficient grounds for a critical juncture to be present, e-governance did not expeditiously increase: as a result, Mexico exercised a mixed strategy towards e-governance where a significant leap was expected.

Keywords: Digital and technological transformations, e-governance, Information and Communications Technology, Sustainable Development Goals, Telecommunications infrastructure, Online Services, COVID-19

Word Count: 9957

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List of Acronyms

CEDN	National Digital Strategy Coordination Office
OECD	Organization for Economic Co-operation and Development
INEGI	National Institute of Statistics and Geography
ENDUTIH Survey	The National Availability and Use of Information Technologies at Home
EGDI	E-Government Development Index
ISSEMyM	Social Security Institute for the State of Mexico and Municipalities
ICT	Information and Communications Technology

1 Introduction

E-governance exists as part of the larger trend of decentralizing and improving the function of existing government functions by marrying technocratic norms with existing government agencies, services, and more. E-governance, or Electronic Governance, is applying Information and Communication Technologies (ICTs) within governmental and political settings, “delivering government services through integration of various stand-alone systems.” (Bose and Rashel, 2008) These systems exist between Government-to-Citizens (G2C), Government-to-Business (G2B), and Government-to-Government (G2G) services. (Ibid.) Essentially, the way e-governance manifests itself is through various government channels and saw its rise to prominence with the emergence of the internet at the start of the millennium, From the very beginning, there was a focus on the emancipating effects of e-government: reduction of corruption, increasing transparency and accountability, and the holistic positive effects on governance which would be achieved when this process was diffused within the various strata of governance. Early studies suggested that the successful implementation of decentralized e-governance policies led to a reduction in corruption within certain governmental applications. (Bhatnagar, 2003) The e-governance spectrum has evolved over the years—now as many state governments are looking to combine new ICTs with policies, infrastructure, agencies, there is presently more research than ever before.

This field of study would gradually be integrated into a multitude of development agendas, at present due to the Sustainable Development Goals in 2015. The United Nations is aware of the importance of strong institutions, there has been the attempt to create a goal for all member nations to aspire to: leading to the creation of Sustainable Development Goal 16, which aims to build “effective, accountable institutions at all levels for sustainable development.” (SDG UN, 2015)

By proliferating the Sustainable Development Goals, the United Nations actively promotes e-governance norms as a normative fixture of developmental frameworks and approaches, e-governance is recognized by organizations such as the United Nations and the Organization for Economic Co-operation and

Development (OECD) as an important component in achieving various developmental goals. Understanding a country's trajectory of development and its e-governmental priorities is important because the expectation cannot be unilateral implementation, certain factors like geography give rise to stark urban/rural divides which deeply mark the potential of e-governance diffusion. E-governance implementation is harder than one expects, the term is a useful umbrella of similar practices and goals, but within that lies a spectrum of possibilities, challenges, and differing priorities.

Mexico is an interesting case for e-governance. Mexico has a tumultuous history with political processes, regional disparities, and cyclical declines. (Trejo, 2020) As such, Mexico has become crucible for e-governance idealism, people are receptive of further integration in the nation. Perceived utility of e-governance in public administration was received warmly in the rural state of Veracruz and showed that people's perspectives are "motivated by the sufficiency and efficiency of e-government websites." (Mora et. Al, 2021) Mexicans have clamored for further integration of e-governance in all respects, further integration of information and communications technology in government administration and day-to-day tasks, expanding infrastructure and access of the citizenry to the internet. Expanding e-governance is a process which takes years if not decades, but now, the COVID-19 pandemic may be an inflection point which has the possibility for speeding up this rate of integration nationwide.

COVID-19 has provided a renewed impetus for e-governance studies worldwide in what could be considered a new era, where terms such as 'pre-covid' and 'post-covid' are abundant. This matters because institutionally, Mexico is known for the detriments which afflict its governance: corruption and government failures and violence. Current inefficiencies in current and past administrations have contributed to considerable 'institutional and state weakness, broad gaps in authority' in all governmental regards. (Aguirre-Ocho and Gómez, 2020)

Emerging because of the pandemic, new logistical and operational challenges emerged as priorities had to be shifted. 'Good governance' was recognized as ("regulatory quality, voice and accountability, and government effectiveness") (Tatar et al. 2021) imperative, "as the best way to control and stop the COVID-19 pandemic as quickly as possible is to develop and deploy safe and effective COVID-19 vaccines and immunize a

sufficiently large share of the world." (School of Global Public Health, 2020, cited in Tatar et al. 2021) Government effectiveness is considered a major part of any country's COVID response, with the tantamount effects of e-governance, there could be the considerable expectation for the expansion of e-governance.

1.1 Scope

The scope of this thesis will encompass the country of Mexico and its constituent states, and the analysis will be based on a hybrid methodology which allowed the analysis of states, the nation, and e-government policy. As a nation of many contrasts, a top-down, analysis of of policies was selected to keep it centered on what constitutes a 'Mexican' institutional response to the crisis. Mexico was selected on account of the statistical death toll per capita (Sava, J. A., 2022) (expressed in crude death rate) by COVID-19, Mexico at the beginning of the pandemic gradually became one of largest 'epicenters' of the virus—the capital of Mexico City, the surrounding State of Mexico and states of Puebla, Guanajuato and Nuevo Leon experienced the largest reductions of life expectancy in the countries and ranked near the top worldwide. (Heuveline and Tzen, 2020) This crude death rate is important to the reasoning and the hypothesis of this thesis. Prior knowledge also contributed to this choice, since the ultimate selection was drawn from personal experiences in the nation and research, not featured in this report but nonetheless important to the reasoning of it.

The indicator this thesis chose for the quantitative section was telecommunications infrastructure, as it is the indicator which has the greatest quantitative ties. (When observing infrastructure spending) This combined with the other indicators could more fit well into the hypothesis.
What lies outside the scope of this thesis is the further compounding effects this death toll and the subsequent lockdowns have had on the economic and societal outlook within the respective country, what is germane to this thesis is as thus: investigating connection COVID-19 has had for e-governance research in Mexico.

1.2 Research Gap and Contributions

The research gap this thesis occupies is the COVID-19 pandemic. The novelty of the pandemic and its impacts have not fully realized at the time of this thesis, and probably will not for many years. The commitment to this time frame is evident from one of the key sources which is going to be used in this report—at the time of writing this thesis, it is unknown when the latest edition of the E-Government Survey 2022 will be released, which means that knowledge of the most up to date policies will be out of reach of this thesis.

The research gaps this thesis follows then, are narrow ones: using the chosen indicators, and employing a theoretical model supported by theories, quantitative results and literature will suffice to answer the hypothesis thought up by this thesis. While it will not serve as an infallible guide, this thesis was not meant to do so from the outset. The model of exploring the Mexican model of development by evidence (or lack thereof) of path dependency in combination to the pandemic is a novel contribution which was hitherto not encountered within the literature. The new circumstances afforded by the pandemic urges research to be carried out in hopes of invigorating new research. Beyond its destabilizing effects, this thesis argues that COVID-19 presents a critical juncture for e-governance research. COVID is and will be a divergence, a new vector in e-governance studies moving forward which cannot be approached in the same way as before, as the necessity to quickly adapt to circumstances has not been this pertinent before.

1.3 Purpose, Specific Aims and Hypothesis

Two inspirations have galvanized this thesis, the COVID-19 pandemic and the prolific discussion on technological modernization, adoption and decentralization of government services in the face of it. A challenge to this aspiration is the path dependency of institutions and the potential adoption rate of e-governance, the speed at which e-governance can be implemented depends on a variety of factors. The idea is that a comprehensive understanding of the e-government landscape in Mexico will be achieved, and to grasp the current failings of the paradigm.

This thesis' primary aims are as follow. Its primary aim is to investigate the connection COVID-19 has had on select aspects of e-governance: within this thesis several aspects will be investigated: primarily e-governance building in the wake of a critical juncture, the adaptations which are formed in both rural and urban settings and the intergovernmental effort on the part of several agencies to sustain e-governance. These three aims proposed within the thesis are cleavages which fit within e-governance frameworks and are suitable to the investigation of the thesis. From the literature review, there is the expectation that a critical juncture, ("a period of significant change, which typically occurs in distinct ways in different countries, and which is hypothesized to produce distinct legacies.") (Collier and Collier, 2009) brings with it a period of radical reform, reform which has been shown that many Mexicans are wanting and indeed expect. (Mora et al. 2021) The time of radical reform is what this thesis posits will be a direct catalyst for e-governance research based on these factors to be investigated.

