9. Public Service Logic: a service lens on the COVID-19 vaccination programmes

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This chapter explores the utility of the Public Service Logic (PSL) framework for understanding and enhancing the effectiveness of mass vaccination programmes, such as the current programme for COVID-19. Our argument is that such programmes have only been evaluated with a logistical and operational focus, in relation to public health objectives. By viewing such vaccination programmes through a service lens, however, the focus shifts from logistical programmes to those of value creation at the individual and societal level. Such an approach, we argue, is one that has significant benefits for the strategic achievement of public health objectives. Consequently the chapter is in three parts. The first part lays out the core elements of PSL. The second part then describes the current COVID-19 vaccination programme and the key challenges that it faces. The final section applies a PSL approach to the vaccination programmes and evaluates the strengths and challenges of such an approach.

PUBLIC SERVICE LOGIC

PSL is a theory of public administration and management (PAM) that seeks to integrate insights from service management and marketing theory together with those of PAM. It was first posited in the work of Osborne and his colleagues (Osborne et al. 2013) but has since become the field of a substantive community of PAM scholars (inter alia, Hodgkinson et al. 2017; Grönroos 2019; Hardyman at al. 2019; Eriksson 2019; Trischler et al. 2019; Engen et al. 2020; Scarli 2021; Vestues et al. 2021).

PSL understands public services 'as services' and argues for the application of a service-dominant approach (Vargo and Lusch 2008) to their management – in contrast to the product-dominant approach of the New Public Management (NPM). A 'product-dominant approach' is one that treats services as if they were goods produced through manufacturing and which emphasises technical specification, rather than service process enactment. A 'service-dominant approach' is one that understands services as process-based and as contingent on the creation of value in the lives of their users. The NPM argued for the hegemony of a linear approach to public services that concentrated upon the transformation of resource inputs into outputs and the importance of external competition and internal value chains for the efficient management of public services (Lapuente and Van der Walle 2020). In contrast, PSL argues for a focus both upon the creation of external value for the users of public services, and other key stakeholders (such as family and friends, public service staff and other citizens), and upon how such value is created within public service environments. This then forms a sustainable societal and economic basis for these public services. In doing this, it builds upon a substantial thread of PAM research and theory, including that of Public Value (Moore 1995). However, whilst Public Value focuses on value creation at the societal level

alone, PSL explores the interaction and tensions between value creation at the societal and individual levels.

Importantly, PSL does not seek to simply import/impose lessons from commercial services onto public services (whether provided by the public, private or third sectors) – this was a significant flaw of the NPM. There are significant differences between public and commercial services. These include the distinctive ownership patterns of the public and third sectors, the place of public policy as a significant and often hegemonic element of the environment of public services, and the distinctive nature of the users of public services (that, unlike in commercial services, they may be mandated (school children), coerced (prison inmates) and/or unconscious (adults with dementia) users of public services) (Alford 2016). PSL thus integrates insights from both commercial and public service experience to identify four core elements of PSL (Osborne 2021). These are the public service ecosystem, the distinctive role of public policy in PSL, the purpose of public services, and the nature of value and value creation for public services and their users.

The Public Service Ecosystem (PSE)

The metaphor of the 'ecosystem' has become a prevalent one in contemporary management theory (e.g. in innovation studies, Granstrand and Holgersson 2020). It draws upon the metaphor of dynamic, interactive and self-sustaining ecosystems, developed by Tansley (1935), to understand complex organisational environments. In service management and marketing theory, Vargo and Lusch (2016) argue that value creation is not solely the purview of individual businesses, but occurs within complex and interactive *service ecosystems*, comprising the key actors and processes of value creation as well as societal/institutional values and rules. It has subsequently become the front-line of such theory (Mustak and Plé 2020).

PSL adopts and adapts this approach to a public service context. Context has long been a pre-occupation of PAM (Pollitt 2013), of course, and systemic approaches have an extensive history also (e.g. Knapp 1984). The PSL approach goes further, to explore both context and system (Hodgkinson et al. 2017). Petrescu (2019) has described it as a unifying framework through which to understand the complexities of public service delivery and value creation at the societal, service and individual levels, whilst Trischler and Charles (2019) explored its import for public service design. Strokosch and Osborne (2020) offered an empirical exploration of PSEs. They concluded that they moved our understanding of public service delivery from the transactional and linear approach of the NPM and towards a relational model where public service value creation is shaped by the interplay between multiple dimensions – and not least by the wider societal context and the values that underpin it (see also Kinder et al. 2020; Rossi and Tuurnas 2021; Hardyman et al. 2021; and Trischler and Westman Trischler 2022).

