Demand smoothing response by street-level bureaucrats (SLB) in delivering public services during COVID-19 scenario: A system dynamics modeling study

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During such unprecedented time as COVID-19, despite stretched to its limit, public service delivery remains crucial to societies’ well-being. Street-level bureaucrats (SLBs), specifically, become the most visible outreach of public policies to citizen. However, as the literature suggests, unintended outcomes of SLBs–citizen interfacing have been discretion, inefficiency and accountability, an issue lies at the heart of the standard public governance. No scholarly attempt has been made in the past to address this shortcoming. This research by proposing a conceptual model using system dynamics captures the complexity, and in so doing posits testable hypotheses that instigate an alternative visualization of public affairs, thereby closing the gap in the SLB scholarship.

KEYWORDS
COVID-19, fixes-that-fail, public service delivery, street-level bureaucrats, system dynamics

1 | INTRODUCTION

In the context of COVID-19 pandemic and ensuing public service delivery thereafter, the concept of Street-Level Bureaucrats (SLBs) from the seminal work of Lipsky (1980) has emerged as the bedrock in the public administration. Straightforwardly, Lipsky (1980) conceptualizes public policy as what gets delivered through SLBs or frontline functionaries through their daily interactions with citizens, and is not what get deliberated and formalized in the ivory tower of administration buildings. Central to this idea of SLBs functioning are two important characteristics – high degree of discretion; and accountability (Hwang & Han, 2017). Arguably, discretion is a dilemma and a necessary evil as seen through the top-down and bottom-up lens (Alom, 2018; Tummers & Bekkers, 2014). Looking from the top-down, discretion is seen to be a nemesis for inequitable distribution of public service output, whereas from bottom-up lens it is assumed to be an optimizing and prioritizing tool against spikes in demand with constrained supplies. Admittedly, with such countervailing forces in action, it is evident that SLBs accountability is perennially subject to scrutiny (Brodkin, 2008). While the literature very well recognizes these challenges in the context of SLBs management, yet it appears that the literature has conveniently ignored this in terms of providing any white-box explanation of the challenges and prescriptions. Our research is an attempt to close this visible gap in the scholarship.

In this paper, we review some of the key theories of public service delivery, and assess their relevance, paying particular attention to SLBs–citizen interaction and ensuing issues of discretion and accountability. We then describe a systemic way of capturing and resolving these issues, using system dynamics modeling (Forrester, 1961; Richardson & Pugh, 1981; Sterman, 2000). We end this article with a discussion of those results, study limitations, and its implications for theory and practice, as well as avenues for future research.

2 | LITERATURE REVIEW

We carried out a systematic literature review by adopting keyword search in the SCOPUS database. As we realize, system dynamics (SD) literature relevant to SLBs and their role in public service delivery context is scarce. In the end, we could only pinpoint the following papers as relevant for our purpose. Forlano et al. (2020) examined the credit collection process in Italian local government-owned...
enterprise, while Mendes and Alemu (2019) looked the Portuguese school district to unpack the concerns regarding redundancy and hiring for all vacancies. Through group model-building, an extension of SD modeling, (Rouwette et al., 2014) investigated the quality of public policy interventions to allay increased public nuisance, bullying, and criminal activities in one of the outskirts of a Dutch city. Through a dynamic simulation model, Taylor et al. (2012) studied how public policy and societal risk perception would impact the next generation of U.S. civilian nuclear plant construction. Ghaffarzadegan et al. (2011) probed how public policy could improve warning systems and its impact on people's behaviour. Through system dynamics simulation modelling, Charalabidis and Loukis (2012) investigated how government agencies leveraged social media to expand participative interactions to promote public policy design. Wheat (2010) addressed how to internalize operational thinking skills for designing public policy in health. Cavana and Clifford (2006) analysed the relationship between the collection of tobacco excise duties and cigarette smoking in New Zealand. Finally, Khalid (1982), by incorporating the typical architecture of developing country income distribution, attempted to answer question related to policies targeted to mitigate rural poverty in Pakistan.