This thesis will examine the connection between path dependency in Mexican institutions, the effect this has on governance policies, and whether COVID-19 is a mould breaker in this respect, the main interest is what has happened to the rate of integration in 2020. In terms of scope and year(s) of focus, 2020 was specifically chosen for specific reasons. As the start of the pandemic, this is the place to begin looking for the highest concentration of e-governance discourse, sources from after this year will not be discounted, but they are naturally fewer in number so they cannot be counted on for the substance of this report.

This thesis was conducted with the theoretical presumption, and then on the hypothetical correlation between e-governance and COVID, aiming to investigate the trend of telecommunications adoption—with the primary hypothesis being that there was a significant move to increase e-government presence within governing bodies in Mexico. As nuanced as e-governance is when diffused in different spheres, it is important to remember that the observations this thesis makes do not complete the picture, and that the map is not the territory in its entirety. Planning for this, furthermore, meant that this thesis tried to zoom out; investigate the regional patterns to create a graphical representation for Mexico, but see if there was theoretical course alteration of e-governance adoption since

COVID-19 began in all similar Latin American countries—discernible in such a way to definitively say whether COVID was the impetus.

The research process was conceived initially with a research question, the researcher began by formulating a general question which asked in which way critical junctures impact governmental processes and institutions. This was further refined, with the addition of the critical juncture (COVID-19) and the process/institution (e-governance) to:

How has the COVID-19 pandemic impacted e-governance building in Mexico's urban and rural settings?

This research question was useful for guiding the research, and it gave rise to another element of the study, bridging the urban/rural divide in Mexico through e-governance. The hypothesis then, a restating of the research question but it being the culmination of the research. The research question and the hypothesis were fundamental, immutable parts of the theoretical model and formed the thought process. To summarize, the focal point of this report is COVID-19 as force majeure, the crossroads at which a critical juncture has formed, and which this report aims to investigate. To this end, the main hypothesis to be tested is:

COVID-19 has increased the speed of implementation for e-governance, an observable, extraordinary increase in growth compared to previous years in Mexico in comparison to the years prior to the pandemic in 2020.

The conditions for the study, and subsequently fulfilling this hypothesis are to judiciously examine the effects of different policies, the intended and unintended, how they shaped the e-government experience of Mexico during the pandemic, and whether COVID served to cement them as a new benchmark. The hypothesis will be tested in both quantitative and qualitative settings, quantitative data will be gathered and processed on telecommunications infrastructure to test compared to the indicators of previous years. Moreover, everything else will be sourced from the relevant reports which forms the qualitative bulk of this report.

2 Background

The thesis used a widely accepted aggregate index, The United Nations E-Government Development Index (EGDI) to select the metrics which would make up the bulk of the analysis, the analysis is an expression of the EGDI when unpacked and individually investigated. The EGDI is a weighted index formed of smaller indexes, a composite of 'Online Services Index (OSI), the Telecommunications Infrastructure Index (TII) and the Human Capacity Index (HCI) (UN Department of Economic and Social Affairs, 2020) for every member nation of the United Nations which submits information on the e-government survey, then compiled and presented regionally, which each region given a score. This is the most widely accepted e-government index and featured in several UN, (Subdivisions like CEPAL as well) and OECD reports. In terms of Human Capacity, it is important to note the inclusion of educational policies for it is not abundantly clear at first.

What this regional score belies is a more nuanced individual profile for every nation. The EGDI is extremely useful as an index, with the overwhelming advantage of reach and centralized information available to all end users. An index cannot fully capture the entire dimensions of e-governance, however. E-governance studies are spread out among many disciplines, despite the most popular being political studies, there are numerous fields which are bridged when conducting research and analysis in the field. Therein lie a few difficulties when researching this field, the multidisciplinary nature of the field is both an advantage and disadvantage (Molnar, Janssen and Weerakkody, 2015), there is the danger of adding too much 'value' and 'muddying' the waters so to say, fully losing focus on what e-governance studies entail, which also means one loses focus on the context of e-governance studies and what separates the private from public domain of studies. (Ibid.) These smaller indexes will be the crux of the analysis.

Several authors cite the potential of Mexico as an e-governance rich nation: Lau et al. (2008). called Mexico as 'among the most advanced nations at world level in terms of presence on the web,' cited in again in the book *Global Strategy and Practice of E-Governance: Examples from Around the World* (Piaggesi, Sund,

and Castelnovo, 2011, p. 162) back in 2008 and 2011, respectively. These two views are corroborated by results from the 2008 edition of the United Nations E-government survey, placing Mexico at number 37 of the top 70 countries in the Readiness Index (UN Department of Economic and Social Affairs, 2008), a high position and the regional leader for both Central America and South America. In recent times, especially after 2018, Mexico is no longer the regional leader in Central and South America, and has been overtaken by other rapidly digitalizing countries, especially Brazil, Uruguay, Chile and Argentina. (UN Department of Economic and Social Affairs; 2018; 2019; 2020) Eventually this will be answered in the analysis along with the other prevailing problems of the analysis.

3 Previous Literature

E-governance studies take diverse forms, and are available from all sorts of publishers, not just 'tech savvy' publications. New authors choose to build on prior research to update new developments in the field, and others are done in conjunction with a larger topic. The larger institutional publications such as the OECD and the United Nations published review papers which had to do with e-governance as a smaller fraction of what amounted to a temporally pressing issue. A reference which authors come back to a often was the OECD's 2011 edition of *Open Government in Latin America*, both as a starting point and a document which outlines the principles of the UN e-government survey and how these are used in a cumulative effort to gauge open governance, linking it to the Open Government Initiative in 2011. More papers were authored prior to 2020 in e-governance research for a multitude of reasons, there was a stronger, united governmental effort to promote e-governance in Mexico before the current presidential administration took power in 2018, as well as the time limitations in authoring a paper for a very recent event. Several inroads to analyzing Mexican e-governance since 2018 have been made by authors like Mora, Martínez-Dominguez and Sandoval-Almazan. These researchers have based their research on different aspects of e-governance, such as e-education, e-participation in the

form of online services, and most recently, healthcare information as of 2020. As this last aspect is far newer to Mexico than other aspects of e-governance, healthcare information is perhaps the angle which is approached more often now in the literature compared to the other aspects of e-governance for Mexico. Scouring sources led to research which was equally distributed at the start of the decade to towards the end. Literature from the beginning of the decade points to a well-balanced view, positive of Mexico's adoption of e-governance.

Critical Juncture Studies

Critical juncture theory encompasses a sizeable range of possible critical junctures, examples include the Black Death Plague, the French Revolution of 1789, the Industrial Revolution—they range from disease epidemics to political and societal upheaval. The common attribute to these crises and upheavals is the 'fork-in-the-road' (Green, 2020). The 'fork-in-the-road' signifies the possible course correction or continuation that an individual, state or institution can find themselves in, which inevitably brings a discussion of path dependency theory to the light as well.

The usage of critical junctures was cited from Giovanni Capoccia's chapter in *Advances in Comparative-Historical Analysis* (Mahoney and Thelen, 2015) and Duncan Greene's paper on Covid-19 as a *Critical Juncture and the Implications for Advocacy.* Adapted to operation development studies and political science, what Critical Juncture theory examines is these stakeholders and institutions, (Mexican governmental institutions in control of aspects of e-governance) change and act when subjected to external phenomena, 'shocks,' which institute the aforementioned 'fork-in-the-road' (COVID-19) which 'throw the status quo and power relations into the air.' (Green, 2020) Thereby, critical junctures allow for two sets of incidences, when looking at the political dimensions of the theory, in theory allowing for two divergences in political outcomes, a continuation of the path (Evidence of path dependency) or a divergence, into what can be considered the new paradigm.