Osborne et al. (2022) have presented the most evolved version of the PSE approach, which explores the interplay between four levels in the ecosystem. These are the *macro-level* of societal beliefs, norms and values, the *meso-level* of organisational actors, networks, processes, and norms, the *micro-level* of the individual actors (public service users, staff, and other stakeholders), and the *sub-micro-level* of the values and beliefs of these individual actors. None of these is hegemonic within PSL. Rather their interaction forms the petri-dish of public service delivery and value creation (Figure 9.1).
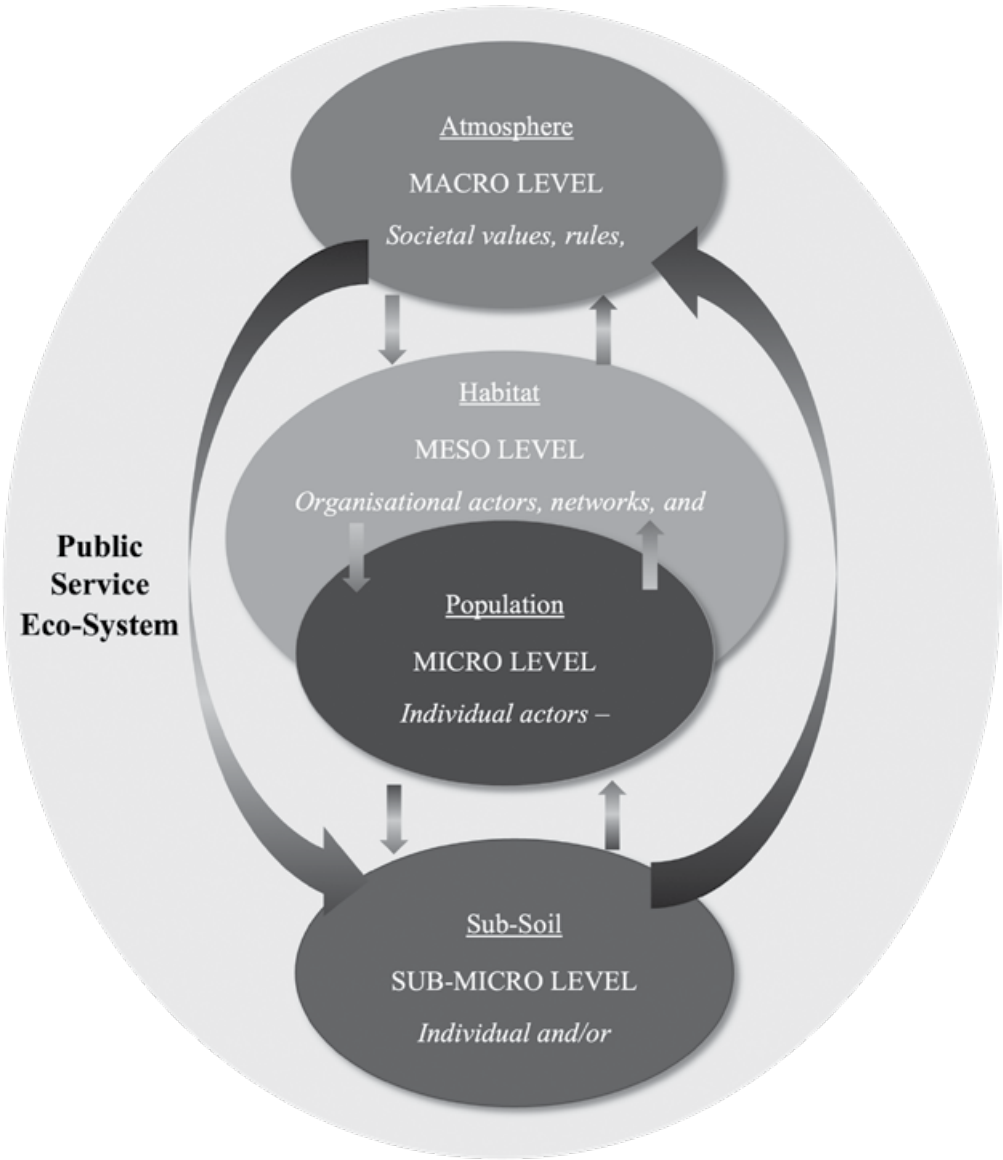
Figure 9.1   The public service ecosystem

The Nature and Role of Public Policy

In contrast to many policy implementation theories, PSL does not understand public policy creation and implementation as linear processes. Rather it understands public policy as a core element of the PSE. Public policy, as the outcome of political debate, offers a codification of

the societal values and beliefs embedded within public services (e.g. beliefs about the relationship between the 'deserving' and 'undeserving' poor engrained within national welfare systems). Public policy has no value in its own right. Rather it is a series of aspirations that may, or may not, be achieved by implementation/enactment through public services (e.g. societal aspirations about literacy in education policy). As such, it is a 'service promise' rather than the achievement of that promise. However, it is an essential element of the PSE.

Public Services and Public Service Organisations (PSOs)

In traditional models of PAM, the creation of public services and their organisational entities (PSOs) is seen as the fulfilment of public policy. Such services and organisations are there to meet the needs of citizens. PSL understands services and organisations differently. Rather they are resources that public service users can interact with in order to address their needs and create value in their own lives (Eriksson and Hellström 2021). However, the existence of a public service or a PSO does not create value in its own right. It is how the citizen interacts with a service/organisation that does so. The existence of a school and the place of teachers within it does not create value through learning, for example. Rather it provides a set of resources. What is key then is how the individual schoolchild interacts with these resources to create (or destroy) value in their lives – and this interaction will be mediated by their needs, personal/family experiences, and expectations (conditioned by prior service experiences). They can share this process with public officials, through co-creation.

