Building ICT Critical Infrastructures for Trade Regulations: Implications from a National Initiative in Mexico

Carla M. Bonina

London School of Economics and Political Science, Department of Management,
Information Systems and Innovation Group, London, United Kingdom
`c.m.bonina@lse.ac.uk`

Abstract. New information and communication technologies (ICT) promise an era of remarkable changes for society. In this paper, I propose to reflect on the processes underlying a national ICT initiative in Mexico aimed at improving foreign trade regulation – the Single Window for Foreign Trade. The case offers an example of the complexities of building ICT critical infrastructures in a given context. Using a narrative approach, I address the challenges and potential strategic lessons that can be learned from the case. Overall, the study offers implications that can serve as a point for comparison to similar projects.

Keywords: e-government, ICT infrastructures, modernisation reforms, trade, Mexico.

1   Introduction

The use of the internet and new information and communication technologies (ICT) promises an era of remarkable changes for society, particularly in terms of opening up new channels of connectivity and organisation among business, governments, individuals and civil society groups. Governments around the world have been investing large amounts of money in public information systems. The main rationale for these investments relies on the strategic potential of these new ICT to reorganize tasks, routines and internal processes [10, pp.10–12], as well as them being a low-cost medium to interact with citizens more broadly [12]. Yet ICT adoption in the public sector (otherwise known as e-government) is a complex undertaking. Research in the field suggests that there have been over-optimistic and highly descriptive claims of the actual benefits that the internet has delivered to governments [9], [15], [30].

My research focuses broadly on technology-motivated programmes (e-government) within the process of public sector reforms that has been dominated by the global discourse relating to new public management, economic individualism and neoliberalism [5], [11]. Although there is a vast literature on e-government, the process of organising technology within the public sector in the context of broader modernisation reforms remains understudied.

In this paper, I propose to reflect on the processes underlying a national ICT initiative in Mexico aimed at foreign trade facilitation. More precisely, the case focuses on the trajectory of events to build a digital single window (hereafter single window) for foreign trade. It represents an enormous effort of coordination between government agencies, the private sector and business associations. The aim of the paper is to address the potential strategic directions that can be drawn from the case, and to reflect on the main challenges that are presented when developing an ICT critical infrastructure for foreign trade.[1]

Deconstructing a large-scale and longitudinal case such the one described here is by no means straightforward. I reflect on the role of national governments in shaping the e-government strategy. Thus, my focus will remain on the organisational aspects of the case, its negotiating tensions and the potential effects on society as identified by looking at the various discourses of the champions involved in the project. To do so, I employ a narrative strategy to present the main events of the longitudinal case. This entailed a mixture of different collection methods: 38 in-depth interviews, direct observation, and extensive archival research. Employing a narrative approach seems fruitful to account for the particular design features, and process contextual factors and their interactions that underlie the case under study [2].

Theory on studies of e-government is not well developed (i.e. [15], [30]). To overcome this limitation, this work studies networked technologies in government not only as information processing tools and communicating technologies but also as elements of socio-technical systems composed of humans, technologies, politics, values, knowledge and tensions [12], and does so in context. The usefulness of this approach relies on the distinctive characterisation of technology within social contexts [1]. This distinction between technologies and their social context is of importance, because it rejects the common tool view of technology, which generally assumes that technology is neutral, unproblematic, or can be treated as a black box [23].

2   E-government and Modernisation Reforms

During the last two decades the diffusion of affordable networked technologies appeared as a useful tool to reinforce a powerful wave of reforms in many countries. Usually referred as New Public Management, these reforms were initiated in the 1980s in the developed economies (i.e. Canada, New Zealand, United Kingdom and the United States of America) and then spread globally. The reforms' motto, of a government that 'works better and costs less', led to a growing interest in adopting CT to support the reform of public administrations [13], [16], [17] and to reinvent citizen-government relations, giving growing attention to the term e-government. In many countries, most research on e-government is understood as a tool to reinforce the objectives of public administration reforms [21], [22], although the connection

---

[1] I use the term 'ICT critical infrastructure' in a rather loose way to refer to a technology-based information infrastructure that have a vital importance for the country, which its destruction or disruption can have negative impacts on the national economy, national security or the efficient operation of government.

between broader institutional reforms and e-government is less explicit. E-government has been studied from many perspectives, from a means to achieve something else (i.e. administrative reforms) or as an end in itself [30]. Yet the most common view understands e-government as the generalised use of new ICT to provide better public services, to improve public administration performance and to broaden citizen participation and democratic processes [4], [8], [12], [14], [30].