What Duncan Greene asks is whether COVID-19 can ameliorate present path dependences, raising the question of whether COVID-19 will "trigger

demands for more broad-based reform and renewal of the state and its potential for the public good?" (Ibid.) There is a congruence with this quote with the larger field of critical studies, particularly to the transformative nature of critical junctures. Evidence linking critical junctures to substantial institutional change at all levels of governance (Collier and Collier, 2020 p.28) (Donnelly and Hogan, 2012) (Acemoglu and Robinson, 2012 p.207) motivated this thesis to think of COVID-19 achieving the same theorized effect as these prior critical junctures had, giving rise to 'inclusive institutions.' (Acemoglu and Robinson, 2021 p.208) Inclusive institutions work seamlessly with newer forms of social and political integration and participation, e-governance in other words. (Bhatnagar, 2003)

Critical juncture studies and e-governance make a good pairing, e-governance as the metric to future digitalization and critical juncture studies as the threshold to either advance or restrict it. The potential for this form of study is useful as black swan events are always on the horizon and knowing the operationalization of e-governance and its theoretical implications is useful to this report and others due to the potential in utilization for later.

4 Conceptual Framework

E-governance, alternatively known as digital governance and internet governance within the literature, is an oft-discussed topic within academia regarding its implementation, benefits, and drawbacks. Despite not being perfectly congruent, the literature treats e-governance and its various denominations as one and the same, with the nuances of every term not brought up unless there is a paper specifically to challenge the term. Therefore, this thesis will change in between these at times but will adopt e-governance as the primary term. The concurrency of political science and development studies with e-governance is immediate, as methods to implement e-governance have significant overlap with both disciplines but understanding e-governance requires unpacking the term in question.

Discussion of the implementation, definition and theorization of e-government has fundamentally changed the perceptions of e-government over the decades, with current understanding of e-government seeing it as the gestalt of different methodologies and theoretical perspectives; the spectrum of electronic governance changes within systems, therefore the conceptual understanding revolves around a gradual change in adoption of different e-government norms, strategies, and rates of implementation. As contentious as its implementation is, the definition of e-governance is relatively undisputed, with Dawes (2008) providing the most often cited account of it:

> *"E-governance comprises the use of information and communication technologies (ICTs) to support public services, government administration, democratic processes, and relationships among citizens, civil society, the private sector, and the state" (Dawes, 2008. p. S36).*

This thesis will adhere to this definition throughout for consistency and accuracy. For the sake of expediency and efficiency, e-governance as well as e-government were utilized interchangeably within the framework of this thesis, they are not ontologically equivalent, and as such would not fit other purposes but those of this thesis. However, ontologically speaking, these two concepts are interchangeable in the literature. What this means is that for the relationship which will be observed, this was a necessary step to take to create unity within the source material when pooling data. This is the only ostensible liberty taken in the framework, so this thesis could accurately observe information when looking at the distinct sources. As to the actual variable which will be used to make the observations, telecommunications infrastructure will be used to formulate a representation, this subsection painting a picture of the larger e-governance landscape in Mexico. Telecommunications infrastructure per definition is the amalgam of all forms of communications at a great distance, intentionally vague as it itself covers a spectrum of technologies like the larger e-governance field. To this end, what is typically compiled rather is internet traffic access and growth, growth of mobile broadband infrastructure, and the expected improvement of generational hardware, denoted for mobile broadband as *3G*, *4G*, and the forthcoming *5G*.

$$\frac{Mexican\ INEGI\ Survey\ Results\ for\ 2018-2019}{Mexican\ INEGI\ Survey\ Results\ for\ 2020-2021}$$

$\rightarrow$

$Due\ to\ COVID, there\ should\ be\ a\ pronounced\ difference\ between\ results\ of\ earlier\ years\ to\ now \rightarrow$ $Increased\ Telecommunications\ evidence\ in\ Mexico\ as\ a\ critical\ juncture$

Figure 1. Example 1 of theoretical relationship between variables, access of internet growth

The theoretical section of this thesis was based on a hypothetico-deductive model, devised, and integrated with two major theories which were at the conception of the thesis. These theories were not being tested with the results but solidifying the conceptual model from the outset and a general lens to view the results from.

These two theories mentioned are critical juncture theory and path dependency theory, two theories which form the bulwark of this theoretical section. Using these theories to further explore institutional change present within Mexico, what evidence there exists of either critical juncture theory or path dependency within institutions. These theories were more direct in their application, they were consequential within the system. As an explanation has been provided for critical juncture theory and its operationalization, further discussion of it and other theories will be discussed below, and it will be visualized to provide context for the deductive model for reproducibility. (See Figure 1.)

Theoretical Perspectives

As such, path dependency theory was also proposed as an analytical conduit for critically analyzing the results of Mexico—the path institutions chose in the past (particularly the crucial years of 2018-2019 to see evidence of a governmental trajectory in e-governance) and how this manifest in the years after, whether this has manifested in Mexico as a continuation of trends before 2020 or a continuation of newer trends after the pandemic. This symbiotic approach will

allow for further discussion at the end of the thesis of how to apply a similar model for growth in the region, as well as to how future results may possibly be graphed.

The reason this thesis chose both critical juncture theory and path dependency theory as fulcrums to the theoretical model was to analyze the issue by approaching it from a similar to cost-benefit perspective, that is in line with the theory which, when distilled, that institutional authorities will continue down a path when the opposite is indeed too costly. (Pierson, 2000) When examining Mexico as a whole, Mexico suffers from unequal distribution of resources among its urban and rural areas, income inequality is extremely high in Mexico by OECD standards (IMF, 2019) with a stark rural/urban divide. Therefore, path dependency can be used in this regard to see whether there is a continuum during the COVID period, whether there has been telecommunications expansion which has grown at a faster rate during the COVID-19 pandemic (2020-2021) compared to 2018-2019. A break in Mexican path dependence for e-governance would be indicative of greater growth in e-governance in both urban, but particularly rural settings and the creation of rural urban linkages—therefore it will come to play the greatest influence when analyzing this part.

Other theories which formed the conception of this theoretical framework were of course Easton's political system theory. These three theories pivoted the thesis to more action. Inclusion of more theories was possible, but in order to maintain the scope of this thesis in check limiting the number of theories used in the main segment of the thesis allowed for a more focused approach. Too many theories in the periphery would have been detrimental without proper integration into the model and the thesis as a whole.

Below is a graphical representation of the deductive model used in the thesis in operation, in essence, it aims to represent the underpinnings of the thesis, the progress of advancing from a research question to the hypothesis, how evidence with the aid of both theoretical lenses was used to arrive at the conclusion, which was the answer to the research question. After receiving an answer, the discussion loops back around to the theories for the final discussion.