A PSL approach thus shifts the focus of performance and performance evaluation away from the internal efficiency and effectiveness of PSOs alone. Instead, the focus becomes how effective they are both in creating resources for public service users to integrate with their needs and in facilitating such value creation. Three key concepts are deployed within PSL. *Co-design* is the collaborative engagement of the key stakeholders (such as public service users, their carers and family, and public service staff) in the design and/or re-design of a public service. *Co-production* is the collaborative involvement of these stakeholders in the management and/or delivery of a public service. *Co-creation* is the collaborative process of value creation by these key stakeholders to a public service.

Value and Value Creation through Public Service Delivery

The crux of PSL is that public services should be judged upon their ability to facilitate value creation in the lives of public service users and their other stakeholders (Osborne et al. 2021). This value creation takes place within four domains and consists of five elements. These domains and elements comprise the *value creation matrix* for public services (Table 9.1). The domains are those of experience (*value-in-use*), of engagement in the design/delivery of public services (*value-in-production*), of fulfilling the needs of users and other stakeholders (*value-in-context*), and of their broader achievement of societal aspirations such as an inclusive society (*value-in-society*).

Within these domains, five types of value can be created. These are

● the short-term satisfaction and well-being of public service users,
● the medium-term effects and long-term impacts (outcomes) of public services in relation to needs,

- the effect of public service upon the whole life experience of public service users,
- the ability of public services to create personal capacity for the future, and
- the creation of value for society through public service delivery.

Table 9.1   The value creation matrix

Domains of value	Elements of value				
	Short-term satisfaction and quality of life	Outcomes (medium-term effects and long-term impacts)	Whole-life experience	Capacity creation	Societal value
Value-in-production					
Value-in-use					
Value-in-context					
Value-in-society					

A concrete example of these elements of value can be offered by a mental health service. *Satisfaction* concerns how the short-term effect of a public service user is created by service interactions. This will not only condition their personal well-being but also their willingness to engage further with the service in relation to their mental health needs. *Outcomes* concern the effect of the service upon their mental health needs directly – both in terms of medium-term effects and longer-term impacts. *Whole-life experience* concerns how being engaged with a mental health service constructs their view of their own life and their capacities within society more broadly. *Capacity creation* concerns the extent to which public service users develop strategies and techniques to manage their own mental health in the future rather than being dependent solely on the mental health service. *Societal value* concerns the extent to which the mental health service contributes to the mental health of society as a whole and to its beliefs about the nature and impact of mental health conditions and also the extent to which it reduces pressure on other healthcare services through improved mental health. It is important to distinguish between value-in-society and societal value. The former is a domain where value may be created, for the individual or society. The latter is actual value created for society as a result of public service delivery.

Finally, none of the above assumes that public services will always create value or have positive outcomes. It is equally possible that the poor design or delivery of public services can make the lives of service users, service staff, and/or other citizens worse. This is known as *value destruction* (Plé and Caceres 2010; Engen et al. 2020).

In summary, we would emphasise five points. First, PSL requires a new understanding of public policy as creating values-based aspirations for public services rather than offering the technical specification of these services. Second, PAM needs to replace its preoccupation with PSOs and their management with a focus on the PSE and value creation/mediation for all stakeholders within these ecosystems. Third, PSL will require both cultural change within PSOs and a new orientation by citizens to the purposes of PSOs. Such cultural/orientation change is challenging but not impossible (Grönroos 2019). Fourth, digital technology and

artificial intelligence is transforming public services, as with other elements of society. Increasingly the PSE may exist at least partially within a virtual province. Finally, PSL does not replace the key features of public service management but rather presents them with new challenges (e.g. the creation of performance management systems for PSOs that capture value creation and co-creation).

COVID-19 AND THE COVID-19 GLOBAL VACCINATION PROGRAMME

On 11 March 2020, the COVID-19 outbreak ('COVID-19') was characterised as a pandemic by the World Health Organization (WHO). Two years later, the number of confirmed cases had exceeded 71,503,614. Since the pandemic began to spread, national governments had little time to prepare for its impact on healthcare systems, economies and businesses. The provision of public services has been especially challenged by the pandemic as many PSOs have perforce taken on new responsibilities. Examples of these challenges are the adaptation of personal protective equipment (PPE) and of hospital intensive care units to respond to COVID-19, and the establishment of nationwide 'track and trace' systems (Bokemper et al., 2021).

However, in response to COVID-19, many governments also identified the rapid deployment of an effective vaccination programme as the 'best way' to fight the virus (e.g. UK Government 2021a). By mid-February 2022, at least seven vaccines had been rolled out around the world. The pandemic is now entering a new phase (as of March 2022), driven by the mutation of the highly transmissible Omicron variant of COVID-19. The transmissibility of this variant made such precautions as quarantining much less effective at containing the pandemic – and simultaneously raised further the significance of an effective vaccination programme as a response to COVID-19 (WHO 2021a).