We could identify from the literature and subsequently justify adopting “system dynamics” methodology to investigate public policy matters as it has many advantages like: policy design, verifying effects of endogenous factors, policy bundling and optimization, policy testing, and evaluation before implementation. Besides, literature review also alluded system dynamics to be a powerful methodology in the application to public policy contexts, where there are multiple factors, agents, non-linear interrelationship among the variables, and delays between action and consequences.

3 | THEORY AND HYPOTHESES DEVELOPMENT

While the literature recognizes and problematizes the challenges of accountability, autonomy and discretions in the context of SLBs, prescriptive research that could potentially guide as to how the public governance ought to deal with it is scarce. Therefore, the integration of public governance and SLBs through system dynamics model could facilitate research in that direction.

3.1 | The PA-NPM-NPG continuum and SLBs context setting

Public governance theories shed lights on the issue of examining the causal linkage between public service deliveries and implementation effectiveness (Robinson, 2015). It is argued that government’s adherence to different governance architecture is a dynamic process and varies over time (Kruyen & Genugten, 2020; Osborne, 2006; Robinson, 2015). Starting with the principles of traditional public administration (PA) until the beginning of the 1980s, then with the principles of market-centric New Public Management (NPM) from the 1980s onwards, and finally with the extant citizen-centric New Public Governance (NPG) philosophy (Kruyen & Genugten, 2020), the contours of public governance have been a witness to many motifs. Unarguably, regardless of the mode of governance structure, the role of SLBs as interfacing and implementing agency remains paramount. Therefore, quality and effectiveness of public services would eventually hinge on the productive behaviour of SLBs (Tummers et al., 2015).

However, the usual ambiance of constrained resources, urgent work pressure, interpretational ambiguities of policy memos, top-down control overthrow SLB behaviour, rendering their ideals into practice inefficient. SLBs coping behaviours to arrest the widening of the gap between written and performed policy usually range from prioritizing clients, rationing resources including information, and stereotyping clients (Gilson, 2015). Extrapolating this, especially during COVID-19 like situation, would mean there are high probabilities that SLBs would end up generating sub-optimal and unintended policy consequences.

3.2 | Discretion of SLBs over the PA-NPM-NPG continuum

As alluded in the earlier paragraph, discretion by SLBs plays a decisive instrument between the action and inaction resulted due to counter-vailing positions between the top-down blue-prints and local opposition at the bottom-up, as described by Lipsky. Apparently, discretion comes into being when there is interaction among multiple policy objectives resulting into a situation of “unlimited demand” and there is lack of sufficient resource that is, “limited resources” to be able to satiate. Such situations entailing human judgment leverage discretion as trump card to resolve the problem at hand. In that sense, discretion is a deliberate, intrinsic, and desirable element for implementation of public policy (Lipsky, 1980). As a consequence, SLBs are supposed to be more managerial than administrative focusing more on outcomes than the processes. Hence, discretion in the context of managerial spirit (not in the letter of policy) within the context and the interest of the organization or state will theoretically enhance efficiency of outcomes. Discretion resulting in negative consequences for the service recipients may be illegitimate (Alden, 2015).

Because the SLBs face the pressures from both service demand and resource availability, they use “coping mechanisms” (Tummers et al., 2015) like limiting demand, rationing the output, cherry-picking, and automating output (Vedung, 2015). However, such mechanisms finally lead to lose-lose situation as it acts against the ideal motivation of the SLBs (Nielsen, 2006, p. 864; Winter & Nielsen, 2008, p. 122). Demand limiting activities include limiting the information, deliberately creating waiting lines for the users, making inconvenience accessibility, and devising cumbersome application mechanisms. Similarly, output is rationed through creaming for success, cost efficiency, and quantitative improvement by the SLBs. All such measures described are constituted to be “demand smoothing” activities, a policy construct that we conceptualize as an integration of SLBs coping strategies (Gilson, 2015) and resource smoothing (Akpan, 2000). Hence, we present the following central proposition as follows:
Proposition. In an uncertain scenario with resource constraints, demand smoothing is an intermediary outcome of content and context of policy against the legitimate wish of the SLBs.