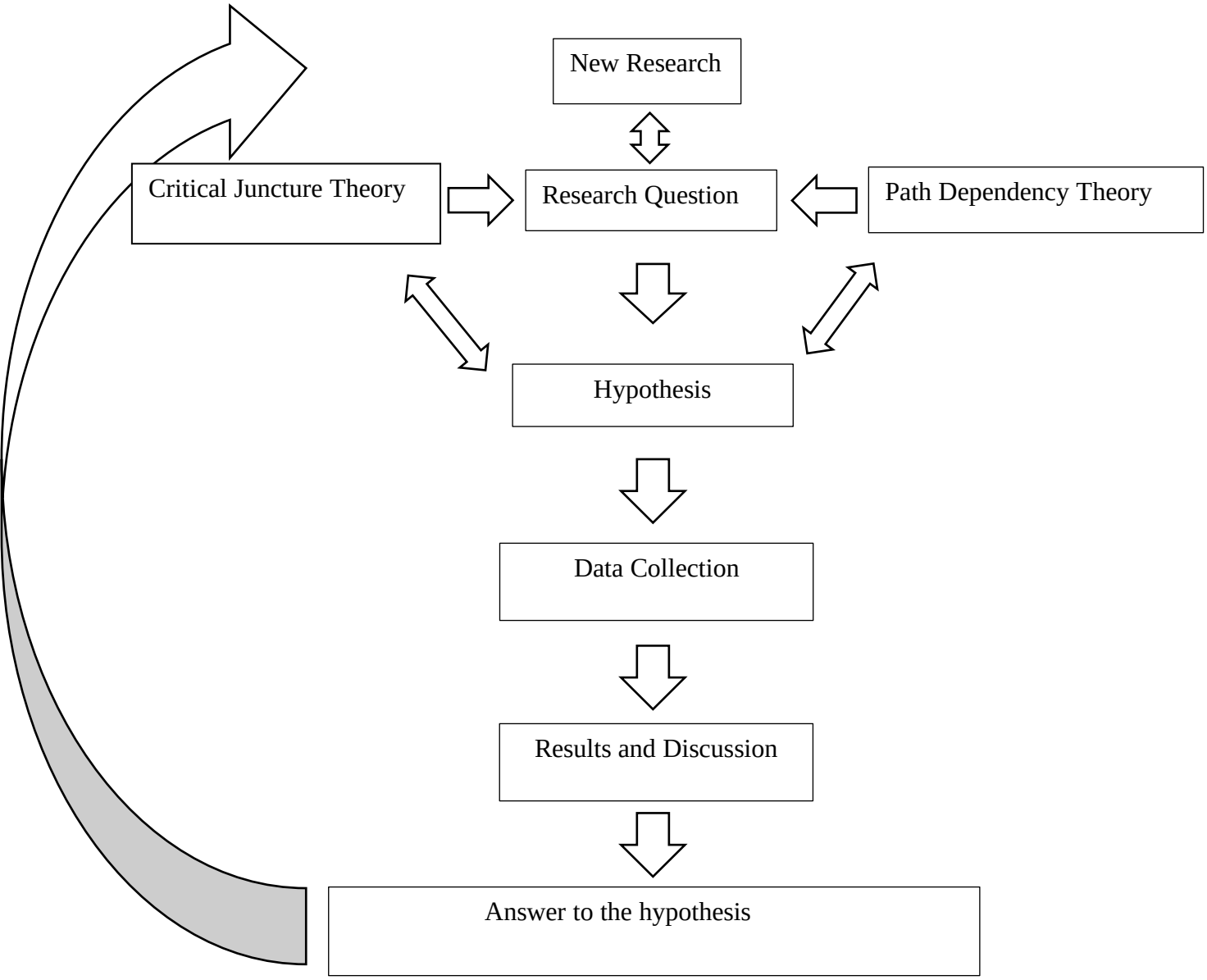

Figure 2. Reproducible Deductive Model

5 Methodology

This thesis' methodology will have the following subsections: data collection, delimitations, sampling, method of analysis, as well ethical considerations. These sections detail the path this thesis took in its systematic investigation.

5.1 Research Design

This thesis synthesizes different methodological approaches to research design. The primary approach is a mixed methods exploratory case study which will combine elements of both qualitative and quantitative research frameworks, in a manner indicative of Chapters 26 and 27 of Bryman's *Social Research Methods* and combining earlier chapters on case studies and research methods of the book. The strengths of mixed methods research come from its flexibility in the utilization of both research paradigms synergistically, in the "technical version" of the data collection and data analysis phase, which involves both quantitative and qualitative research methods. (Bryman, 2012 p. 630) What Bryman describes as the overlap between quantitative and qualitative research methods being the domain for mixed methods research suits this thesis, this overlap breaks down the epistemological and ontological commitment to either method, (Bryman, 2012 p. 614) which for the benefits of this thesis grants it more liberty. There will be recognition of the pitfalls of choosing this focus, which will be expounded on later in the limitations of the research design.

This proposed research framework is ideal for analysing the Mexican region for both its parts and the sum of its parts. The use of qualitative and quantitative findings will ensure that this thesis achieves decent triangulation within the results, emphasizing both aspects of qualitative and quantitative data. Relevant, retrospective literature will bridge the background of this thesis, ensuring there is a consistent informative thread throughout the thesis, starting with the background of e-governance research, and the retrospective analytical portion of this thesis, which seeks to cover the year of 2020. Producing a working theory precipitates the acquisition of in-depth knowledge - (Scheyvens, 2014 p.59) for which the phenomenon of e-governance can be more easily studied in relation to the factors it affects on a socio-political level. Secondary data and associated methods are of most help when answering the research question.

5.2 Data Collection

Data collection is divided into the two aforementioned qualitative and quantitative portions of this thesis. The quantitative portion of the thesis was based decidedly on metric data available to all users: data from the World Bank, Statista, as well as the individual country profiles on the UN's E-government portal were used their greatest effect in this thesis. Careful consideration was given to these sources to vet them properly, comparisons were drawn within the data and the usage of independent, country articles to supplement the data collection became useful. This thesis chooses to gather most of its literature from various databases which are available to most end users, the ones used were LUBSearch and Scopus which aided in expediting the research process. In total, 20 articles, 3 books and 5 reports were a part of the direct thesis, with more serving the fundamental background research process.

5.2.1 Data delimiting

Delimiting the research field for the thesis meant that the material used had to fit very certain criteria, firstly, reports had to fall within the time frame instituted in this thesis, unless it is something which can be used for the background and conceptual framework. Therefore, the reports used throughout this thesis are from 2020 onwards, entirely set in Mexico and its constituent states and had to be simultaneous to COVID, and be about e-governance, strictly aspects such as telecommunications, online services, and matters pertaining directly to the aspects closely aligned with the e-government survey qualitative. The reports utilized were in English, but Mexican government reports were in Spanish. The researcher has fluency in English and Spanish, for particularly specific terminology the artificial intelligence self-learning translation software DeepL was used. A limitation to the research gathering was the difficulty in sourcing due to the recency of the pandemic, there existed few articles for each country, which meant that the researcher was forced to rely on the limited quantity, meaning that a complete breadth of the subject will not be arrived at, but this is acutely understood in the limitations of this thesis.

5.2.2 Data Sampling

To hone the search, several key terms were used, particularly the prefix of ‘e-’ when combining terms such as governance, governance index and government. The search terms which informed this thesis were governance, Latin America, COVID, as well as direct translations in Spanish: *e-gobierno,* and e-*gobernanza*. These search terms would make up the bulk of the qualitative data collection of this report; expanding the research in this manner allowed for a wider selection of curated articles which greatly informed the rest of the thesis. In the selection of these articles, the researcher attempted to minimize outside interference and focus on the quality of said articles, but as stated before, the researcher needs to further hone data selection skills. As for other delimitations, this thesis made the conscious choice of selecting different resources (numerous reports, books, and this report sourced other relevant literature, namely books) and choosing a wide geographic region for analysis. This had the predicted effect of covering a nuanced topic expeditiously, enough time could be given to collecting research for each country chosen as per the restrictions. The quantitative data collection was based on the E-government survey and telecommunications index aggregates, as mentioned before.

5.3 Method of analysis

Data management in this thesis hinged on qualitative methods by the researcher from numerous sources, mainly those espoused by Scheyvens and Bryman. This thesis was built around a model of planning the thesis, developing a hypothesis to go on, collect the appropriate data for each of the stated objectives, and organize that data to where it could be summarily summoned. This planning allowed the thesis to conduct research without being paralyzingly withholden to the theoretical framework.

The thesis made sure to reflect upon the findings and coded and indexed the results in various folders for each theme analyzed within the thesis. Since this thesis was not entirely a qualitative endeavor, Scheyven’s 4-step model was

adapted to best suit the needs of the thesis. this meant to sort qualitative data and quantitative data (Scheyvens, 2014 p.76) by where it was most necessary in the investigation. This system found particular use because it ‘addresses the pitfalls of qualitative research’ (Scheyvens, 2014 p.77.) Organizing and interpreting data was done in Microsoft Word and Excel, the data was thematically indexed in Excel for later use. Separate Word files were kept on hand and on the cloud which housed the data from either program once analyzed.

The process of analysis was conducted in tandem with revisiting the data and finding new sources, this way investigating linkages and patterns were more easily discovered once the researcher had a better grasp of the subject and the process to look for more reliable sources outside the literature review. When initially comparing data to the theories and hypothesis presented, it became necessary to look for data outside the realm of current explanations, as it was not totally possible to answer the hypothesis with solely the hypothesis which was used, more explanations were required than initially thought. (Ibid.) Later, these results will be used in the final discussion to examine the potential extrapolation of data. Scheyvens’ table of criterion for ‘judging rigour’ in qualitative research (Ibid.) These steps for analysis were instrumental in maintaining internal logic and consistency across all the sections of the analysis, but this thinking was extrapolated to the other sections of the thesis as well to make sure no words were wasted.