Implementing Vaccination

In principle, vaccines represent one of the safest and most cost-effective public health intervention strategies to mitigate global pandemics (Ehreth 2003). Studies consistently indicate that vaccination provides a high level of protection against symptomatic and severe disease, as well as death, from COVID-19 (Scott et al. 2021). In addition to providing a direct benefit to individuals by reducing their risk of infection, vaccines also have a substantial indirect benefit by reducing transmission and generating herd immunity and by minimising the likelihood of new variants emerging through transmission (Betsch et al. 2013). Nevertheless, vaccine hesitancy and opposition prevails, and many existing public health campaigns have been ineffective in persuading significant elements of the public, globally, to vaccinate. This has delayed the evolution of the much-vaunted (and also contested) 'herd immunity' (Cucciniello et al. 2022).

The COVID-19 vaccination programme was one of the largest such vaccination programmes in history (UK Government 2021a) and required rapid roll-out, in highly uncertain and stressful circumstances. In this context, the deployment of COVID-19 vaccines largely rested on government-centred national plans, actors and actions (Subbaraman 2020). Scientists succeeded in the initial task of developing vaccines in less than a year. The world has now begun grappling with the equally important questions both of how to deliver a mass

vaccination programme most effectively, and of how to convince an often hesitant or resistant public to vaccinate and to continue engaging in healthy behaviour.

These are no easy tasks, and research on vaccination programmes has continued to be scattered and spasmodic (Jean-Jacques and Bauchner 2021). It has focused on three, primarily operational, challenges. The first was establishing how to develop fully functional vaccination programmes that maximise vaccine procurement, storage and delivery, combined with effective information sharing and communication (Enayati and Özaltın 2020). The second concerned ensuring that vaccines were distributed speedily and equitably, especially in rural areas and in deprived and vulnerable communities and also between the global north and south. (Jean-Jacques and Bauchner 2021). The final challenge concerned how to address vaccine hesitancy and resistance. For some this was a case of concern about the side-effects of the COVID-19 vaccines, but it also encompassed distrust in scientific expertise and/or political leadership and the prevalence of vaccine conspiracy theories and misinformation (Agley and Xiao 2021).

Whilst this research is important it has two failings. First, it is primarily operational rather than strategic. It deals with 'how to' questions without any strategic orientation (Osborne and Strokosch 2021) towards the personal and societal values underpinning the programme. Second, it provides no real guidance as to how to address vaccination resistance and hesitancy. A PSL approach, we argue, would address both these failings by adopting a value creation approach as its strategic orientation and by viewing vaccination resistance/hesitancy through this lens also.

Vaccine Hesitancy and Resistance

Whilst current attention is focused upon the COVID-19 pandemic, we know that despite the progress in infectious disease control and prevention during the past century, infectious pathogens continue to pose a threat to humanity. This point is clearly exemplified not only by the current pandemic but also by past experiences such as Spanish Flu and Ebola. Vaccines, when available, represent one of the most significant, cost-effective and safe public health interventions capable of mitigating such outbreaks. However, vaccine refusal has steadily increased globally and routine immunisation coverage for infectious diseases, such as measles, has decreased over time (WHO 2021b).

The prevalence of vaccine hesitancy/refusal, and the consequent re-emergence of vaccine-preventable diseases, is a complex behavioural issue, which is context-specific and varies across time, place and vaccine type. For the mass COVID-19 vaccination programme, this has been especially challenging.

Understanding Vaccination Programmes from a PSL Perspective

Our argument is that a PSL perspective is essential for furthering the effectiveness of the COVID-19 vaccination programme. It situates these programmes within their broader societal ecosystems and is predicated upon a strategic orientation of value creation for the individual and society. The final section of this paper applies this perspective to the COVID-19 vaccination programme and examines its lessons and implications both for theory and practice.

A PSL PERSPECTIVE ON THE COVID-19 VACCINATION PROGRAMME

Adopting the PSL perspective, we conceptualise the nature of a mass vaccination programme as a 'service'. This service comprises numerous, micro-level, interactive processes between the vaccine team and recipients, situated within an overarching public service ecosystem. This conceptualisation is in counter-position to the prevailing 'product-dominant' approach that views vaccination programmes as a linear transformation from vaccine production/procurement to distribution/injection. Even though reliable logistics are essential to a vaccination programme, there is no reason to assume that reliable logistics alone will necessarily lead to a successful vaccination programme. Rather, an often-ignored fact is that the effective implementation of a vaccination programme, as a cluster of services, is ultimately determined by the trust, acceptance and cooperation of citizens and service users (Cairney and Wellstead 2021).

Through this service lens, we suggest a shift of research attention along two dimensions, in order to develop effective health policy for the pandemic. First, the current focus on logistical supply of vaccines should be supplemented by research on their use and uptake. Second, the fixation with the operational speed and efficiency of vaccine logistical deployment should be supplemented by a focus upon the external value-creation impacts. On both dimensions, the role of individual citizens is essential: they uptake vaccines as users, and act as the final arbiter of value-creation results. Therefore, their hesitancy and refusal needs to be taken seriously, rather than dismissed as foolishness, and as the most significant challenge in the COVID-19 vaccination programmes. Taking a PSL perspective, such resistance cannot be resolved in isolation. Rather, it depends on the strategic re-design and of public services, based upon a deeper comprehension of the complexity of PSEs and the embedded diverse value promises and value-creation processes. We now explore how PSL theory can shed light on effective vaccination programmes from the four distinctive spheres above: the PSE, public policy, the role of health agencies as PSOs, and the nature of value/value-creation.