From a normative perspective, there have been many claims that new ICT will make citizen-government transactions easier, cheaper and faster. These claims have been mainly supported by models that build on stages of development and different levels of e-government maturity that were originally developed for e-business processes [18]. Usually, the models depict a transaction-oriented view in which electronic government development occurs in three general maturity phases: the early, middle, and later stages. The more mature the stages, the levels of interaction, collaboration and management increase in complexity both, in terms of government's back office functionality and the interactions with citizens. These models imply a sequence towards more e-government, assuming that more e-government is better. However, they usually remain limited as they cannot account for processes, contextual factors, and triggers that make some strategies more successful than others.

Research in the area of ICT and development has provided valuable insights into the multiple social, political, economic and technical dimensions that shape, and are shaped during, modernization reforms that include building technological platforms (see for example [1] and [19]). The fact that political forces together with other multiple socio-technical factors shape the design, implementation or use of ICT in government does not remain an exclusive domain of research on development. Studies in the particular area of e-government that have been conducted in other settings such as Europe and the United States of America have already demonstrated that political influences shape the outcomes of public information systems [12], [10].

Mexico presents hybrid characteristics that make it hard to classify the country simply as a developing economy. For example, Mexico has been a member of the Organisation for Economic Co-operation and Development OECD since 1995, and has been recently classified as a newly industrialised countries (NICs) suggests a more complex scenario. Yet it is not the purpose of this article to enter into a classification debate. Rather, the aim is to suggest that a contextualist approach is crucial to understand not only the local dynamics embedded in the case but also those particular features that shape the organisation, its actors and the technology employed [1]. The narrative approach will thus be used to highlight these processes.

3   A Brief Context of Mexican Reforms and Foreign Trade

Mexico is the 13th largest economy in the world, the second largest in Latin America after Brazil, and the third major merchant of the emerging economies, after China and Russia. Mexico's international trade is crucial for its economy, representing about

60% of the total gross domestic product (GDP).[2] For the last 30 years, Mexico has implemented strong economic and political reforms, ending its welfare state model, and embarking on drastic economic liberalisation based on neoliberal ideals. In economic terms, the country is one of the most open in the world, and has stable and strong macroeconomic indicators. Liberalisation of trade was undoubtedly achieved in 1994 when Canada, Mexico, and the United States launched the North America Free Trade Agreement (NAFTA), the largest free trade agreement in the world.

Yet, social inequalities and distribution of income remain unresolved. Gradual modernisation reforms were started in the public administration, partly because of the economic, market-driven reforms, and partly because of f political democratisation. As a result, the Mexican public administration has also been transformed from a clientelistic and highly political bureaucracy towards a more professionalised and impartial one. In sum, these broader institutional changes that Mexico has started in the mid-1980s have persisted as the contextual features of this case[3].

My entrance point in this case is the regulatory activities of Mexican foreign trade. In Mexico, the administrative procedures related to foreign trade activities involve the issue of around 37,000 export licenses, 1 million import licenses and 10 million importation requests per year. There are more than 55 thousand foreign trade users and around 30 main actors from several sectors, including government agencies, exporters, importers, logistics and trade associations. The regulatory requirements and normativity of trade procedures are complex: a common operation of foreign trade entails the presentation of at least 40 different documents that include between seven and 14 paper sheets. The government estimates that at least 65% of single data points are captured on more than one occasion (i.e. the identification of a given enterprise).

The events I will introduce correspond to several developments that the central offices of the government in Mexico put in place to build a single window for foreign trade procedures from 2008 to 2012 ("*Ventanilla Digital de Comercio Exterior*"). The initiative aims to simplify, and make more efficient and transparent the trade regulation. The case entails an enormous back-office integration effort –that is still ongoing– intended to support the facilitation of international trade, based on efforts that can be traced back to mid-1990s. Given the fact that Mexico faces important challenges related to economic growth, income distribution and social policies, gains from international trade are considered key for improving the country's welfare.

4   The Mexican ICT Infrastructure for Foreign Trade

The case description is structured into three chronological periods. Period 1 (SICEX phase I) goes back to the mid-1990s and covers the award-winning technological platform to support international trade procedures, called SICEX (Integral System for

---

[2] Data for the year 2010; based on a nominal GDP list of countries. Source: International Monetary Fund, World Economic Outlook Database, April 2011: Nominal GDP list of countries.