The demand and output management techniques through coping, limiting, creaming, rationing, and automating (Vedung, 2015) are useful during situations like COVID-19 as opposed to the normal situation when demand is managed through top-down bureaucratic control mechanism. Such techniques are included in the “demand smoothing” activities. Hence, we test this proposition by verifying the following hypotheses through system dynamics modelling of demand smoothing techniques of SLBs’ public service deliveries during COVID-19.

3.3 Hypotheses development

In an extraordinary situation, such as COVID-19 wherein demand variability remains unpredictable, public service deliveries with limited resources will be stretched to respond to individual demand calls. Intrinsic to this is the problem of indivisibilities of capacity addition. Adapting service deliveries (lumpy supply) to a variable demand and then treating citizens without prejudice often would require judicious manoeuvring of capacity. Hence, we expect SLBs in contexts with limited resources and stochastic demand – the situation usually prevalent during COVID-19 like situations – to act more, with discretion, into levelling out the entrenched demand unevenness. Furthermore, policymakers being the part of larger political and economic agenda of the state are motivated to set extended goals and aspire for efficient outcome. We define the following three hypotheses:

Hypothesis 1. Demand smoothing activities increase with increase in resource scarcity in a complex policy situation like COVID-19.

Hypothesis 2. Demand smoothing activities increase with increase in discretion of SLBs in a complex policy situation like COVID-19.

Hypothesis 3. Demand smoothing activities increase with increase in competitive aspiration of policymakers in a complex policy situation like COVID-19.

Relatedly, as SLBs are in the management of the ground situations that, in turn, are subject to their discretions, likelihood of divergence of outcomes between policymakers and policy implementors (i.e., SLBs) looms large. Consequently, SLBs through “trial-and-error” would strive to close this gap, ostensibly by an egalitarian treatment of service deliveries through demand levelling. Hence, we posit below the hypotheses as follows:

Hypothesis 4. Demand smoothing activities increase with increase in “trial-and-error” learning of SLBs in a complex policy situation like COVID-19.

SLBs against their legitimacy (Alden, 2015) implement demand smoothing activities as the “fixes” for enhancing policy effectiveness and delivering services. Such act of SLBs generates a legitimate feedback for the policymakers towards amending the policy content in order to refrain themselves from demand smoothing fixes. Such a phenomenon motivated us to define the following hypothesis for our research.

Hypothesis 5. Increase in demand smoothing activities by SLBs against their legitimate wish leads to feedback and frequent policy amendments that in turn increase the policy complexity.

To sum up, we argue that the lumpiness and constraint condition of available resources in such situation is controlled by demand smoothing, which, in turn, is moderated by SLBs discretion, policy aspiration, and incentives for SLBs to trial and error.

In the following sections, we, using system dynamics, have modelled public service delivery through SLBs. The model constitutes of various causal loops, each representing the above hypotheses. Then, we have verified the above hypotheses through mental-simulation of loops and benchmarking the dynamics with “generic” structure-and-behaviour theory of system dynamics models (Paich, 1985). Nonetheless, simulation methods are highly adapted for theory building in social problems involving longitudinal and dynamic phenomena (Davis et al., 2007).

4 DYNAMICS OF PUBLIC SERVICE DELIVERY IN COVID-19 SCENARIO

The scenario of COVID-19 is different in many ways, particularly in terms of “availability” of time and identifying the “qualifying” recipients for the service. Furthermore, because of situational exigency, instructions from top-down lack clarity and consequently, contents and the communication fall short of precision and efficacy. Unlike the policy implementation through usual public governance mechanism, that is, PA-NPM-NPG, where there are clear identification of recipients and defined delivery mechanisms, COVID-19 policies implementation through SLBs entail intuition and self-deliberation. Hence, SLBs would identify the recipients in the ground, judge the validity of the recipients’ qualification, and define the degree of services to be provided. Through system dynamics model, we present a conceptual building of the phenomena capturing the dynamic complexity of the implementation of public policy through SLBs in COVID-19 context.