The Public Service Ecosystem

A PSE approach understands the environment of mass public programmes as an interactive and dynamic ecosystem. This approach to the COVID-19 vaccination context allows the clarification of its three issues. First, COVID-19 vaccination is not implemented by individual PSOs, or by the dyadic relationship between nursing staff and vaccine recipients, but occurs at the nexus of multiple actors and processes. In the UK for example, by March 2021, there had been over 2,700 different locations nationwide offering vaccinations, ranging from GP surgeries, high street pharmacies, to larger urban vaccination site and small 'vaccine teams' in local care homes (UK Government 2021a). The questions about how to incentivize relevant actors, generate accountability mechanisms, and mitigate the transaction-cost risks are critical to the governance of this large-scale relational network.

Second, the PSE approach maintains that inter-organisational networks are essential, but not the whole picture. As illustrated in Figure 9.1, the societal/institutional values and rules at the macro-level are highly significant (Osborne et al. 2022), such as regarding vaccination safety or trust in scientists and the government (e.g., Trent et al. 2021). The meso-level governance systems are also significant. The centralised COVID-19 response model in the UK, for example, has been criticised for its arrogance towards the knowledge and experiences of local

governments and communities (Harris 2020). An ecosystem approach reveals these tensions for resolution.

Third, the PSE framework highlights the potential impacts of individual values and beliefs in COVID-19 vaccination programme. These diverging beliefs at the sub-micro level not only determine individual and professional behaviours, but also can influence how perceived value achievement is appreciated. Citizens with vaccine-resistant belief will interpret an increase in vaccination levels differently from a vaccine supporter (perhaps as evidence of state control rather than effective healthcare). Moreover, the impact of such individual beliefs can be magnified through social media exposure, which can in turn influence public policy and service delivery (at the meso-level) and re-frame both individual and societal values (at the sub-micro and macro-levels respectively). Notably, an expanding group of studies has revealed that individual values and beliefs can be challenged and modified by an active response to them within the PSE. For instance, the social experimental research of Cucciniello et al. (2022) has found that appealing to other-regarding preferences is one way of combatting vaccine hesitancy and improving the pro-vaccination commitment.

A PSE approach thus shifts the discourse on vaccination away from a transactional approach, and towards a relational model that takes both the human and institutional/belief factors into account. It also emphasises the dynamic interaction across the institutional, network, organisational and individual levels. In doing so, it raises a series of new challenges for public managers in vaccination programmes. The governance of PSEs is not an easy task. Moreover, how to account for and govern the diverse societal and individual values towards vaccination, and deal with the possible subsequent values conflicts, is a substantial challenge for public managers.

The Nature of Public Policies

Public health policy is an essential tool to implement the COVID-19 vaccination programme. Within the UK government, for example, there have been over 100 vaccination policies published since 2020, ranging from general guidance on vaccine delivery to specific advice, such as on the vaccination of children. The successful implementation of these policies relies both on effective public officials and on the compliance of citizens. However, increasing studies have shown that there has been a significant increase in non-compliance towards vaccination policies, especially in developed countries (e.g., Blume 2005).

Existing research on such non-compliance has largely concentrated on the operational implementation of vaccination policies. They suggest a series of operational/logistical tactics to overcome vaccine hesitancy and refusal (e.g., Gofen and Needham 2015), while overlooking the importance of health policy design. From a PSL perspective, we argue that vaccination policy has no value in its own right. Instead, it offers a codification of societal values and beliefs related to vaccination and proposes a series of value 'aspirations' or promises. Further, such policy is not only data-driven but value-laden (Hwang et al. 2021). Therefore, evidence-based policymaking is necessary but not sufficient for effective policy: communication and negotiation with/across stakeholders with different beliefs is also essential. Health policy will also require iterative policy re-design as a pandemic evolves, and a balancing between the national and local elements of the PSE. 'One-size-fits-all' vaccination policies, usually with mandatory elements, invariably trigger citizen resentment and provoke protests/boycotts that impede the progress of the vaccination programme as a whole (Mahdawi 2022). Rather, an approach is

required that acknowledges the legitimate holding of such value positions, whilst also challenging them and seeking to ameliorate their impact on the effectiveness of the vaccination programme. This is not a 'quick-fix' approach, but we would argue that in the medium term it offers a more effective and sustainable response to vaccine hesitancy and refusal.