[3] For reasons of space, I have been very brief on the Mexican reforms. For a review of the economic and social policy aftermath in Mexico see [20]. For changes in the bureaucratic structure and Mexico's steps towards democratisation, see [6] and [24].

Foreign Trade). I pay particular attention to this phase's initial problems and what problems the platform came to resolve as well as its main achievements. Period 2 (SICEX phases II and III) presents very briefly the main actions, developments and results from 2000 until 2008. From 2008 to 2012 (period 3), I review more extensively the recent developments and advances towards the design and pre-implementation of "the Mexican Digital Window for Foreign Trade". The phases, main events and contextual factors are summarised in the figure 1 below. The entry point is the Ministry of Economy which has been the agency leading the initiative.

4.1   Period 1: Building an ICT Platform for Trade Procedures from Scratch (1995-2000)

Back in 1995, the Mexican government started its first steps to build a new technological platform to support administrative simplification [27]. The initial motivation behind the project was the need to have clear rules and procedures to eliminate the disparate variations in decision-making, performance, and results of foreign trade regulation in an increasing competitive environment created by NAFTA. The absence of a clear system of rules co-existed with disparate and precarious technological platforms, each operating according to its own logic. Moreover, there was at best a weak communication infrastructure to connect databases in different locations. This means that the diverse offices of the Ministry of Economy (i.e. the central office and the 52 federal delegations) analysed procedures that drew on different information standards. Security was not robust and, together with the different interpretations of decision standards, there were notable differences between offices when issuing administrative decisions.

With the help of its own "clients" (foreign trade companies), the government started several actions in parallel: a process redesign, a rationalisation of procedures, and the design of a unified, central database that would enable the decentralisation of the administrative operations. By the end of 2000, trade procedures were standardised, responded to newly created rules, and were broadly incorporated into a single and integrated database. By 2000 it was also possible to comply with certain regulations over the internet, mainly those that were informative such as annual reports from the beneficiaries of special export programs. [4] The implementation of the technological platform meant that foreign trade procedures (i.e. rules of origin certificate approvals, authorisation and management of import quotas and licenses) became integrated under a single and unique database, registered and standardised into one information system that could be accessed from decentralised points across the country.

---

[4] The capabilities of the system, by 2000, where mainly reduced to streamlining the processes of reception, authorisation and resolution inside the ME. Submission or collection of procedures was vastly done face to face.

Overall, average response times were reduced, and also allowed the first steps towards collaboration with other government agencies. In particular, the connectivity with Customs became a salient feature.
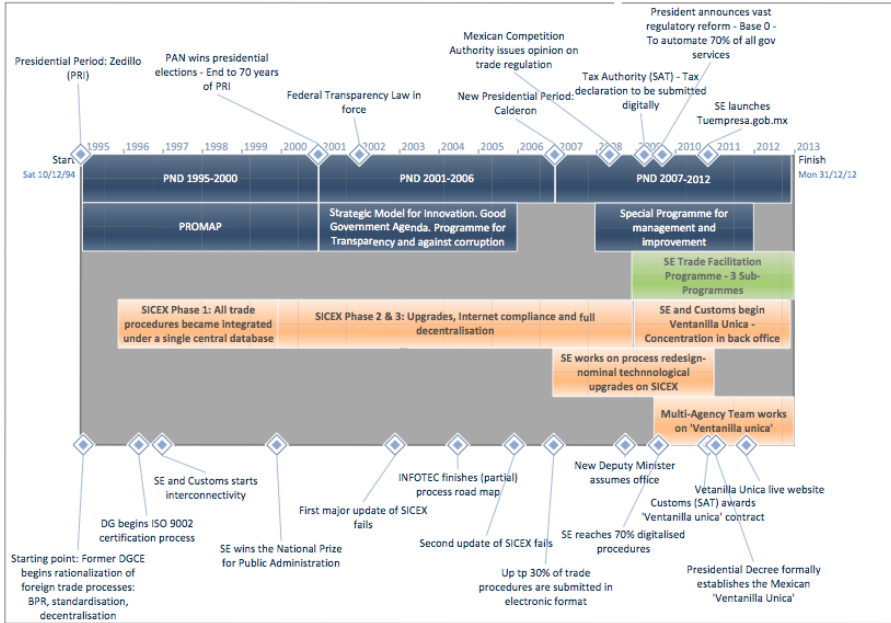