Nevertheless, policy structure in the context of COVID-19 has never been simpler because of the complex nature of the context. Within the two extremes of policy complexity at the top and demand smoothing activities at the bottom, discretion of SLBs acts as the instrument for optimal delivery of public services. Demand smoothing activities became the outcome of such discretions. The section below unpacks the endogenous interactions among each of the above conditions, for example, policy complexity, discretion, demand smoothing, feedback and learning, aspirations, and resource adequacy and presents
In normal public policy situation, bureaucracy plays a major role while identifying service demand and devising policy, making rules, communicating to the public, and maintaining order and ensuring adaptation by the public (Jreisat, 2002, pp. 27–37). However, when there is change of policy and goals due to the change in social, economic, or political transformation, a “transitional” phase in the society emerges where the normal functions of bureaucracy are challenged. COVID-19 being different from normal scenario has resulted in generating newer problems having no “historical” analogies. Therefore, it warrants new skills and capabilities of bureaucracy leading to shifting power positions among the bureaucrats, and also in usual political equations (Ahmed & Aref, 2018). The challenges occur due to specific characteristics of the transitional phase that includes uncertainty, instability, complex, and multidimensionality (Schmitter, 2012, pp. 2–4), which we have defined here as “policy complexity.” The turbulent features of transition phase furthermore include dilemmas related to incomplete legislative framework, weakly defined laws, and regulations and improper accountability mechanisms (Wolf, 1999, pp. 1–3).

The policy characteristics discussed above (Schmitter, 2012, pp. 2–4) are the serious challenges before policy implementors during conditions like COVID-19. The “complexity” of policies is characterized through number and nature of implementing agencies (decision makers) and recipients, nature of flow of information, and clarity of policy guidelines, stochastic nature of variables, and higher level of “disorders” in the system.

SLB discretion to manage policy complexity

The complexity further gets exaggerated because multiple agencies (Central/Federal and State/Local Government) have their own policies with varying objectives that may or may not align. Imposition of multiple objectives through the same context influences in terms of: (i) increasing in individual agency’s policy outcomes, (ii) rising discretionary choice options of the SLBs while implementing the policies, and (iii) increasing the complexity of the individual policy content. Both the complexity and discretions increase the discrepancies between the policy guidelines and ground conditions that in turn reduce the overall policy implementation effectiveness.

SLB discretion and demand smoothing

Ineffective policy implementation reduces the service rate and, as a consequence, the overall number of beneficiaries reduces. Furthermore, the resource availability gets attenuated with increase in policy complexity, resulting in resource inadequacies for the desired service rate. Poor service rate further impacts the policy outcomes, which in turn increase the discrepancy between the policy objective and outcome. The discrepancies indicate the difference between desired state of “well-being” of service recipients and the actual well-being after policy is implemented. Such discrepancies continue to build pressure on the SLBs for demand “smoothing” activities using the entrenched autonomy and discretionary powers. The “discrepancies” also generate pressure on SLBs to enhance productivity in order to raise the implementation effectiveness and service rate. Figure 1 below highlights the “demand smoothing” loop, which controls the dynamics of service delivery rate through smoothing decisions of SLBs. The feedback loop being “negative in nature,” the service rate gets controlled after certain time and does not grow infinitely. We present some of the pictures from the field on “demand smoothing” activities by SLBs in Appendix A (Figures A1–A3) as illustrations.

SLB feedback and learning

Intertwined with pressure from multi-stakeholders, SLBs provide feedback to the top to tweak policies in order to mitigate the discrepancies between policy objective and outcome. The feedback from SLBs comes from their learning from managing through “demand smoothing” loop (Figure 3). The feedback from SLBs acts as a useful guide for the policymakers to amend the existing policy through which the number of “objectives” further increase and the policy becomes more complex. As the complexity compounds, the communication effectiveness reduces. Hence, the SLBs manage through “trial-and-learning” in the field with reduction in learning time and learning effectiveness. Poor learning effectiveness reduces productivity and reduces service rate. Decline in service rate again forces SLBs to use their discretion and strengthen “demand smoothing” activities. Learning loop tries to reduce the implementation effectiveness, which in turn gets resisted by “demand smoothing” loop (Figure 2). The inference is that learning and feedback from SLBs in the case of COVID-19 like situation enhance the policy complexity and accelerate the demand smoothing activities of SLBs during implementation phase.

