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Exploring Public Sector Managers' Motivations in Deploying Decision Support Tools to the Street Level

Abstract

This article explores the motivations of public sector managers in developing and deploying digital tools to support decision making at the front lines of public service delivery. Two digital decision support tools created by New Zealand's Ministry of Social Development are presented as a case study, drawing primarily on semi-structured interviews with senior managers. Results provide empirical evidence that public sector managers deploy digital tools not to curtail, but to support street-level bureaucrats' discretion. Managers appear to be motivated not by increased control over front-line staff, but, rather, by improving clients' experience of the system and decreasing long-term service costs.

Keywords digital government, automated decision making, street-level bureaucracy, algorithms

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Determining who gets what from government is the fundamental purpose of politics. Winners are rewarded with control of whole bureaucracies to fulfil their vision of how people should receive the services, benefits or sanctions to which government deems they are entitled. But decisions about who gets what are not made in parliamentary chambers; counterintuitively, they are made on the streets by some of the most junior public servants: street-level bureaucrats.

Street-level bureaucrats are no longer the only interface between governments and their people. Technological change has 'major impacts on budgets, jobs, accountability, transparency, efficiency, effectiveness, and relations with citizens' (Pollitt, 2010, p.32). However, government technologies remain a neglected aspect of public administration scholarship, especially at the street level, where digital tools are increasingly used to support decision making (Buffat, 2015; Reddick, 2005).

Table 1: Illustrative arguments for the impact of digital tools on street-level bureaucrats

	Enablement thesis	Curtailment thesis
Digital tools may positively influence discretion by…	providing data to support decision making	introducing rules that increase the grey area where bureaucrats can apply discretion
	automating mundane, routine decisions to 'free up' discretion	providing managers with remote oversight capabilities, reducing direct supervision
Digital tools may negatively influence discretion by…	breeding reliance, thereby degrading bureaucrats' ability to apply discretion without digital tools	prescribing decisions previously made by bureaucratic judgement
	tracking outputs of decision making, leading to self-enforcement	explicitly tracking bureaucrats' compliance with rules
		disintermediating bureaucrats' interactions with clients
		empowering clients to influence their own outcomes

Digital tools do not magically appear on the front lines: they are planned, developed and implemented by managers. Yet little is known about managers' specific motivations to deploy street-level digital tools. This research asks: what motivates the creation, implementation and use of decision support tools for front-line decision-making processes?

New Zealand's Ministry of Social Development (MSD) is presented as a case study, drawing specifically on two decision-support tools. Drawing on qualitative research consisting primarily of elite interviews, this research suggests that public sector managers deploy digital tools to support, not curtail, street-level bureaucrats' discretion, with the dual goals of decreasing long-term service costs and improving client well-being.

Theoretical context

Bureaucracy and public administration theory

Max Weber's early definition of bureaucracies – organisations governed by hierarchy, rules, documentation and professional management – allowed for autonomy and discretion only at the top of hierarchies. Weber anticipated 'the reduction of modern office management to rules', suggesting that managers would limit autonomy and discretion at lower levels by codifying their preferences into standard procedures (Weber, 1978 [1922], p.956).

In 1980, Michael Lipsky's street-level bureaucracy theory upended the assumption of managerial control. Lipsky argued that public policy was an abstraction until actualised by front-line workers, who held far more decision-making power than Weber could have imagined:

> Although they are normally regarded as low-level employees, the actions of most public service workers actually constitute the services 'delivered' by government. Moreover, when taken together the individual decisions of these workers become, or add up to, agency policy. (Lipsky, 1980, p.401)

Furthermore, Lipsky observed a principal–agent problem: street-level bureaucrats' professional motivations, priorities and objectives do not necessarily match their managers'. Street-level bureaucracy theory suggested that rules and procedures should extend down to street level, lest 'tiny oligarchs' on the front lines undermine managerial objectives (Bovens and Zouridis, 2002, p.175).

The introduction of rules, procedures and incentives to prescribe and monitor public servants' behaviour was a central tenet of reforms carried out across many countries from the 1980s onwards, now collectively known as New Public Management (NPM) (see Dunleavy et al., 2006b; Henman, 2010, p.118; Hood, 1995).