Fig. 1. Case timeline: from SICEX to digital-window for foreign trade. Source: own data[5]

These initial efforts may seem modest compared to the progress that other countries were making at the same time (i.e. International Trade database in the United States of America) or in terms of scope. After all, one may argue that the case was simply all a matter of putting things in order, and streamlining processes with the help of a single database. Yet, the system represented a milestone for the Mexican public administration and set a precedent for other e-government programmes. In 1999, the National Institute of Public Administration awarded the Ministry of Economy with the most prestigious national prize in public administration for its innovative achievements and possibilities of replication. [6]

---

[5] SE stands for Ministry of Economy; SICEX stands for Integral System for foreign trade; PND stands for National Development Plan.

[6] In Spanish, the Prize is called "*Premio Nacional de Administracion Publica*", and it is the only one granted to the Ministry of Economy and to an e-government programme in Mexico.

4.2   Period 2: Turning into a Slower Pace (2000-208)

During the next phase (2000-2006 and 2006-2008) the project was strengthened in terms of continuity, although but with modest achievements in comparison to the changes in the previous period. Updating the technological platform remained a priority for the Ministry, mainly because the volume of administrative procedures was growing and more technological capacity was needed. To do so, the government occupied a mixed strategy of in-house and outsourced deals.

The outsourcing entailed two failed intentions. The first outsourcing deal was awarded in September 2002 and entailed a general diagnosis of the system features, the revision of procedures (a classic business process re-engineering exercise) and areas in which SICEX should be upgraded. [7] Only three months later, the contract was rescinded as the Ministry alleged that the company lacked sufficient expertise and technical capabilities [26]. After the first failed attempt, the system update was re-planned. With a clearer roadmap in hand, the Ministry set out an open tender and awarded the contract to pursue the upgrading tasks to a private company in September 2004. After no more than one year, and with no major achievements in hand, the government cancelled the contract again [26]. The arguments that the Ministry set forth were no different from before; the government officials argued that the second company had failed to meet the deliverables agreed in the contract, a claim that the private contractors challenged by taking the case to court. While the dispute remained in the court for several years, operationally, the budget was frozen and no further external upgrades were possible.

While the general upgrade of the system failed, other parallel and internal actions took place, especially in the area of digital security and coordination agreements with other agencies to share the information and availability for the electronic validation of a growing number of formalities. By 2008, most of the results concentrated on updating and maintaining the technological capabilities internally (both the platform and the digital connectivity with Customs), continuing the efforts towards simplification and elimination of red tape (such as unnecessary trade regulations), and building the basis for international collaborations with other countries. In technological terms, there were neither major changes in the ways in which the system worked or was operated nor was there a notable change in the main features the system could support.

4.3   Period 3: From SICEX to the Digital Single Window for Foreign Trade (2008-2012)

In August 2008, a new Minister of Economy was appointed, and with him, new leaders in trade regulations took office. [8] From then onwards, SICEX's fate was to be

---

[7] The whole contract included the revision of 18 modules that were on SICEX. The total length of the contract was about three months.

[8] In Mexico is common that, one a new Minister is appointed, he or she will pick new underse-cretaries and eventually, new General Directors. In terms of the project, a new Deputy Secretary of Industry and a new General Director of foreign trade were appointed accordingly.

converted radically: the idea of 'seriously' building a single window for foreign trade was born.

A number of institutional forces contributed to this new idea. The first came from a technical opinion that the Mexican Competition Authority (Comisión Federal de Competencia, (CFC)) produced in May 2008 regarding issues affecting Mexico's performance in foreign trade. In the opinion, which was grounded in economic terms and international statistics, the CFC identified that Mexico could achieve a significantly better performance in economic growth and competitiveness by investing in foreign trade facilitation policies [7]. The CFC recommended the reduction in the levels and dispersion of tariff regulations, to simplify and deregulate customs clearance procedures and to build institutional capabilities for government agencies that regulate foreign trade. The use of new ICT to support the processes of simplification of trade procedures, especially for customs clearance, was also highlighted. The opinion was timely with regard to Mexico's concerns concerning its relative worsening position against China as a main export supplier for the United States of America (the main market for Mexico's exports). The Ministry of Economy adopted this opinion – in conjunction with others coming from international bodies (i.e. World Bank, OECD) – so as to support an ambitious trade reform that included a massive reduction in tariffs, and a more strategic use of networked technologies, to support the trade facilitation process. The policy was grouped under the label "Programme for Trade Facilitation" and was initiated in 2008 with clear goals to achieve before the end of the Presidential period (December 2012).