5.4 Limitations

Mixed methods research carries limitations of its own. Bryman raises several quandaries for projects using mixed methods: careful consideration needs to be in place when considering mixed methods as they are more challenging to approach compared to solely quantitative or qualitative reports. This is in manner reminiscent to the entirety of the field of e-governance studies, the multidisciplinary approach which warrants research can make it difficult to discern particularities present within the field itself, it can become difficult to conduct original research due to the low separation of source material and inspiration into the field. (Molnar, Janssen and Weerakkody, 2015)

This researcher acknowledges that their Spanish was instrumental for the writing of this thesis, carrying out research would not have been possible only in English. There should be the disclaimer and the acknowledgement of an inherent limitation to the thesis; the issue of mental biases the researcher might possess when combing and coding the appropriate data. The researcher, having never conducted a report of this magnitude before at the bachelor's level, might produce mistakes when could alter the final interpretation of the results and data, which could inevitably interfere with the final discussion. Sampling is done to the best of the researcher's ability, abiding by the limitations inherent to this thesis and research design. Recognizing the thesis' preconceptions to the research and working past them was at the forefront of the writing. Idiosyncratic a priori assumptions about the research were the most difficult biases to diminish, they informed the underpinnings of this thesis, more so as the research questions operated under the assumptions which were inherent to the researcher. (Robson and McCartan, 2016 p.235) The researcher made sur to remember that this analysis would not cover the entire picture of the e-governance landscape and to ensure consistent internal quality.

There is an obligation to discuss the nature of a few of the minor publications and research papers utilized in the construction of this thesis. The use of databases was instrumental to the research, amassing information from several relevant databases was found to be useful for various use cases. Acknowledging the reliance on these databases, being informed about the potential deficiencies of solely relying on databases set this thesis up to be more well-rounded and bolder in scouring for information (Robson and McCartan p. 53.) This thesis recognizes the problem as explained by Scheyvens, "just because data is published or official, it may not necessarily be truthful or valid." (Scheyvens, 2014, pp.44) What this thesis interpreted from Scheyvens was the necessity to verify the data from numerous sources when applicable.

5.4 Ethical Considerations

Ethical considerations were observed throughout this thesis, qualitative specific ethical considerations such as anonymity in subject responses or consent were not thing aspects observed, as those did not play a major part in this thesis as there were no obvious ethical implications as the data sourced here, which came from public reports and second-hand sources, not from individuals imparting sensitive information under an informed consensual agreement, so other, more general but nonetheless important ethical guidelines were observed. These ethical considerations include academic honesty, strict adherence to not withholding information which could compromise the hypothesis, or data manipulation which extends to academic dishonesty. Ethical conduct was still observed in regards to the data collection and processing, tact was considered when processing all the data in this thesis and careful consideration was given to rightfully present the data as to how it was originally published without doctoring. There are paradigms which need to be discussed which may play a part in the informed conclusion which this thesis will arrive at.

6 Analysis

This section details the different aspects of e-governance growth in Mexico for 2020-2021, compared to results 2018-2019 for evidence of extraordinary growth in evidence of COVID as a critical juncture. Following sections cover the gamut of e-governance approaches and evaluation per the United Nations E-government survey. This mini-section introduces the important agencies which feature heavily in the analysis, they are better introduced here as they are quite technical in nature.

The IFT (Federal Institute of Telecommunications) is the parent agency in charge of telecommunications in Mexico, with direct responsibility to manage and regulate issues pertaining to telecommunications, which includes telecommunications networks, as well as telecommunications service providers (telecoms) broadband, and regulation of teleworking. The IFT are directly responsible for managing aspects in the analysis concerning: Telecommunications

Infrastructure and Online Services and Health Information, and regulations concerning access to internet.

The CEDN (National Digital Strategy Coordination Office) is the national authority in Mexico within e-governance, as such they direct the national strategy in e-governance. There is the stark issue of a lack of national direction for e-governance, addressed by several authors. The issue arises from the current executive administration, which has not set forth a direct target, despite the presence of an agency to head the national development for e-governance. The closest analogue to a plan comes from the older 5-year "National Development Plan 2019-2024" headed by the Secretariat of the Interior. The interplay between these two agencies and the federal administration have shaped Mexico's current advancements in e-governance, since these two are the major authorities in e-governance and have authored several regulations outside of federal support in 2020.

6.1 Access to Internet in Mexico Growth Percentage 2018-2021

As of 2021, according to the latest INEGI ENDUTIH survey, over 75.6% of Mexicans (Over the age of six) have access to the internet, with 78% of people living in urban settlements having access. (INEGI, 2021.) This is a reported internet access growth of 4.9% compared to the figures in 2020, 2020 itself saw a growth of 2.73% internet users compared to 2019—a real increase of over 3.5 million users. (Ibid.)

This type of growth is impressive and would signal a critical juncture disruption, but earlier results preclude this conclusion. The period of 2018-2019 saw growth of 6.1%, which surpasses that from 2020-2021. (INEGI, 2019) Overall, we can see an increase of 10.2% over the period 2019-2021, these two years marked a noticeable increase in new users of the internet. From the data it is observable that rather there being a sequence break in the pattern, taking these previous years as start there is a positive continuum rather than a divergence from it. The period of growth in 2020-2021 is like that in 2018-2019, so while an increase of users on a percentage basis would be expected, this is not the case. (It

is important to observe the future continuation of this trend and, allowing a year for the gestation of policies and new technologies, observe future trendlines from 2022 onwards.)

Figure 3. below sheds more visual light on the progression of internet users.

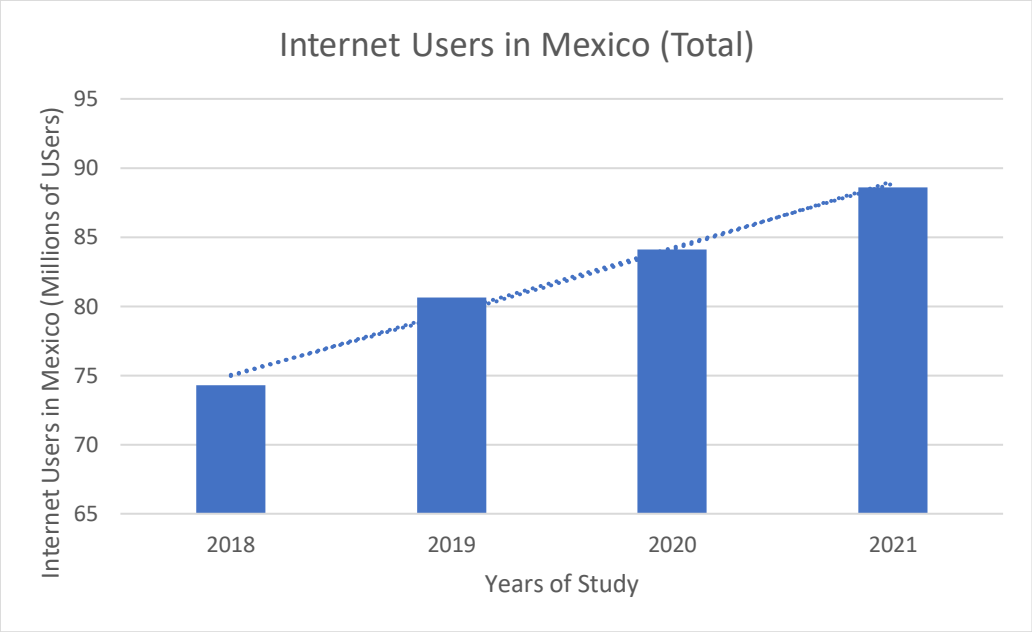

Figure 3. Graphical Representation of Growth Internet Users in Mexico, 2018-2021 (INEGI, 2018; 2019; 2020)

Rural growth as an indicator of more rapid growth in rural areas has a shallower trendline as well, with much the same story. It is impressive growth, 2019-2020 indicates higher growth potential but it is ultimately less than growth experienced in 2018-2019. What this indicates is a continuation of a plan rather than forging a new path during COVID for this aspect. What is notable is the rate of growth of rural areas compared to urban areas, the slope is far shallower which illustrates the continued rural/urban divide which COVID has not closed to a faster extent than normal.