The effect of digital tools on public administration

In modern bureaucracies, the collection and analysis of operational data allows for the development of data-driven digital tools to support policy implementation (Fountain, 2001). Digital tools have a range of uses (see Snellen, 2005), including providing managers with the capability to encode their preferences into decision-making tools: a means of direct influence over street-level bureaucrats (Pollitt, 2010, pp.34–45).

Digital decision support tools are variously hypothesised to have enabling and curtailing effects on street-level bureaucratic discretion (Table 1). The enablement thesis holds that digital tools can support bureaucrats' exercise of discretion (see Buffat, 2015; Bovens and Zouridis, 2002). In contrast, the curtailment thesis suggests that digital tools degrade or remove elements of street-level bureaucratic discretion (Snellen and van de Donk, 1998; Bovens and Zouridis, 2002).

Digital tools are often viewed as neutral technical objects, the unglamorous administrative elements of policy implementation (Pollitt, 2010). Yet digital tools are not neutral: they result from larger socio-organisational processes, against a milieu of organisational beliefs, goals and power dynamics. Though little is known about the motivations that drive the creation, implementation and use of digital tools at the front lines, the public sector managers who develop and implement such tools surely have specific intentions vis-à-vis street-level bureaucrats.

Public administration scholars have not achieved consensus on how to characterise the use of digital tools in the years following the New Public Management reforms. Two leading theories are used in this research as the basis for hypotheses: neo-Weberian statism (Pollitt and Bouckaert, 2017) and digital-era governance (Dunleavy et al., 2006a; Margetts and Dunleavy, 2013). Neo-Weberian statism re-asserts the importance of many traditional elements of Weberian bureaucracy – rules, hierarchy and documentation – while also using

technology to involve citizens in decision making (Drechsler, 2005; Pollitt and Bouckaert, 2017, pp.121–2). Digital-era governance suggests that technology is used to support the post-NPM reintegration of government departments and holistic service delivery to clients (Dunleavy et al., 2006a).

New Zealand policy context

This research uses New Zealand's Ministry of Social Development as a case study and examines managers' motivations in deploying two digital tools to the front lines. Following the global financial crisis, demand for the ministry's core welfare services more than doubled. In response, the newly elected fifth National government reshaped MSD's business rules to ensure that the system could cope with increased demand, and in 2010 the minister for social development, Paula Bennett, created a Welfare Working Group to target the 'unsustainable' fiscal, social and economic costs of welfare (Bennett, 2010; Garlick, 2012, p.279).

The working group's report, released in 2011, most notably recommended adopting an actuarial approach to measure forward liability. Minister of Finance Bill English spearheaded a new 'social investment' approach, premised on the idea that early interventions could reduce forward liability in the welfare budget (Boston and Gill, 2017).

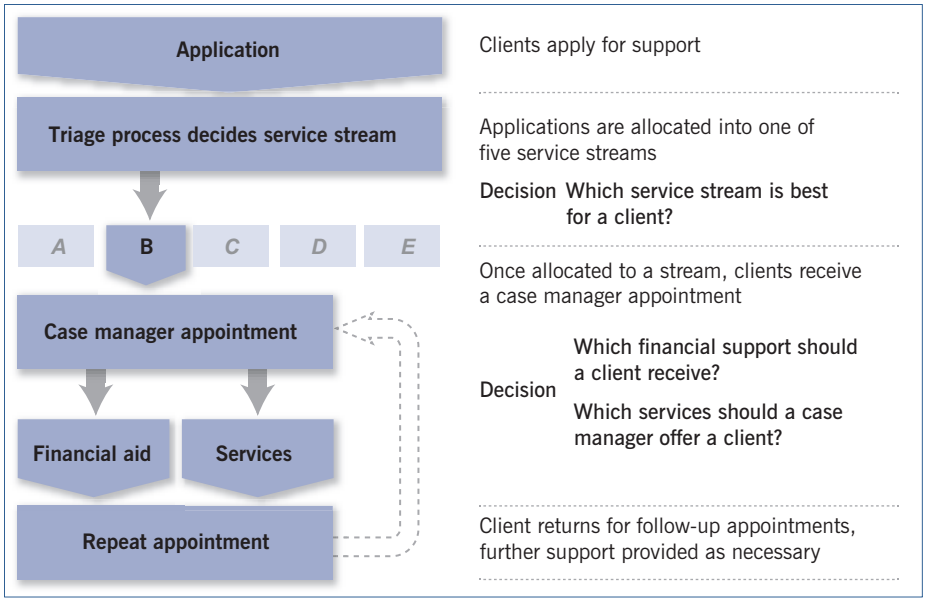
As social investment took shape, MSD also digitised various transactional processes to achieve operational cost savings and improve the client experience. The Simplification programme, launched in 2012, created client- and staff-facing tools to support appointment booking and routine data entry tasks (Office of the Auditor-General, 2015, pp.9–10).