A further fact, also related to the CFC's opinion, had to do with Mexico's poor performance in world's competitiveness and trade facilitation indexes. The World Bank's [29] report entitled Doing Business positioned Mexico number 41 across 183 economies for doing business in 2010. Yet, in terms of trading across borders (a sub-category on which the total score is built), Mexico scored as number 69. Given the complexity of the current system of trade procedures, according to government data, Mexico could advance at least 40 positions with the single window [28]. Not surprisingly, escalating positions in a world ranking such as the World Bank Doing Business or the World Economic Forum Competitiveness Report, translates into a strong political incentive, given the publicity and visibility of the two reports both nationally and in global trade forums.

Within this context, after a series of informal meetings between Customs, the Ministry of Economy and other members of the Foreign Trade Commission, the initiative was formally founded within a working group for the simplification of trade procedures that was set up in July 2009. The people participating in the sub-group knew each other well – at least in their majority. In some cases, they had worked together in setting up the first steps towards coordination mechanisms between Customs and the Ministry of Economy back in the 1900s. In other words, there was a history of collaboration or coordination that had started several years before. Yet, it was not until 2009 that this sub-group gained a rather more formal status.

The two following figures can offer a clearer illustration of the main policy ideas behind the single window. The left hand side of figure 2 depicts the complexity of foreign trade procedures in the year 2010. The right-side figure portrays the Ministry of Economy and Customs' view on how the trading across borders would (or should) look like once the project is put in place.
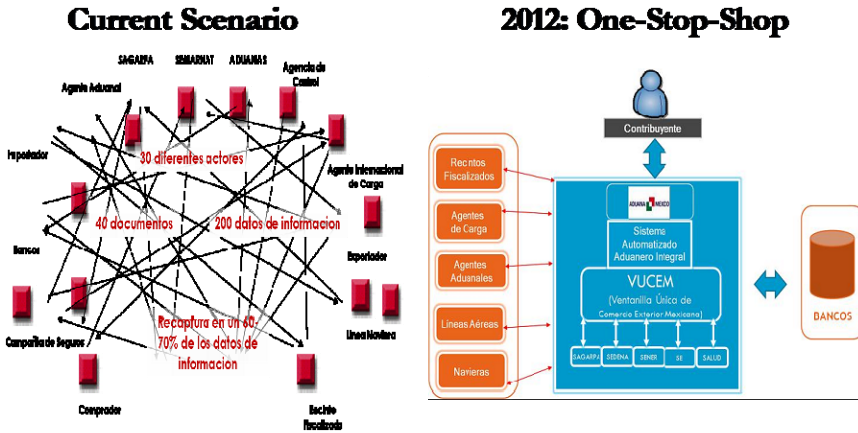
Fig. 2. Current versus planned scenario of foreign trade procedures. Source: [28]

In June 2010, Customs set forth an open tender to outsource the project, which was awarded later in October of the same year. The contract includes an exhaustive revision of procedures, the design and implementation of the web-based platform, the digitalisation of five years of paper-based procedures (archival information of Customs daily operations), and the mobile operation of the entire system. The contract was awarded for five years, had tough deadlines, and stipulated achievable results within the current presidential administration.

With the contract awarded, one of the major milestones of the project was the passage of the Presidential Decree on January 2011. In order to avoid relying on the "good will" of the governmental agencies, the passage of a decree gave a strong political and legal support to the single window for foreign trade. The legal tool, entitled "Decree that establishes the Mexican Digital Window of Foreign Trade", put firm deadlines for interagency integration and required that each authority should facilitate the necessary infrastructure required. In addition, it established three phases for the project implementation (article III) on a progressive calendar of integration which was due to be finished by the end of 2012[9]. The decree also gave legal support to the above-mentioned working group for trade facilitation, by setting up officially an Inter-Secretariat Commission for the Single Window. The Commission has provided the basis for negotiating, debating and coordinating the tight deadlines that the project set forth. The Ministry of Economy retained the lead role in the project, even though the funds for building the single window come from the Customs budget.