Four positive feedback loops, that is, Discretion, Learning, Resource Adequacy, and Aspiration loops, continue building pressure on SLBs by increasing the discrepancy between policy objective and outcome.

SLB discretion

With the alterations in policy objectives based on the “feedback” from the SLBs, the discretionary power of SLBs increases. Hence, this is self-perpetuating in which SLBs by virtue of being in the pole position of implementation are further nudged with more “discretion” to deliver service at any cost. More discretion, however, increases the
**FIGURE 1** “Demand smoothing” feedback loop explaining the control over SLB discretion and service rate

**FIGURE 2** “Learning” feedback loop increasing the policy complexity
discrepancy between the policy guidelines and bottom reality due to judgmental errors, which, in turn, result in reduction in implementation effectiveness. The discrepancy is basically the deviation of policy assumptions and definitions from the actual conditions in the field. Reduction in implementation effectiveness activates the “demand smoothing” feedback loop for balance. Figure 3 highlights the “discretion” feedback loop.

4.6 | Resource adequacy

During COVID-19, availability of resources for delivering public services became extremely limited because of policy measures like “lockdown” and “shutdown.” Furthermore, requirement of resources increased significantly with increase in policy objectives. As a result, “resource adequacy” became very low, causing decline in the service rate. Decline in service rate increased the discrepancy between policy objectives and outcomes activating the “demand smoothing” loop. Demand smoothing activities of SLBs provided policy amendment feedbacks, in turn increase the policy objectives and strengthening “resource adequacy” feedback loop. A diagrammatic representation of interaction of “resource adequacy” and “demand smoothing” loops is highlighted in Figure 4.

4.7 | Policy aspiration

Aspiration of policymakers in achieving efficient service delivery in COVID-19 situations has been observed to be an important policy agenda and at times supersedes other political and economic objectives. Steep and ambitious objectives always create discrepancy between the “policy objective” and “policy outcome” and activates demand smoothing activities of SLBs to continue. Such phenomena are supported by the literature (Gollwitzer & Sheeran, 2006), where the meta-analysis has suggested that a strong “goal set” may not guarantee its attainment. Subsequently, the feedback from SLBs continues to increase for policy amendments, and increase in policy objectives and aspirations continues to grow further because of socio-politico-economic reasons. Figure 5 presents the “aspiration” loop interacting with “demand smoothing” loop.

Figure 6 shows a holistic view of the dynamics of public policy implementation through SLBs during black-swan events like COVID-19. The model shows that as long as the complexity of policy remains high, “demand smoothing” feedback loop remains stronger and continues to be stronger as a result of feedback from the SLBs for amendment of policies. Furthermore, as the number of policy objectives increases due to the amendment of policies and also because of the imprecise and unpredictable nature of events like COVID-19, pressure
on implementation effectiveness, and service rate increases. Three positive (decay) loops, that is, Resource Adequacy, Discretion, and Aspiration, also continue to build pressure on implementation effectiveness and service rate bringing them to steady state condition. Furthermore, availability of resources reduces with the increase in policy complexity, which, in turn, pulls the service rate down. Pressure on service rate reduces the policy outcome, which, in turn, forces the SLBs to increase demand smoothing activities with the objective of enhancing service delivery. Similarly, an increase in the number of policy objectives increases the discrepancy between expected policy outcomes, which, in turn, increases the pressure on SLBs towards demand smoothing activities. Finally, autonomy and discretion of SLBs are the drivers of demand smoothing effort, which arise out of the discrepancy between policy objectives and outcomes. The proposed causal loop diagram (CLD) of public service delivery model in the context of SLBs can act as a vehicle of implementation of public policies, highlighting nuances of various actions and their responses.

The model (Figure 6), however, has the following assumptions.