The sixth Labour government, elected in late 2017, continued key elements of social investment under the name 'investing for social wellbeing' (Sepuloni, 2018). The approach remains a key input into decision making within MSD and other government agencies (personal interview, 2018).

Digital decision support tools used by MSD

This article focuses on two specific tools developed by MSD: the client service matching (CSM) tool and the menu of services (MoS). Each simplifies one part of the service delivery process (Figure 1).

Figure 1: Illustrative diagram of the client journey



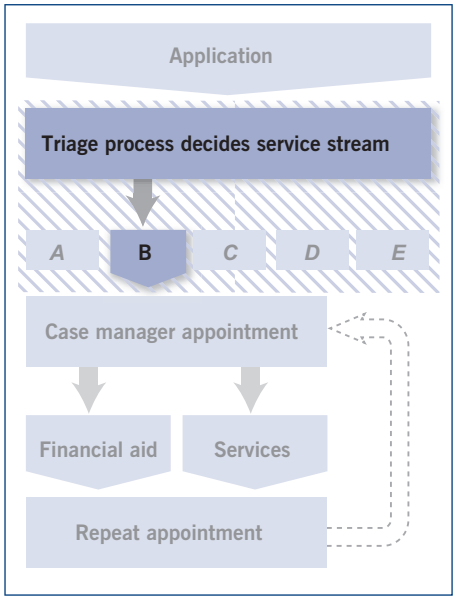
Client service matching tool

The CSM tool removes human decision making from the triage process by automating the allocation of clients to case manager appointments.

Since 2012, applicants are sorted into five service streams. The lowest service stream, general case management, is for clients unlikely to require targeted support; higher streams are for clients requiring active case management support to varying degrees of intensity. An automated triage process, widely considered impossible for manual review, allocates clients to case management streams appropriate for the level of support required: 'We had 250,000 clients, some thousands coming on the books each month … the sheer volume of that problem means you can't necessarily have a person sitting there doing that' (personal interview, 2018).

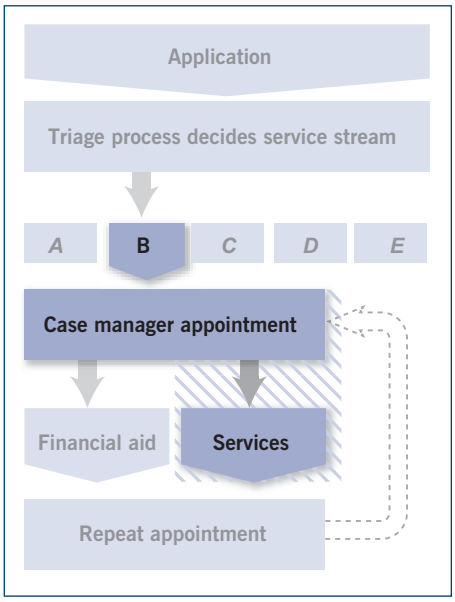
The CSM tool was implemented in 2017 to make the triage allocation process 'smarter' through harnessing predictive risk modelling. First, business rules determine which stream is suited to the client, given their characteristics. Next, the tool applies two models to prioritise clients within each stream. A service effectiveness model compares each client's data with aggregate outcome data from similar clients to estimate the likelihood of a positive outcome from each stream. A 'positive outcome' is where 'a client is more independent and needs less support' (personal interview, 2018). For one service, where there isn't enough data to create a service effectiveness model, a second model is used: the liability estimator tool (LET). The liability estimator tool predicts the lifetime future benefit cost of a client. Clients with higher expected lifetime future costs are prioritised for this intensive service stream.

Figure 2. Role of the CSM tool in the client journey



The number of clients eligible for a given case management stream sometimes exceeds allocation capacity. Allocations to each service stream are made according to the models' prioritisation, and where there is not enough capacity in a given stream,

Figure 3. Role of the MoS in the client journey



clients will be considered for other streams. This process repeats weekly, so if space becomes available in a stream where a client is expected to have a better outcome they may then move to that stream. Case managers are responsible for booking appointments and ongoing client interaction once clients are assigned to a stream.