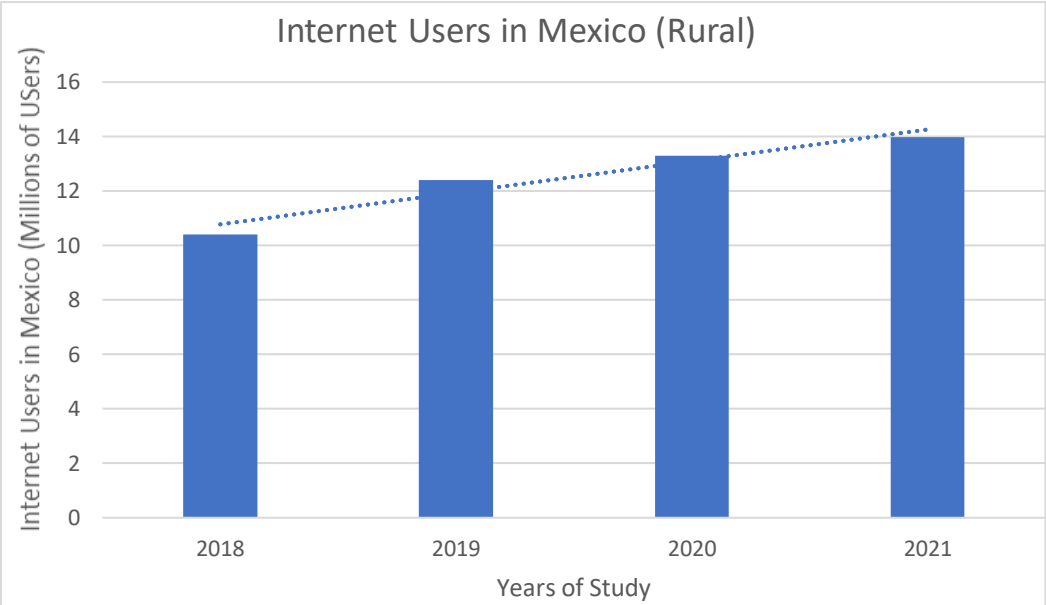

Figure 4. Graphical Representation of Rural Growth in Internet Users in Mexico, 2018-2021 (INEGI, 2018; 2019; 2020) (WorldBank, 2021)

6.2 Telecommunications Infrastructure

Telecommunications infrastructure was a new growth vector for the Mexican economy as well as the direction the national government is taking, expectations were considerably ambitious regarding investment and potential of the 5G broadband networks for introduction of e-governance policies for even distribution amongst the populace. There have been two major obstacles for telecommunications infrastructure expansion over the recent years, telecommunications networks depend heavily on foreign investment by direct investment in developing countries. (Lydon and Williams, 2005) (Izuchukwu, 2010) It is apparent that COVID-19 was a direct impediment in this regard, as total FDI inflows dropped by 20% at the beginning of the pandemic (CEPAL 2021), which led to 40% decrease in foreign investment in telecommunications infrastructure (Sava, J. A., 2022). As such, Mexico's federal regulators had fewer resources to work with but with the cumulative load of more internet users consuming more broadband.

Therefore, framing is very important when tackling the issue of infrastructure, COVID-19 served to expend government resources where there were needed most and stretched thin an already decreasingly funded federal telecommunications agency. (Berg and Ziemer, 2021). Nevertheless, an expanded telecommunications infrastructure network was evidently needed to support sustained broadband demand for citizens; academic activities and increased remote communication. There has been roughly an even divide in domestic federal versus private investment into telecommunications infrastructure, representing a combined total of investment of roughly $MXN 200 billion pesos for 2020 (Sava, J. A., 2022a; 2022b) which is considerably less than preceding years for the combined total of investment by both the government and external foreign actors. This was then to the direct detriment of plans for 5G rollouts in the country, a cornerstone Mexico's future telecommunications infrastructure (Ericsson, 2022)

However, as it stands, this does not address the rural divide in telecommunications, no report analyzed thus mentions a coherent strategy to improve rural telecommunications, neither is there a public policy document which outlines any central strategy to it, there are no COVID recovery plans to speak of which include greater infrastructure spending, this is presents a challenge for future telecommunications growth in the country (ECLAC, 2021)by which COVID did not stimulate more investment at this critical time.

6.3 Online Services and Healthcare Information

There rapid steps taken at the beginning of the pandemic by the federal government of Mexico to bring a constant stream of up-to-date information to all those present in Mexico. The https://coronavirus.gob.mx/ domain is the primary site for coronavirus information in the country backed up by the state, with access to open data, a repository for past technical diaries, COVID vaccination information and open-source data. (Gobierno de México, 2020) There are differences within the country itself, however. Alluding to the previous rural/urban divide present within the country, to study rural and urban growth it is first necessary to divide the country's states and rank them in terms of total e-governance penetration, for this U-Gob's 2018 study was used. From 2018

onwards, the ‘best’ state overall when qualifying local e-governance information, accessibility was the State of Mexico with a baseline of 55.1 points out of 100, the best score out of the country. (U-Gob, 2018) The same study argued that Veracruz, the featured rural state for the analysis, was not the ‘worst’ in absolute ranking but it was the worst in improvement prior to 2020. (Ibid.)

The State of Mexico is one of the most urbanized in the country, the state and its environs account for nearly 37.8% of the urban population of the entire country (Sobrino, 2011) as well as having 78.6% of households with access to internet. (INEGI, 2020.) This extends to local government agencies, the ISSEMyM has various information pages up, a functioning social media platform in the form of Facebook and Twitter. Sandaval and Valle-Cruz’s findings in their 2021 report maintained that the site saw elevated user counts and interaction, providing constant stream of information for citizens on the website throughout the period of January-July of 2020 (R. Sandoval-Almazan and D. Valle-Cruz, 2021). Their findings also purported a decrease in ISSEMyM’s interactions in 2019, seeing a decline of similar activity directly prior to the pandemic, previously peaking in 2018 but declining in 2019 which demonstrated a dramatic increase in social networking interaction in the immediate declaration of COVID-19 as a national health emergency. (Ibid.)

Veracruz, along with vast swathers of rural Mexico, is acknowledge as lacking telecommunications infrastructure and penetrating policies for telecom adoption, due in large part by geographical problems and rurality. As such, this has made it hard for telecommunications infrastructure to penetrate the region, there is a lack of knowledge on the part of the citizenry of where and how to interact with e-government portals and organizations online. (Mora, 2021) These findings point to a preliminary exclusion of rural citizens to e-government portals, noting a particular deficiency in broadband-based telecommunications and internet access in this state. (Ibid.)

With these rural states, also comes the expectation that something will be done about it, “a citizen expects the incorporation of major web platforms which offer public e-governance services” (ibid.) in lieu of existing, scant resources. Furthermore, there is the expectation of committing to social distancing programs

and conducting government transactions online, but in reality, local adoption of these policies is challenged on numerous fronts, even more rural and traditional states like Oaxaca face, being a "lack of investment by the state and federal government in local infrastructure which limits access to potable water, electricity as well as the internet and communication technologies that would support development" (Cohen and Mata-Sánchez, 2021)

6.4 Boosting Telecom Cooperation

There was a concerted effort on the part of the IFT to boost the outreach of online services, as well as improve the mediums of communications for citizens to receive timely information. Collaboration between the IFT and the mobile operators/carriers of the country, including AT&T, Movistar (Télefonica) and Telcel (America Móvil) to bring more information online to paying teleservice customers was one of the primary moves in this regard. (IFT, 2020) Cooperation among telecoms is a cornerstone of the digital effort to combat COVID-19, telecommunications-wise it was an improvement over the situation before COVID in terms of access to pertinent government information, on the gob.mx website and local government e-initiatives. (Ibid.) Online services in Mexico have not been democratized, to the extent that America Móvil has grown to encompass 62% of the entire Mexican telecommunications market (Berg and Ziemer, 2021), growth which happened solely during the pandemic. Disincentives for regulation will arise in the event of a similar critical juncture in the future, which might impair the IFT's ability to coordinate the telecommunications companies, as happened to its predecessor agency and is compounded by the country's historical corruption in regulatory agencies. (Ibid.)

In conclusion, the federal implementation of e-governance online services has been quite successful, and in many regards is the sector which has seen the largest amount of growth due to the necessity caused by the pandemic. On the other hand, the per-state handling of e-governance is more nuanced, Mexico does not have an even coverage of implementation nor combined responses from several agencies. The IFT is de jure under the umbrella of agencies managed by the CEDN and the federal government, but the federal government has made

attempts to defund the agency in the past (Ibid.) along with other e-governance agencies in the previous few years, without outlining a plan on how to proceed with diminished resources. This, in conclusion, cements poor communication in between agencies, between themselves and the federal government; there is minimal evidence to suggest that cooperation exists in the face of the pandemic.