In parallel, there were two important institutional changes in the area of digital policy agenda in Mexico that contributed towards the trajectory of the project. The

---

[9] The phases of implementation were described according to the actors that should be operating in different points in time. Thus, phase I establishes that the Ministry of Economy and Customs start operating no later than 30 September 2011; and all the other ten Ministries with inference in trade (i.e. the Ministries of Agriculture, Health, Environment) should be included on the platform no later than 30 June 2012).

first one was the approval for the use of the advanced electronic signature (FIEL) in Mexico. In June 2009, the Mexican Tax Authority implemented a federal resolution that made the electronic submission of patrimonial tax declaration mandatory for all public servants. That was the starting point for making the use of FIEL a reality, and was also an example of the public sector relying on the monopoly of the use of authority [3]. In the context of the case, it meant a strategic step: from 2009, the rollout of authorised digital signatures among public servants became pervasive. A second institutional change entailed a tough agenda for digital electronic procedures. In 2010 the President announced a big step towards regulatory clearance, which set forth to automate 70% of all government services by 2012. Together with other measures, such as the raising importance of the Digital Government Agenda and the Austerity Decree, it gave even more support to the Ministry of Economy-Customs single window initiative.

In January 2012, the President formally inaugurated the Single Window for Foreign Trade, which is still operating within a trial period and limited to some locations and only 21 trade procedures. In March 2012, more than 24,000 companies have registered as potential users of the single window (half of the entire universe of users). There have been around 25,000 digital invoices, even when they are as yet optional until June 1st, 2012. The process of digitalisation of the paper-based archive of trade procedures has reached around 70% of completion, while the website has had more than 280,000 visits since its opening in October 2011. From June 2012, the use of the single window will be mandatory for every foreign trade operations with Customs.

5   Concluding Remarks

While at first glance the progress and results that the project achieved between 2008 and 2012 look impressive, a more detailed understanding of the case shows that the single window project has been immersed in a strong, longer history of broader institutional dynamics. On the one side, for example, the constant work towards simplifying and eliminating unnecessary regulation has been supported by broader modernisation reforms in the public administration in Mexico. On the other side, economic reforms and the opening to trade, particularly after the enforcement of NAFTA in 1995, changed remarkably the scenario of trade in Mexico. As a senior Mexican official in foreign affairs put it: "the changes that NAFTA brought into the economy of Mexico were impressive... You could not explain Mexico's trade today (2012) without considering NAFTA and all the concomitant regulatory changes that it meant for trade operations".

There were lots of tensions and negotiations that happened during the years and, particularly, within the latest three. A salient and visible feature is the strong political support that the project achieved, especially with the passage of the Presidential Decree in 2010. But many other less 'visible' factors contributed to what in a first sight could be seen as an easily replicable experience. A remarkable characteristic is the longstanding process of building state capacity in the agencies involved (Customs

and Economy) and the level of expertise and collaboration that the members of the project achieved throughout a process of more than 10 years. Another characteristic is the personal capabilities of senior government officials to drive the project to the highest levels of support possible. And a third characteristic involves the broader institutional dynamics that push for more use of technology in government, red tape elimination, and the space that foreign trade policies occupy in the national agenda. In addition, the presence of international bodies, whether providing technical support (i.e. OECD and the World Bank) or opening up platforms for sharing knowledge (Latin American and Caribbean Economic System (SELA), Inter-American development Bank (IADB), has also helped to shape the trajectory of the project. This is not to say that the international bodies imposed their own views and agendas. Rather, Mexico enacted some of them to achieve its own policy on trade.

The conclusions of the 3rd Latin American and Caribbean Regional Meeting on International Trade Single Windows held in November 2011 summarised what the Mexican project has seemed to have achieved so far: "The plans to establish International Trade Single Windows form an integral part of the structure of public services and promotion of competitiveness... Such projects should take due account of fundamental variables, such as: support from governments, formulation of public policies on the matter, the consolidation of a legal and regulatory framework, the linkage of the agencies involved with trade processes, and the establishment of the Single Windows architecture, based on an all-encompassing vision of the institutional framework for foreign trade and its stakeholders" [25, pp.3].

Although the implementation effects on trade flows, transparency and control mechanisms are yet to be seen, the steps that the Mexican federal government has taken are remarkable. The focus of the narrative has been to reflect on the government role and the processes underlying the construction of an ICT critical infrastructure such as that on trade in Mexico.