Public Services, Citizens and PSOs

PSL theory views public services as resources that users can utilise to address their needs and create value. This can be applied to the COVID-19 vaccination context. Vaccines, medical equipment, and staff do not create value by themselves. Rather, they provide resources. Citizens who choose to engage with them can create value in their lives and across the PSE, by increasing individual and societal-level immunity. However, it is the citizen who creates this value by their engagement, not the vaccination programme by its existence. Thus, the role of PSOs and their staff is to support the co-creation of such value, rather than simply asserting vaccination as 'a good thing'. From this perspective an effective vaccination programme validates and celebrates the active role of citizens within the programme, rather than simply focusing on PSOs as vaccine delivery agents. It is also important to recognise and celebrate the role of citizens as carers within the vaccination ecosystem. This will, in turn, influence the value creation of other key actors, such as volunteers and care staff.

PSL also emphasises the experiential/phenomenological aspects of public service delivery and reinforces the need for healthcare managers to focus on improving the individual service experiences of vaccine recipients (e.g. dealing with fear of needles) as a conduit to enhanced vaccine uptake. Four specific changes are suggested here. The first is to resolve such phobic fears effectively rather than dismissing them as irrational (Gofen and Needham 2015). The second is to break down barriers to accessing the COVID-19 vaccine, such as through the UK's 'Mobile Vaccine Bus', bringing vaccination to hard-to-reach parts of the community with a poor experience of pre-existing health services (UK Government 2021b). Third, accessibility is also mediated by information dissemination. Linos et al. (2022) have demonstrated that social media-based communication strategies can backfire, by imposing sizeable psychological burdens on disadvantaged groups (e.g. older or less educated individuals) and preventing them from accessing service information. In contrast, an active approach to supporting social media usage by older people, for example, can enhance their usage and impact (Leist 2013). Fourth, and underpinning this, is the need for effective communication strategies across the PSE, about the COVID-19 vaccination programme. A vaccination strategy has to embrace not only existing communication standards, such as timeliness and transparency, but also needs to consider and respond to the specific demographic and social-economical features of a country, such as the 'Spread Calm, Not Fear' movement in Ghana (Antwi-Boasiako and Nyarkoh 2021).

Value and Value Creation

PSL requires policymakers and public service managers to proactively define, respond to and facilitate the creation of societal and individual value. However, few indicators of such value currently exist. Existing research on vaccination programmes has predominantly focused on technical/logistical indicators, whilst ignoring phenomenological and value-based ones. In the first section, we elaborated the four domains of value creation and five types of value within

Table 9.2   An illustrative evaluative framework for the COVID-19 vaccination programme, from a PSL perspective

Dimension of value/time-frame	Value-in-use (experience)	Value-in-production (systemic)	Value-in-context (needs)	Value-in-society (societal)
Short-term	Citizen/staff satisfaction with the vaccination process	Vaccine staff/volunteers learn new skills and citizens are actively involved in decisions about their vaccinations	The vaccination programme provides short-term immunity to the virus	The vaccination programme prevents the collapse of the healthcare system from overload
Long-term	The short-term positive experience builds a positive attitude for citizens/staff about vaccination more generally	The new skills acquired above enhance social and work achievements of citizens/staff/ volunteers	Vaccine recipients have more confidence to return to social life with protective immunity	The vaccination programme leads to 'herd immunity' and the prevention of new variants by reducing transmission

PSL. In Table 9.2 we offer an illustrative approach to the evaluation of value creation by public services, located within this framework.

As Table 9.2 illustrates, value can be achieved in both the short-term and long-term and be accumulated by both vaccine recipients and volunteers/vaccine staff. Such value creation also occurs both societally and individually. Table 9.2 is only an illustrative example of the application of the PSL framework. Specific value propositions will need to be defined within each local and national PSEs. Moreover the potential for 'value destruction' (Engen et al. 2020; Cui and Osborne 2022) has to be continually acknowledged and responded to – no mass vaccination programme is assured of success. A PSL approach to its implementation, though, will enhance the prospects of such success.

CONCLUSIONS

Our argument is not that the effective logistical and operational implementation of a mass vaccination programme is unimportant. Far from it. Our argument is rather that such effective implementation is essential. Achieving such effective implementation though requires an over-arching PSL perspective that:

● situates such implementation within the over-arching PSE that recognises the interaction between its institutional/societal, organisational, individual and values/belief levels. This will allow greater clarity over the processes and mechanisms of value creation for citizens. Without this recognition, a mass vaccination programme will be much less effective in achieving its goals;
● acknowledges that the relevant healthcare policies have to be based upon an understanding of how vaccination adds value to citizens and society rather than simply portraying it as a logistical objective to be achieved. It thus needs to have clear value propositions articulated. It must also acknowledge and challenge alternative value propositions, such as vaccination hesitancy/resistance;
● recognises that public services and PSOs can only offer resources to citizens (e.g. a vaccination programme). Its effectiveness is reliant both upon public policy and PSOs providing

a convincing narrative about how that programme will enhance their lives and upon citizens actively engaging with this value creation narrative; and

● validates value creation as the key lens through which to evaluate the success of a mass vaccination programme. This will thence allow the development of appropriate measure through which to evaluate such value creation, rather than focusing solely upon logistical deployment.

REFERENCES

Alford, J. (2016). Co-production, interdependence and publicness: Extending public service-dominant logic. *Public Management Review*, 18(5), 673–691.