6.5 Human Capacity

Educational reform has been a fixture of many Mexican administrations' promises, but this has been the first time in many decades where any sort of change to school's curriculums had to be enacted, because of force majeure. Mexico has been of the countries affected the hardest by COVID-19, and it has received little respite, being maligned by a poor culture of e-governance which reflects poorly on educational integration during COVID-19. (Cazales et al. 2020) This in turn is derived from the aforementioned poor connectivity from a lack of infrastructure, harkening back to the polarized telecommunications infrastructure which Mexico has. Programs instituted before the start of COVID-19 were deemed to be deficient in reducing the digital divide present within the country, as well as the lack of integration of ICTs (Martínez-Domínguez and Fierros-Gonzalez, 2021) when accounting for the "regional heterogeneities" (Ibid.) To the credit of the government, policy was implemented very rapidly after the onset of the pandemic.

The Secretariat of Public Education, with the launch of the multiple iterations of the *Aprende en Casa* (Learn at Home) programs, which sought to combat the logistical problems in education present after the start of the pandemic. The program has seen its share of criticism, however, as it was not meant as a permanent fixture of the Mexican education program (Cazales, 2021) and as such does not accommodate the same learning regimen of Mexican schools, a detriment to the overall learning experience according to Cazales. (Cazales, et al. 2021) There are various predictions to where educational reform could go from here, authors such as Martínez-Domínguez and Cazalez point to this being a potential genesis to more inclusive programs which breach the digital divide. As it stands, however, there is little federal oversight to the extent of these programs and the rural/urban divide serves to impede progress in this regard.

6.6 2022 Regional e-governance landscape and beyond

It is difficult to determine Mexico's future stance on e-governance from the data gathered, Mexico lacks a unified approach to ICTs and at worst is actively undermining its constituent agencies, as is the case with the IFT. The Mexican government gradually reducing funding to the IFT (Berg and Ziemer, 2021) comes as a deliberate result to reduce overhead expenses, but this has proven to be a contributing factor to exacerbating the digital divide. (Ibid.) The reality of the situation is that these agencies are allowed the freedom to act semi-independently, National Development Plan 2019-2024 (Gobierno de Mexico, 2020). This leads to some alternative future possibilities for e-governance expansion. For most applications, e-governance expansion is likelier to continue within aspects which lie outside the scope of this thesis; mainly the e-banking and e-commerce sector.

For matters pertaining to the things covered by the main bulk of the investigation, there is the overwhelming matter of the unresolved digital divide. Predictions range, but the main prediction is a return to pre-COVID policies for education (Cazalez, 2021; Martínez-Domínguez, 2021) and the continued usage of portals created by the government to maintain the citizenry informed (R. Sandoval-Almazan and D. Valle-Cruz, 2021), this last point considered to be the main accomplishments in e-governance policy during the COVID pandemic. Telecommunications infrastructure is expected to go through a more gradual increase as well, seeing as more 5G rollouts are planned for the rest of 2022 (Ericsson, 2022) and Mexico is expected to be one of the countries on the continent to benefit the most from increased bandwidth, but this is expected to only roll out in the major population centers and will not equate to the same rate of growth in rural areas.

Path dependency is a discussion to be had, the analysis concludes that Mexico is following a similar digitalization path as before COVID-19, and the pandemic itself had less to do with the prioritization of e-governance within the government and more so affect the populace, who consequently had to adapt to digital measures which were not all quite there past the beginning stages of the pandemic, as has been mentioned quite a lot this far due to the lack of a unified e-governance policy within the government.

7 Discussion and Conclusion

General Discussion of Findings

Evidence for COVID-19 being an e-governance accelerator in all of Mexico is not applicable to the entire nation, as there are several major caveats to confirming the hypothesis definitively, the hypothesis was refuted by the results in more than one instance. At first, the most revealing attitude is the indifference of the federal government towards e-governance policy during the pandemic, seeing it as low priority to other programs which may seem more pertinent at this moment in time. For example, internet access did not increase exponentially across the entire nation. Internet users did, but universal access to the internet was not accelerated by COVID and continued the same trajectory as before the pandemic, and due to the logistical problems in infrastructure at the beginning of the pandemic it saw a slower rate of growth compared to the years 2018-2019. This pattern extends to telecommunications infrastructure as well, as seeing that rural areas remain underfunded in comparison to the main urban settlements which leads to greater digital divides than before, as more people were forced onto the net to reduce the rate of infection. The urban/rural divide remained troubling for Mexico during the pandemic, in some cases it was further exacerbated by lack of present infrastructure which reduced the effectiveness of e-governance policies aimed at the rural population.

This then leads to a discussion of the policies which depend on the locus of investigation, such as education/human capacity, and telecom operation. Again, this result has mostly followed a reactionary policy judgement, and it is not clear whether this will signal the start of a new e-governance direction or the emergence of a new paradigm for e-governance adoption in Mexico, due to the present rurality. The answer to the three primary aims of this thesis: to determine increased e-governance building in Mexico, increased cooperation and efforts between state agencies specialized in e-governance and a decrease in urban/rural disparities has been refuted by the findings of the thesis. What these findings point to is the present path dependency in e-governance not being cyclical; dislodged by the critical juncture itself, but it points to deeper rooted dependencies which prevent

the expected increase in e-governance compared to previous years. COVID-19 was not ‘enough’ of a juncture to force change which outpaced that of previous years.

Thesis Final Conclusion

To conclude, answering the hypothesis is not as straightforward as initially thought. This thesis has arrived at the conclusion that the pandemic itself was not conducive to growth in e-governance when comparing the different sectors which comprise a balanced e-governance strategy per the E-Governance Survey. There are a few aspects, those that lie outside the scope of this thesis, which have benefitted and will continue to benefit from the COVID-19 pandemic for growth potential, like the e-banking sector, but what has become overwhelmingly evident from the research is that advances in e-governance are relegated to urban areas and have not penetrated deep into the Mexican rural states. Heavy urban bias has led to the penchant for the Mexican government to invest and continue its path of investing on said urban areas, which has exacerbated the digital divide to the extent which we see now.

What we see, however, is not a unified stratagem towards the adoption of e-governance at all facets, but a fragmented strategy which is spearheaded by individual agencies which individually pass new regulations without the total oversight of the executive administration. Therefore, the hypothesis was refuted on the grounds of being an incomplete picture of the analysis. This might eventually change, as Mexico does show a spark of promise when it comes to e-governance, and several predictors place Mexico as one of the leaders of the forthcoming 5G revolution and the benefits related to e-governance this may bring. For now though, the country may need to address the institutional issues which plague it and eschew the conventional path of development it has pursued (In digital terms) should it want to extend the reach of e-governance to its more rural parts, and have that be the core strategy to have the nation develop united.

This thesis leaves a lot up for future debate, a the time of writing this thesis is published in 2022, and this thesis' scope is only until the present; the state of the Mexican situation as of the first half of 2022 seems less than promising with the evidence presented. However, people are clamoring for further integration of e-governance within governance to facilitate many processes which they were not privy to during the pandemic, and the government, albeit in a disorganized way, is responding, with up-to-date census data.

Ultimately what this means is that Mexico is progressing, there will be a wealth of resources to pool from in the future, the 2022 edition of the United Nations E-government survey has not been released which might present new evidence which stands to the contrary of this report. More evidence is only good, regardless, to more accurately track the trajectory of Mexico and other countries to come. Mexico will choose its future digital governance policies from this moment onwards, critical junctures have proven in the past to be an effective method of catalyzing change and although this has not been demonstrable so far, we are still present at the overture of the current crisis and crises to come. This time needs to be spent wisely to ensure future prosperity, as opportunities are fleeting, but the possibilities remain.

References

Acemoglu, D. and Robinson, J.A. (2012). Why nations fail : the origins of power, prosperity and poverty. London: Profile Books, Cop.

Aguirre-Ochoa, J. and Gómez, M. (2021). "*Debilidad institucional y experiencia anticrimen en México."* URVIO. Revista Latinoamericana de Estudios de Seguridad, (29), pp.45–57. doi:10.17141/urvio.29.2021.4407.

Berg, R. C. and Ziemer, H. (2022). "*The Development of the ICT Landscape in Mexico: Cybersecurity and Opportunities for Investment*." [online] Available at: https://www.csis.org/analysis/development-ict-landscape-mexico-cybersecurity-and-opportunities-investment.