- SLBs are responsible and accountable for the discrepancy between policy objectives and outcomes.
- Demand smoothing activities lead to judiciary interventions.
- SLBs’ feedbacks are received and policies are amended time-to-time.
- Pressure on SLBs increases their productivity.

5 MODEL ANALYSIS USING SYSTEM ARCHETYPES

We have taken help of “system archetypes” to analyse the current model. System archetypes are existing and tested structures that facilitate in thinking and understanding system structures (Prusty et al., 2014; Prusty et al., 2017; Senge, 1990; E. F. Wolstenholme, 2003). The current model (Figure 6) consists of four “positive” feedback loops and one “negative” feedback loop. Mapping the model onto the family of generic archetypes (E. Wolstenholme, 2004) our model resembles “fixes that fail” archetype. A generic structure and behaviour of the “fixes that fail” archetype are presented below in 7. The behaviour of the archetype depicts that a quick-fix to a problem results into “unintended” consequences that outweigh the “healing” effect of the “fix.” In such a
scenario, the problem symptom though reduces for some time, it again reappears after certain time when unintended side-effects continue to emerge. The problem symptom may reappear to be much bigger if the “reinforcing” effect of unintended consequences outweighs the healing effects of the fix(es). The reverse may also happen. The resultant behaviour of the archetype depends on the “dominance” of the loops (Ford, 1999; Güneralp, 2006; Richardson, 1995).

In the model of public service delivery (Figure 6), the “demand smoothing” loop acts as a “fix” in the complete system. The problem in hand is the “implementation effectiveness” of the public policy. The SLBs’ quick-fix of “demand smoothing” activity to enhance the “implementation effectiveness” quickly leads to four “unintended consequences.” They are: using SLB’s discretion, learning through trial-and-error, and amendments to existing policy purely based on “SLBs’ feedback”; all leading to increase in the policy “complexity.” Fixes adopted during COVID-19 scenario have resulted in unintended consequences like violation of lockdown guidelines, court cases, repeated policy amendments, loss of economic value, difficulty in non-COVID healthcare delivery, and so forth. Furthermore, exogenously originated system constraints like “resource adequacy” and “aspirations” continue to “strengthen” themselves and get connected into “endogenous” system as “unintended consequences.”

A business-as-usual scenario of the above situation will lead to continuous decline of “implementation effectiveness” and the policy will get into a state of permanent paralysis. However, a “relaxing” the impact of “unintended consequences” loop through conscious decisions will provide an outweighing impact of “fixes” and the problem symptom will continue to reduce and reach a steady state of policy success. In the latter case, the “repeated” fixes get routinized and develop into the “capability” (Eppel et al., 2011) of SLBs to deal with the problem symptoms. Thus, feedback for amendments reduces and policy complexity ceases to increase continuously, which leads to reduce the “unintended consequence” feedback loops. That means, the policy guidelines become comprehensive and robust, use of discretions gets reduced, trial-and-error learning gets converted to learning-curve. Furthermore, the “resource adequacy” gets defined and available because of clarity, and estimation of resource requirements.
Overall, the system reaches a steady state with time and a "new-normal" gets defined. Overall, the system reaches a steady state with time and a "new-normal" gets defined.

6 | DISCUSSIONS AND POLICY IMPLICATIONS

In this paper, we posit an expansive view of the extant governance mechanism through system dynamics model for arresting the “leakages” in public service deliveries under the pretext of SLBs discretion and autonomy. By doing so, we take a closing-the-loop and public service-dominant approach by capturing the complexity of COVID-19 problem through the explication of feedback among endogenous variables (Forrester, 1961; Nicholis & Prigogine, 1977; Richardson, 1991). The purpose of the system dynamics model is to capture the interconnections among the variables of a public policy design-delivery system implemented through SLBs and to identify the key feedback loops that govern the dynamic behaviour of the system.