Agley, J., and Xiao, Y. (2021). Misinformation about COVID-19: Evidence for differential latent profiles and a strong association with trust in science. *BMC Public Health*, 21(1), 1–12.

Antwi-Boasiako, J., and Nyarkoh, E. (2021). Government Communication during the COVID-19 Pandemic in Ghana. *International Journal of Public Administration*, 44(13), 1175–1188.

Betsch, C., Böhm, R., and Korn, L. (2013). Inviting free-riders or appealing to prosocial behavior? Game-theoretical reflections on communicating herd immunity in vaccine advocacy. *Health Psychology*, 32(9), 978.

Blume, S. S. (2005). Lock-in, the state, and vaccine development: Lessons from the history of the polio vaccines. *Research Policy*, 34(2), 159–173.

Bokemper, S. E., Cucciniello, M., Rotesi, T., Pin, P., Malik, A. A., Willebrand, K., ... and Melegaro, A. (2021). Experimental evidence that changing beliefs about mask efficacy and social norms increase mask wearing for COVID-19 risk reduction: Results from the United States and Italy. *PloS One*, 16(10), e0258282.

Cairney, P., and Wellstead, A. (2021). COVID-19: Effective policymaking depends on trust in experts, politicians, and the public. *Policy Design and Practice*, 4(1), 1–14.

Cucciniello, M., Pin, P., Imre, B., Porumbescu, G. A., and Melegaro, A. (2022). Altruism and vaccination intentions: Evidence from behavioral experiments. *Social Science & Medicine*, 292, 114195. https://doi.org/10.1016/j.socscimed.2021.114195

Cui, T., and Osborne, S. P. (2022). Unpacking value destruction at the intersection between public and private value. *Public Administration*. https://doi.org/10.1111/padm.12850

Engen, M., Fransson, M., Quist, J., and Skålén, P. (2020). Continuing the development of the public service logic: A study of value co-destruction in public services. *Public Management Review*, https://doi.org/10.1080/14719037.2020.1720354

Ehreth, J. (2003). The global value of vaccination. *Vaccine*, 21, 596–600.

Enayati, S., and Özaltın, O. Y. (2020). Optimal influenza vaccine distribution with equity. *European Journal of Operational Research*, 283(2), 714–725.

Eriksson, E. (2019). Representative co-production: Broadening the scope of the public service logic. *Public Management Review*, 21(2), 291–314.

Eriksson, E., and Hellström, A. (2021). Multi-actor resource integration: A service approach in public management. *British Journal of Management*, 32(2), 456–472.

Gofen, A., and Needham, C. (2015). Service personalization as a response to noncompliance with routine childhood vaccination. *Governance*, 28(3), 269–283.

Granstrand, O., and Holgersson, M. (2020). Innovation ecosystems: A conceptual review and a new definition. *Technovation*, 90–91(February-March), 102098. https://doi.org/10.1016/j.technovation.2019.102098

Grönroos, C. (2019). Reforming public services: Does service logic have anything to offer? *Public Management Review*, 21(5), 775–788.

Hardyman, W., Kitchener, M., and Daunt, K. (2019). What matters to me! User conceptions of value in specialist cancer care. *Public Management Review*, 21(11), 1687–1706.

Hardyman, W., Garner, S., Lewis, J., Callaghan, R., Williams, E., Dalton, A., and Turner, A. (2021). Enhancing public service innovation through value co-creation: Capacity building and the 'innovative imagination'. *Public Money & Management*, https://doi.org/10.1080/09540962.2021.1981042

Harris, J. (2020). The pandemic has exposed the failings of Britain's centralised state. *The Guardian*. Retrieved from https://www.theguardian.com/commentisfree/2020/may/25/pandemic-failings -centralised-state-councils-coronavirus

Hodgkinson, I., Hannibal, C., Keating, B., Buxton, R., and Bateman, N. (2017). Toward a public service management: Past, present, and future directions. *Journal of Service Management*, 28(5), 998–1023.

Hwang, S., Nam, T., and Ha, H. (2021). From evidence-based policy making to data-driven administration: Proposing the data vs. value framework. *International Review of Public Administration*, 26(3), 291–307.

Jean-Jacques, M., and Bauchner, H. (2021). Vaccine distribution—equity left behind? *JAMA*, 325(9), 829–830.

Kinder, T., Six, F., Stenvall, J., and Memon, A. (2020). Governance-as-legitimacy: Are ecosystems replacing networks? *Public Management Review*, https://doi.org/10.1080/14719037.2020.1786149

Knapp, M. (1984). *Economics of Social Care*. Macmillan.

Lapuente, V., and Van der Walle, S. (2020). The effects of new public management on the quality of public services. *Governance*, 33(3), 461–475.

Leist, A. K. (2013). Social media use of older adults: A mini-review. *Gerontology*, 59(4), 378–384.