Crucially, CSM decisions are not binding: case managers may exercise their discretion to recommend clients to higher or lower streams for future appointments.

Menu of services

Case managers, once allocated clients, assess their financial and service entitlements. Financial aid is determined at case managers' discretion without direct input from digital decision support tools. The MoS tool, launched in July 2018 at several trial sites, supports case managers to make decisions about which services to offer clients.

Case managers recommend services and programmes to support clients' return to work, such as curriculum vitae assistance or career counselling. These services are often provided by non-government third party organisations, sometimes contracted by MSD. Service availability varies by region, and each service has distinct eligibility requirements and contracted capacities.

Before the MoS tool, case managers were expected to be familiar with all services on offer at their site, including their eligibility criteria. Many relied on heuristic shortcuts to identify appropriate services for clients, creating suboptimal outcomes: 'Some sites have a long list of services, and case managers will be familiar with only a few of those services, which they know always have capacity, and will always refer clients to those services' (personal interview, 2018). The MoS tool is intended to close this knowledge gap by cross-referencing MSD client databases with service providers' eligibility rules to create a shortlist of potential services for the case manager via their screen. The case manager can use the list, in consultation with the client, to decide which services to refer a client to. No additional data collection is required, as information is pulled directly from client records.

Research question and hypotheses

Bureaucracies can be thought of as decision factories (Jorna and Wagenaar, 2007, p.191). Two research questions are used in this article to explore what motivates public sector managers to change the assembly line. The first asks: What motivates the creation, implementation and use of decision support tools for front-line decision-making processes?

Three hypotheses are tested against research question one, each rooted in the history of modernisation reforms. The first hypothesis tests whether managers' motivations are consistent with the principles of New Public Management:

Hypothesis 1a: Managers develop decision support tools to save costs and increase efficiency

New Zealand's NPM reforms were 'unusual in their comprehensiveness' (Politt and Bouckaert, 2017, pp.318–24). Although some scholars have declared NPM 'dead', rearguard actions persist, and managers motivated by NPM principles may deploy digital tools to save operational costs, improve cost-effectiveness or measure performance (Dunleavy et al., 2006a, 2006b; Margetts and Dunleavy, 2013). Evidence for hypothesis 1a would show managers, spurred by efficiency goals, leveraging digital tools to create cost savings or improve cost efficiency.

The second hypothesis tests whether managers' motivations are consistent with the principles of neo-Weberian statism:

Hypothesis 1b: Managers develop decision support tools to increase the capacity for auditing and managing front-line behaviour

Managers may use digital tools to assert hierarchy, codify rules and document front-line decision making. Evidence for hypothesis 1b would show managers deploying digital decision support tools to capture data for improving transparency of street-level behaviour, both upwards (to managers) and outwards (to clients and civil society).

Managers may also use digital tools to reorient services around clients' needs. The third hypothesis tests whether managers' motivations are consistent with principles of digital-era governance:

Hypothesis 1c: Managers develop decision support tools to reintegrate services and improve the service experience for clients

Evidence for hypothesis 1c would show managers expressing a desire to use technology to improve clients' experience of government, and could appear as tools explicitly designed to reintegrate previously fragmented elements of government, or the use of well-being or needs-based frameworks to measure success.

The second research question asks: How do managers intend to influence street-level bureaucratic discretion through the implementation of decision support tools? This question is evaluated without a hypothesis. I will use themes relating to the enablement and curtailment hypotheses as starting points for exploration (see Table 1; Buffat, 2015).

Results

Results for each research question draw on 17 original, semi-structured elite interviews with 13 senior managers, primarily from MSD, conducted between January and August 2018. One limitation of elite interviews is that participants may not honestly appraise their own motivations. To mitigate this, participant anonymity was preserved, and interview responses were triangulated using secondary documentation, including government press releases, departmental

documents and media reports, collected via online search and recommendation from participants.

Research question one: What motivates the creation, implementation and use of decision support tools for front-line decision-making processes?

Two primary managerial motivations emerged for deploying digital decision support tools: to save long-term service costs, consistent with hypothesis 1a, and to improve the client experience, consistent with hypothesis 1c. One participant summarised these motivations thus: 'It's always about efficiency, right? But in the heart of anything done in our business, particularly in the operational sense, it's always about clients' (personal interview, 2018).