COVID-19 has pushed the society into a transitional turbulent phase characterized with multidimensional uncertainty and instability. Participation of SLBs through the nuances of the transition phase is warranted by “frequently” bringing in new bills and laws for regulating information and transparency, by administering local reforms (decentralization, delegation of functions and powers, training and educating, program restructuring), and by bringing in accountability through allowing local community participation (Epstein et al., 2006). Such activities invariably bring amendments to policies from time to time, thereby moving the goal post related to the scope of policy objectives and increasing the policy complexity. As a result, trial-and-error becomes the way of learning instead of efficient learning of SLBs through “learning curve.”

SLBs come as an alternative to supplement the challenge by being in direct contact with the citizens. Variability in demands forces the SLBs to adapt through coping and acquiring skills and competences. In addition to the role of policies, organizations, individuals, and contexts for the implementation of success, learning of “agents,” that is, SLBs is the key for the success. SLBs usually learn through trial-and-error
method without incurring much cost and without searching for good practices. These SLBs act as the “agents” in public service delivery system who implement the policies made by the state (Hill, 2003). The role of SLBs is basically to respond to the countervailing pressures from resource scarcity and ambitious policy aspirations of the state in the context of challenges of learning and using discretions to deliver best services. As we see, demand smoothing comes out as the outcome by SLBs to cope with such challenges. Demand smoothing activities of SLBs are not evils but a well-optimized approach to provide best service delivery in the severe criticality of contextual challenges of COVID-19. Application of feedback loops with a few examples from COVID-19 scenario is shown below in Appendix B.

The model integrates the following fundamental response behaviours of three agents, that is, (i) response of policymakers to the feedback from implementors (SLBs) and to the judiciary instructions, (ii) response of implementors (SLBs) to the policy ineffectiveness due to multiplicity of direction because of repeated amendments, and (iii) response of judiciary system to the SLBs actions in the form of demand smoothing. Hence, the implications from the triopoly interactions captured through the model are to maintain a balance and equilibrium among the three behaviours in order to achieve an effective policy design-delivery system. Furthermore, the implications of the model for the policymakers include questioning their assumptions regarding the responses from other two agents and to aid in strategies and convincing multiple stakeholders with diverse intents to support policy implementation.

Following explicit decisions can be derived in order to reduce “fixes,” that is, reducing demand smoothing activities and reducing the causes of problem symptoms, that is, implementation ineffectiveness (Figure 7).

1. SLBs need to be provided continuous training before and during the implementation phase.
2. Detach the SLBs from being completely accountable for the policy outcomes level.
3. Relook policy objectives whether they are amplifying the “Aspiration” loop (Figure 6)

Specifically, this research makes two broad contributions. First, by combining conventional SLB discourse with system dynamics model, our study in a limited way enriches public governance literature by unfolding the “dynamics.” Second, our proposed theoretical model by incorporating feedback approach and by providing SLBs with a robust and quick tool kit to decision-making and performance measurement can contribute significantly to policymaking. For practitioners, it provides powerful insights in terms of interventions required in the lifecycle of policy formulation starting with uncertain blurred context of top-down policy received by untrained SLBs who set high aspirations to policy achievement by sharing irrelevant feedback, thereby increasing the complexity of the process.

7 | CONCLUSIONS

Based on our study, the following main conclusions can be stated. First and foremost, this study indicates that in extraordinary situations like COVID-19, demand smoothing becomes self-generating outcome of the intrinsic contextual challenges of resource scarcity, learning ineffectiveness, ambitious policy aspirations, and discretions of SLBs. Analogous to network effect in economics, demand smoothing is propelled from effects such as feedback from SLBs towards amendment of policy and increasing policy complexity, which, in turn, fuels into trial-and-error in learning, discretion, resource inadequacy, and policy aspiration.