Bhatnagar, P.S. (2010). *Transparency and Corruption: Does E-Government Help?* [online] ideas.repec.org. Available at: https://ideas.repec.org/p/ess/wpaper/id3275.html [Accessed 9 Aug. 2022].

Bryman, A. (2012). *Social Research Methods*. 5th ed. Oxford: Oxford University Press.

Carrera Mora, O.Y., Villafuerte Valdés, L.F., Romero León, D.A. and Reyes Mendoza, S. (2021). "*E-Gobierno local en México en tiempos de Covid-19."* Revista Venezolana de Gerencia, 26(94), pp.678–695. doi:10.52080/rvgv26n94.13.

Cohen, J.H. and Mata-Sánchez, N.D. (2021). "*Challenges, inequalities and COVID-19: Examples from indigenous Oaxaca, Mexico*." Global Public Health, pp.1–11. doi:10.1080/17441692.2020.1868548.

Collier, B. R. and Collier, D. (2009). "*Shaping the political arena : critical junctures, the labor movement, and regime dynamics in Latin America*." Notre Dame, Ind: University Of Notre Dame Press.

Dawes, S.S. (2008). "*The Evolution and Continuing Challenges of E-Governance*." Public Administration Review, 68, pp.S86–S102. doi:10.1111/j.1540-6210.2008.00981.x.

Economic Commission for Latin America and the Caribbean (2021). "*Economic Survey of Latin America and the Caribbean 2021: Labour dynamics and employment policies for sustainable and inclusive recovery beyond the COVID-19 crisis.*" [online] *www.cepal.org*. CEPAL. Available at: https://www.cepal.org/en/publications/47193-economic-survey-latin-america-and-caribbean-2021-labour-dynamics-and-employment.

Ericsson (2022). "*Ericsson Mobility Report*." [online] Available at: https://www.ericsson.com/en/reports-and-papers/mobility-report.

Granados, M, Manuel, H., Ocaña P. and Cazales, L. (2020), "*Políticas implementadas por el gobierno mexicano frente al Covid-19. El caso de la educación básica"*. Revista Latinoamericana de Estudios Educativos (México), Vol. L, núm.-, pp.143-172 [Consultado: 9 de Agosto de 2022]. ISSN: 0185-1284. Disponible en : https://www.redalyc.org/articulo.oa?id=27063237025

Heuveline, P. and Tzen, M. (2021). "*Beyond deaths per capita: comparative COVID-19 mortality indicators.*" *BMJ Open*, [online] 11(3), p.e042934. doi:10.1136/bmjopen-2020-042934.

INEGI (2021). "*Encuesta Nacional sobre Disponibilidad y Uso de Tecnologías de la Información en los Hogares*" (ENDUTIH) 2021. [online] Available at: https://www.inegi.org.mx/programas/dutih/2021/#Informacion_general [Accessed 9 Aug. 2022].

IFT (2020). "*IFT frente al Covid-19"* | Instituto Federal de Telecomunicaciones." [online] Available at: https://www.ift.org.mx/comunicacion-y-medios/frente-al-coronavirus-las-telecom-estan-de-tu-lado/ift-frente-al-covid-19 [Accessed 9 Aug. 2022].

Izuchukwu, O.-O. (2010). "*Relationship Between FDI and Telecommunication Growth in Nigeria*." [online] Available at: https://www.pucsp.br/icim/ingles/downloads/papers_2010/part_9/11_Relationship%20Between%20FDI%20and%20Telecommunication%20Growth%20in%20Nigeria.pdf.

Lambert, F and Park, H. (2019). "*Income Inequality and Government Transfers in Mexico*." IMF [online] Available at:

https://www.imf.org/en/Publications/WP/Issues/2019/07/11/Income-Inequality-and-Government-Transfers-in-Mexico-47015 [Accessed 9 Aug. 2022].

Lau, T.Y., Aboulhoson, M., Lin, C. and Atkin, D.J. (2008). "*Adoption of e-government in three Latin American countries: Argentina, Brazil and Mexico."* Telecommunications Policy, 32(2), pp.88–100. doi:10.1016/j.telpol.2007.07.007.

Martínez-Domínguez, M. and Martínez-Domínguez, M. (2021). "*Adopción de servicios electrónicos en México: el caso del e-comercio, e-banca y e-gobierno."* Economía: teoría y práctica, [online] (55), pp.171–193. doi:10.24275/etypuam/ne/552021/martinez.
gob.mx. (2020) *Coronavirus*. [online] Available at: https://coronavirus.gob.mx/.

Molnar, A., Janssen, M. and Weerakkody, V. (2015). *"E-government theories and challenges."* Proceedings of the 16th Annual International Conference on Digital Government Research. [online] Available at: https://www.academia.edu/13461450/E_Government_Theories_and_Challenges_Findings_from_a_Plenary_Expert_Panel [Accessed 9 Aug. 2022].

Piaggesi, D., J. Sund, K. and Castelnuovo, W. (2011). "*Global Strategy and Practice of E-Governance: Examples from Around the World."* 1st ed. IGI Global

Pierson, P. (2000). "*Increasing Returns, Path Dependence, and the Study of Politics."* American Political Science Review, 94(2), pp.251–267.

Robson, C. and McCartan, K. (2016). "*Real World Research: a Resource for Users of Social Research Methods in Applied Settings."* 4th ed. Chichester: John Wiley & Sons Ltd.

Sandoval-Almazan, R. and Valle-Cruz, D. (2021). "*Social media use in government health agencies: The COVID-19 impact."* Information Polity, pp.1–17. doi:10.3233/ip-210326.

Sava, J. A. (2022). "*Foreign direct investment (FDI) in telecommunications in Mexico from 2010 to 2021*" Statista. [online] Available at:

https://www.statista.com/statistics/1115539/fdi-telecommunications-mexico/ [Accessed 9 Aug. 2022].

Sava, J. A. (2022) "*Investment of the Government of Mexico in telecommunication infrastructure between 2020 and 2022, by project."* Statista. [online] Available at: https://www.statista.com/statistics/1114877/mexico-government-investment-telecommunication-infrastructure/ [Accessed 9 Aug. 2022].

Sava, J. A. (2022) "*Private investments in telecommunications in Mexico 2013-2020."* Statista. [online] Available at: https://www.statista.com/statistics/1114902/investment-telecommunications-mexico/ [Accessed 9 Aug. 2022].

Scheyvens, R. (2014). "*Development fieldwork : a practical guide."* London: Sage Publications Ltd.

Sobrino, J. and Colegio De México, E. (2011). "*La urbanización en el México contemporáneo*". [online] Available at: https://www.cepal.org/sites/default/files/events/files/jaime_sobrino.pdf.

Trejo Nieto, A. (2020). Regional disparities in Mexico and the spatially cumulative effects of national development and economic cycles, 1940–2013. *Regional Science Policy & Practice*. doi:10.1111/rsp3.12311. Available at: https://rsaiconnect.onlinelibrary.wiley.com/doi/abs/10.1111/rsp3.12311

UN. Department of Economic and Social Affairs. Division for Public Administration and Development Management (2020). United Nations E-Government Survey 2020 Digital Government in the Decade of Action for Sustainable Development. [online] UN E-Government Knowledgebase. Available at: https://publicadministration.un.org/egovkb/en-us/Reports/UN-E-Government-Survey-2020 [Accessed 9 Aug. 2022].

UN. Department of Economic and Social Affairs. Division for Public Administration and Development Management (2019). United Nations E-Government Survey 2019 Digital Government in the Decade of Action for Sustainable Development. [online] UN E-Governmetn Knowledgebase. Available at:

https://publicadministration.un.org/egovkb/en-us/Reports/UN-E-Government-Survey-2020 [Accessed 9 Aug. 2022].

UN. Department of Economic and Social Affairs. Division for Public Administration and Development Management (2018). United Nations E-Government Survey 2018 Digital Government in the Decade of Action for Sustainable Development. [online] UN E-Government Knowledgebase. Available at: https://publicadministration.un.org/egovkb/en-us/Reports/UN-E-Government-Survey-2020 [Accessed 9 Aug. 2022].

Williams, Mark and Lydon, Reamonn (2005). “Communications Networks and Foreign Direct Investment in Developing Countries.” [online] Available at: https://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.518.1306&rep=rep1&type=pdf [Accessed 9 Aug. 2022].