Hypothesis 1a

Before interpreting MSD managers' motivations towards cost savings, it is important to delineate *operational* costs (costs associated with running day-to-day functions of the ministry) from *service* costs (costs associated with providing support to clients). Operational costs comprise approximately 5% of total MSD annual expenditure, over which managers have a large degree of control as – subject to political oversight – they can amend budgets, make investment decisions and adjust operations (Garlick, 2012, p.280). Service costs primarily include entitlements and claims and comprise the remaining 95% of expenditure. Managers have limited control over service costs in the short term, but can exert some control in the medium term by making system adjustments to influence claimant behaviour.

In the recent past, MSD has used digital tools to reduce operational costs by automating simple, non-discretionary routine activities (for example, the Simplification programme started in 2012). However, operational efficiency improvements were reinvested into improving service delivery rather than realised as cost savings: 'the Ministry has identified significant opportunities to gain further administrative efficiencies so staff can spend more time with clients who need more help' (Office of the Auditor-General, 2015, p.30).

There is strong evidence that long-term service cost savings motivate the deployment of digital decision support tools. This motivation first emerged with the social investment approach in 2011, when forward fiscal liability dominated early conceptions of social investment (Boston and Gill, 2017, pp.18–23; Chapman, 2012). As the social investment approach developed through 2014–15, its focus expanded from reducing long-term service costs to include improving client well-being (Boston and Gill, 2017, pp.18–23).

Two primary managerial motivations emerged for deploying digital decision support tools: to save long-term service costs … and to improve the client experience …

Managers in this study frequently cited reductions in service costs – often framed as reduction in forward fiscal liability – as a motivating factor for introducing digital decision support tools. For example, the CSM tool's liability estimator prioritises clients by estimating their lifetime future liability, and places clients with higher liabilities in more intensive case management streams (personal interview, 2018). More intensive case management streams are intended to reduce clients' forward fiscal liability – in other words, to reduce service costs.

Though the political origins of the social investment approach centred on reducing welfare liability, MSD managers commonly claimed that service cost savings were not the ultimate goal, but rather the only available client outcome measure. MSD's predictive risk models generally require one outcome variable, and cost is one metric captured consistently across the system. Although some scholars challenge the suitability of cost as a proxy for well-being (see, for example, Chapple, 2017), almost all participants shared some version of this view: 'It was never about spend. However at the outset of [social investment] a few years ago, the most available indicator to measure the course of someone's life was to look at the fiscal impacts to government'; '[Cost] was more about a pragmatic approach of "what can we measure?" rather than combining 28 different indicators to come up with [a well-being measure]'; 'Reduction in future lifetime liability is the single number used right now. You could do it differently in future, and we no doubt will' (personal interviews, 2018).

The dual goals of saving service costs and improving client outcomes remain closely linked. Bill English's statement that 'what works for communities works for the Government's books' (2015) typifies the dilemma: it claims a link between cost savings for government and improved outcomes for communities but does not make clear whether communities or government accounts are the primary concern. MSD managers cited both goals interchangeably in interviews.

The use of service costs as a proxy for well-being has two interpretations: first, that MSD has to some extent internalised normative prescriptions of less cost, more efficiency as *prima facie* good; second – and more charitably – that managers are constrained in the pursuit of alternative motivations by system settings enacted during past reforms. For example, even if improving client well-being is the primary motivation, actions are limited by data systems that capture – per the NPM-era Public Finance Act 1989 – cost rather than outcomes data.

Hypothesis 1b

Though digital tools offer managers the capability to audit or even directly manage street-level bureaucratic behaviour, MSD

managers did not cite this as a primary motivation, and hypothesis 1b is not supported. As one manager described, 'our approach [is not] we know what you're doing, we're going to monitor you – it's more, you have skills that can be augmented by analytic techniques that you wouldn't be able to use in any other way' (personal interview, 2018).

Even when digital tools provide the technical capability to assert hierarchies of bureaucratic control, these findings suggest that MSD managers do not intend to exercise these capabilities. Instead, managers deploy digital tools to capture data for informing feedback loops that aid performance management of the welfare system. Managers see administrative data as a potential input for measuring progress towards specific policy or organisational goals, rather than staff performance management.