Linos, K., Carlson, M., Jakli, L., Dalma, N., Cohen, I., Veloudaki, A., and Spyrellis, S. N. (2022). How do disadvantaged groups seek information about public services? A randomized controlled trial of communication technologies. *Public Administration Review*, 82(4), 708–720. https://doi.org/10.1111/puar.13437

Mahdawi, A. (2022). The whole world should be worried by the 'siege of Ottawa'. This is about much more than a few anti-vaxx truckers. *The Guardian*. Retrieved from https://www.theguardian.com/commentisfree/2022/feb/08/ottawa-truckers-protest-anti-vaxx-canada

Moore, M. (1995). *Creating Public Value*. Harvard University Press.

Mustak, M., and Plé, L. (2020). A critical analysis of service ecosystems research: Rethinking its premises to move forward. *Journal of Services Marketing*, 34(3), 399–413.

Osborne, S. (2021). *Public Service Logic*. Routledge.

Osborne, S., and Strokosch, K. (2021). Developing a strategic user orientation: A key element for the delivery of effective public services. *Global Public Policy & Governance*, https://doi.org/10.1007/s43508-021-00008-9

Osborne, S., Nasi, G., and Powell, M. (2021). Beyond co-production: Value co-creation in public services. *Public Administration*, 99(4), 641–657.

Osborne, S., Powell, M., Cui, T., and Strokosch, K. (2022). Value creation in the public service ecosystem: An integrative framework. *Public Administration Review*, https://doi.org/10.1111/puar.13474

Osborne, S., Radnor, Z., and Nasi, G. (2013). A services-dominant theory of public management. *American Journal of Public Administration*, 43(2).

Petrescu, M. (2019). From marketing to public value: Towards a theory of public service ecosystems. *Public Management Review*, 21(11), 1733–1752.

Plé, L., and Caceres, R. (2020). Not always co-creation: Introducing interactional co-destruction of value in Service-Dominant Logic. *Journal of Services Marketing*, 24(6), 430–437.

Pollitt, C. (2013). *Context in Public Policy and Management*. Edward Elgar.

Rossi, P., and Tuurnas, S. (2021). Conflicts fostering understanding of value co-creation and service systems transformation in complex public service systems. *Public Management Review*, 23(2), 254–275.

Scarli, J. (2021). Creating or destructing value in use? Handling cognitive impairments in co-creation with serious and chronically ill users. *Administrative Sciences*, https://doi.org/10.3390/admsci11010016

Scott, J., Richterman, A., and Cevik, M. (2021). Covid-19 vaccination: Evidence of waning immunity is overstated. *BMJ*, 374. https://doi.org/10.1136/bmj.n2320

Strokosch, K., and Osborne, S. (2020). Co-experience, co-production, and co-governance: An ecosystem approach to the analysis of value creation. *Policy & Politics*, 48(3), 425–442.

Subbaraman, N. (2020). Who gets a COVID vaccine first? Access plans are taking shape. *Nature*, 585(7826), 492–493.

Tansley, A. G. (1935). The use and abuse of vegetational concepts and terms. *Ecology*, 16(3), 284–307.

Trent, M., Seale, H., Chughtai, A. A., Salmon, D., and MacIntyre, C. R. (2021). Trust in government, intention to vaccinate, and COVID-19 vaccine hesitancy: A comparative survey of five large cities in the United States, United Kingdom, and Australia. *Vaccine*, 40(17), 2498–2505. https://doi.org/10.1016/j.vaccine.2021.06.048

Trischler, J., and Charles, M. (2019). The application of a service ecosystems lens to public policy analysis and design: Exploring the frontiers. *Journal of Public Policy & Marketing*, 38(1), 19–35.

Trischler, J., Dietrich, T., and Rundle-Thiele, S. (2019). Co-design: From expert- to user-driven ideas in public service design. *Public Management Review*, 21(11), 1595–1619.

Trischler, J., and Westman Trischler, J. (2022). Design for experience – a public service design approach in the age of digitalization. *Public Management Review*, 24(8), 1251–1270. https://doi.org/10.1080/14719037.2021.1899272

UK Government. (2021a). *UK COVID-19 vaccines delivery plan*. Retrieved from https://www.gov.uk/government/publications/uk-Covid-19-vaccines-delivery-plan

UK Government. (2021b). *UK COVID-19 vaccine uptake plan*. Retrieved from https://www.gov.uk/government/publications/Covid-19-vaccination-uptake-plan/uk-Covid-19-vaccine-uptake-plan

Vargo, S., and Lusch, R. (2008). Service-dominant logic. Continuing the evolution. *Journal of the Academy of Marketing Science*, 36(1), 1–10.

Vargo, S., and Lusch, R. (2016). Institutions and axioms: An extension and update of service-dominant logic. *Journal of the Academy of Marketing Science*, 44, 5–23.

Vestues, K., Mikalsen, M., and Monteiro, E. (2021). Using digital platforms to promote a service-oriented logic in public sector organizations: A case study. *Proceedings of the 54th Hawaii International Conference on System Sciences*, 2193–2202. Retrieved from https://hdl.handle.net/10125/70882

WHO. (2021a). Vaccines and immunization: What is vaccination? Retrieved from https://www.who.int/news-room/q-a-detail/vaccines-and-immunization-what-is-vaccination

WHO. (2021b). Immunization coverage. Retrieved from https://www.who.int/news-room/fact-sheets/detail/immunization-coverage