References

1. Avgerou, C.: The significance of context in information systems and organizational change. Information Systems Journal 11(1), 43–63 (2001)
2. Barzelay, M.: Learning from Second-Hand Experience: Methodology for Extrapolation-Oriented Case Research. Governance 20(3), 521–543 (2007)
3. Benington, J., Moore, M.H.: Public value in Complex and Changing Times. In: Benington, J., Moore, M.H. (eds.) Public Value: Theory and Practice, pp. 1–30. Palgrave Macmillan, Basingstoke (2011)
4. Bhatnagar, S.C.: E-government: from vision to implementation: a practical guide with case studies. Sage Publications, New Delhi (2004)
5. Bozeman, B.: Public values and public interest: Counterbalancing economic individualism. Georgetown University Press, Washington, DC (2007)
6. Cejudo, G.: Explaining Change in the Mexican Public Sector: The Limits of New Public Management. International Review of Administrative Sciences 74(1), 111–127 (2007)
7. Comisión Federal de Competencia: Opinión con el fin de promover la aplicación de los principios de competencia y libre concurrencia en el diseño y aplicación de políticas y regulaciones del comercio exterior de mercancías. Presidencia, Mexico City (2008)

8. Cordella, A.: E-government: towards the e-bureaucratic form? Journal of Information Technology 22(3), 265–274 (2007)
9. Coursey, D., Norris, D.F.: Models of E-Government: Are They Correct? An Empirical Assessment. Public Administration Review 68(3), 523–536 (2008)
10. Dunleavy, P., Margetts, H., et al.: Digital-era governance. IT Corporations, The State, and E-Government. Oxford University Press, Oxford (2006)
11. Fairclough, N.: Critical discourse analysis: the critical study of language, 2nd edn. Longman, Harlow (2010)
12. Fountain, J.: Building the virtual state: information technology and institutional change. Brookings Institution Press, Washington, DC (2001)
13. Gruening, G.: Origins and theoretical basis of New public Management. International Public Management Journal 4(1), 1–25 (2001)
14. Heeks, R.: Reinventing Government in the Information Age. In: Heeks, R. (ed.) Reinventing Government in the Information Age - International Practice in IT-enabled Public Sector Reform, pp. 9–21. Routeledge, London (2002)
15. Heeks, R., Bailur, S.: Analyzing e-government research: Perspective, philosophies, theories, methods, and practice. Government Information Quarterly 24(2), 243–265 (2007)
16. Hood, C.: A Public Management for All Seasons? Public Administration 69(1), 3–19 (1991)
17. Kettl, D.F.: The global public management revolution. Brookings Institution Press, Washington, D.C. (2005)
18. Layne, K., Lee, J.W.: Developing fully functional E-government: A four stage model. Government Information Quarterly 18(2), 122–136 (2001)
19. Madon, S., Sahay, S., Sudan, R.: E-Government Policy and Health Information Systems Implementation in Andhra Pradesh, India: Need for Articulation of Linkages Between the Macro and the Micro. The Information Society 23(5), 327–345 (2007)
20. Moreno-Brid, J.C., Pardinas Carpizo, J.E., Ros Bosch, J.: Economic Development and Social Policies in Mexico. Economy and Society 38(1), 154–176 (2009)
21. OECD: E-government for better government. OECD, Paris, France (2005)
22. OECD: The e-Government imperative. OECD, Paris (2003)
23. Orlikowski, W., Iacono, S.: Research Commentary: Desperately Seeking the "IT" in IT Research–A Call to Theorizing the IT Artifact. Information Systems Research 12(2), 121–134 (2001)
24. Panizza, F., Philip, G.: Second Generation Reform in Latin America: Reforming the Public Sector in Uruguay and Mexico. Journal of Latin American Studies 37(4), 667–691 (2005)
25. SELA: Conclusions and Recommendations: III Latin American and Caribbean Regional Meeting on International Trade Single Windows, Caracas, Venezuela: Latin American and Caribbean Economic System, SELA (2011)
26. Secretaría de Economía: Memoria Documental Hacia la Administración Sin Papeles/SICEX (2006)
27. Secretaría de Economía: Sistema Integral de Comercio Exterior. Un caso de éxito en la administración de autorizaciones de comercio exterior (1999)
28. Secretaría de Economía: Ventanilla Única de Comercio Exterior Mexicana (2010)
29. World Bank: Doing Business 2010: Reforming Through Difficult Times. Doing Business. The World Bank, Washington D.C. (2010)
30. Yildiz, M.: E-government research: Reviewing the literature, limitations, and ways forward. Government Information Quarterly 24(3), 646–665 (2007)