Secondly, it can be concluded that effectiveness of policy implementation reduces with feedback from SLBs and ineffective learning in a resource-constrained and complex policy situation like COVID-19. This is because SLBs learn through trial-and-error process due to discrepancies between the policy guidelines and field realities, and this continues to exist even after intermittent amendments based on the SLBs’ feedback. Implementation effectiveness increases in a “normal” scenario when implementors (including SLBs) learn through “learning curve” by doing similar things again and again.
8 | LIMITATIONS AND SUGGESTIONS FOR FUTURE RESEARCH

Our analysis underscores that there is more to SLBs management than what extant approaches and research have so far traversed. We need more sophisticated understanding of how SLB’s efforts could possibly be more optimized and performance be scrutinized. Being a conceptual model, this research offers a future research opportunity to get this model empirically tested, which we acknowledge a limitation of our study. The other limitation that warrants further investigation is to apply the model in various sectors of public service deliveries. This might give us more clarity as to how and why SLBs act in a particular way with respect to a particular sector and why there cannot be a “one-size-fits-all” direction from top-down. In summary, we present below the limitations on the model that may trigger avenues for future research.

1. The current model has assumptions that may be modified in case-specific investigations.

2. The current model is generic in nature. More evaluation of the model should be carried out through opinions and experiences of policy designers, SLBs, and service recipients.

3. The model is highly qualitative in nature. A quantitative simulation model (stock-flow model) should be built to identify the loop dominance characteristics of the feedback loops (depicted in the current Causal Loop model) in specific cases and conditions. Furthermore, What-if analyses of stock-flow model should be carried out to design optimal policy guidelines.

Overall, despite these limitations, we contend that system dynamics (SD) models can greatly aid the policymakers in quickly scanning the environment and sensing the triggers of policy resistance, building suitable response system, and developing confidence among stakeholders.

DATA AVAILABILITY STATEMENT

Data sharing not applicable to this article as no datasets were generated or analysed during the current study.

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ENDNOTE

1 In the context of COVID 19, a plethora of government directives have been sent out intermittently and routinely during this lockdown. The authors got a chance to review such directives communicated during the period from the State Secretariat to one such District Collector office. It is a matter of further investigation, obviously not within the scope of this paper, to understand the pathway of such government missive in reaching out to the lower rung SLBs, and also to probe in detail how SLBs use and interpret those instructions, if at all they receive it in on a real-time basis, to achieve their preferred ends.

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**How to cite this article:** Prusty SK, Mahapatra D. Demand smoothing response by street-level bureaucrats (SLB) in delivering public services during COVID-19 scenario: A system dynamics modeling study. *J Public Affairs*. 2021;21:e2633. https://doi.org/10.1002/tpa.2633
APPENDIX A: DEMAND SMOOTHING ACTIVITIES OF SLBs

With reference to the COVID-19 and lockdown situation, we present below few illustrations of the SLBs’ discretionary coping strategies to limit the demand (Figures A1 and A3).

**FIGURE A1**  SLB’s insisting to maintain “social distancing” and “limiting demand” through printing “circles.”
Source: https://www.weforum.org/agenda/2020/04/coronavirus-covid-19-india-lockdown-pandemic/ accessed on August 24, 2020

**FIGURE A2**  SLBs insisting to use bicycles instead of motor-cycles to cause “inconvenience” and “limiting demand.” 
Source: https://www.onmanorama.com/news/kerala/2020/07/05/covid19-coronavirus-daily-report-kerala-pinarayi-vijayan-health-dept.html accessed on August 24, 2020
APPENDIX B: BRIEF EXPLANATION TO THE DOMINANT FEEDBACK LOOPS WITH LIVE EXAMPLES FROM COVID-19 SCENARIO

| Key feedback loops               | Live examples                                                                                                                                 |
|----------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|
| Demand smoothing loop (Figure 1) | Provision of overtime and extra incentive to law enforcing agency and health care professionals.                                          |
| Learning loop (Figure 2)         | Law enforcement agencies adopted various tactics to ensure social distancing and avoid crowding learning through trial-and-error.            |
| SLB discretion (Figure 3)        | Provision of collectorate power to the Sarpanches (constitutional head of villages) in the state of Odisha, India.                             |
| Resource adequacy loop (Figure 4)| Bringing back migrant workers back home during lockdown in India generated resource inadequacy related problems.                           |
| Policy aspiration (Figure 5)     | A “zero” fatality mission in a COVID-19 situation may lead to infeasible targets.                                                           |