Hypothesis 1c

The deployment of decision support tools is motivated by a long-standing intent to use digital tools to improve the service experience for clients. While the CSM and MoS tools do not directly reintegrate services, they do help street-level bureaucrats overcome the difficulties presented by a service provider landscape fragmented by NPM reforms: 'Previously, case managers were under pressure to completely understand clients' needs, to completely understand the services on offer, and to match them. This tool says, here are all the services, your job is to put people in those services' (personal interview, 2018).

The MoS tool makes clients less vulnerable to one downside of discretion, the shortcomings of human memory. Managers believe the tool will improve clients' experiences by overcoming street-level bureaucrats' blind spots and biases, ensuring clients are recommended to services they are eligible for. '[The tool] gives the best chance the most appropriate service is being offered', one participant said (personal interview, 2018). Managers also believe digital tools will improve the client experience indirectly by ensuring that case managers spend more time on direct client support, rather than administrative processing.

Research question two: How do managers intend to influence street-level bureaucratic discretion through the implementation of decision support tools?

Managers intend for digital tools to enable street-level discretion. The CSM and MoS tools enhance discretion by providing street-level bureaucrats with improved information, and ensuring that case managers apply discretion to tasks with a greater direct impact on client outcomes. 'We believe [digital tools] would be additional to any other information that service delivery practitioners, social workers, would have available to them. We would not expect the blind application of any information that our tools might generate, so that social workers might be constrained without human decision making involved'; 'We know that people can make better decisions [but] they are stretched for time, there's a lot of data that may be useful but is simply impractical, or impossible to get in the moment'; 'We want to provide evidentially informed information so that suitably skilled and experienced people at the coalface can make better informed decisions' (personal interviews, 2018).

The focus on supporting street-level discretion and avoidance of binding algorithmic decision making appears consistent across New Zealand government agencies: 'very few agencies use automated execution that doesn't have human decision making', one participant stated (personal interview, 2018). This is consistent with the findings of Statistics New Zealand's recent *Algorithm Assessment Report,* which found that 'humans, rather than computers, review and decide on almost all significant decisions made by government agencies' (StatsNZ, 2018, p.4).

Implications

When considering the potential impact of digital tools on how public services are delivered, there are relatively few empirical studies of how digital tools affect street-level discretion (Buffat, 2015). This research provides an empirical example of welfare system managers deploying digital tools with the intent of positively supporting discretion, building on existing empirical examples from Norway and Denmark (see Hansen, Lundberg and Syltevik, 2018; Høybye-Mortensen, 2013).

The increasing complexity and profusion of digital tools lends greater urgency to understanding their effects. Future research should develop deeper understandings of how digital decision support tools affect, and can be used to enhance, street-level discretion. Two suggestions follow.

First, future research should capture more empirical examples of digital decision support tools being used on the front lines – particularly recent examples of complex, vertically integrated tools rather than simple transactional tools (Buffat, 2015). Research should triangulate perspectives across public systems, and consider longer timescales, including at different stages of policy formulation (Riccucci, 2005, p.5). Future research could also consider how the deluge of front-line data generated by digital tools will change bureaucracies.

Second, future research should define new taxonomies of digital decision support tools. A possible reason for scholarly disagreement on how digital tools influence discretion is the lack of nuance in how digital tools are described. When considered *en masse,* digital tools are a blunt instrument for empirical enquiry. Little research considers the relationship between 'regulation, discretion and impact

Table 2: Potential considerations for a decision support tool typology

Request	What triggers a decision request?
Data inputs	Does the tool rely on existing data or new data? Is human data input possible?
Processing logic	What method is used? Does processing logic transform data inputs? If so, how? How does processing logic differ from current decision criteria?
Outputs	Do the outputs provide information to decision makers, recommend options to decision makers, or directly inform decisions?
Decision	Do decision rights reside with humans, or the tool? If the tool, are the tool's decisions final?

from different kinds of tools' (Høybye-Mortensen, 2013, p.601; Meyers and Vorsanger, 2017). This limits the potential for systematic examination of where and how digital tools are used.

Understanding why digital tools are deployed is crucial to evaluating their potential impact on street-level practice. Understanding only a tool's technical features is not sufficient. A more useful typology for digital decision support tools may consider the points provided in Table 2.

The relationship between outputs and decisions is perhaps most important: does a tool suggest information, prescribe or disintermediate street-level decision making? Consideration of the relationship between outputs and decisions should inform the level of scrutiny new tools receive, to reflect the reality that decision-making technologies are not objective artefacts created in vacuums.

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