**Improvisation in Public Administration: An Exploration of Implementation Environments in a Developing Country**

**Abstract**

Public managers face issues of uncertainty and managing these requires creative out-of-the-box thinking. Though public management in developing countries is oriented toward an action imperative, dealing with situations in real-time, the improvisation phenomenon has received little scholarly attention in public administration and management. This knowledge gap leads to the study’s research question: how do different implementation environments influence improvisation in public service organizations? Addressing this research question, the article draws on survey questionnaire data generated from public managers (n = 208) across different public service organizations in Brazil. Adopting a configurational methodology, the study reveals four implementation environments each with a specific set of characteristics and, through additional analysis, contrasting service performance levels. Key contributions include new knowledge on the environment conditions behind improvisation’ utility, a shift beyond Western developed country contexts to non-traditional contexts, and the deployment of a configurational approach to examine complex public management phenomena.

**Keywords:** Improvisation, cluster analysis, decision-making, configurational approach, developing countries.

**Introduction**

Public managers often face uncertainty surrounding public sector goals and performance criteria, overlapping and random events, a range of priorities, the need to ‘firefight’, and work fraught with ambiguities, paradoxes, and time sensitivities (Johnson and Dobni, 2016). Moreover, these conditions are magnified in developing countries where public sector working conditions are more uncertain than in developed contexts, a result of the politicized nature of bureaucracy, the lack of job security, the limited formalization of working procedures, the lack of managerial guidance and training, scarcity of basic resources, social inequality and poverty (Campos and Peeters, 2022). Consequently, traditional planning processes that involve a logical, sequential, analytic and deliberate set of procedures can, thus, be problematic. This may be due to an inability to form long-range plans and a difficulty in implementing such plans (Johnsen, 2022).

Developing country governments are resource constrained and rather than adhering to a master blueprint, iterative experimentation, adaptation, and learning are abound (Brinkerhoff and Brinkerhoff, 2015). In such country contexts, public service workers face multiple local emergent concerns and managing these issues often requires creative out of the box thinking (Masood and Nisar, 2022). Moreover, management is oriented toward an action imperative, often in the absence of clear formalized instructions or policy guidelines, where managers deal with situations in real-time and in novel or creative ways (Campos and Peeters, 2022). Despite these observations, extant research is limited on improvisation and on-the-feet thinking that occurs in public service delivery and especially in resource scarce settings (Masood and Nisar, 2022).

Reasons for this lack of attention may stem from the negative connotation that improvisation has unfairly gained (Capano and Toth, 2023) resulting in a knowledge chasm regarding how improvisation materializes. It is well recognized that managers’ capacity to process the large volume of complex information and demands they face is constrained by bounded rationality (e.g., Cyert & March, 1963). Thus, often they have to rely on heuristics and mental shortcuts (George, 2023). Indeed, for many public service organizations “even the most carefully devised plans may have to be abandoned or modified in the face of unanticipated changes or challenges, and new actions improvised on the spur of the moment” (Sharkansky and Zalmanovitch, 2000: 322).

A commonly observed practice in the mainstream management literature, improvisation appears to have value for public managers especially when one considers that these managers face many of the same challenges as their private sector counterparts (e.g. a need for decision speed and live-action) (Johnson and Dobni, 2016). Improvisation is a deliberate act (Hadida et al., 2015; Perry 1991) that can be taught and developed (Kendra and Wachtendorf, 2006). For the purposes of this study, improvisation is defined as the convergence of design and execution of novel action (e.g. Moorman and Miner, 1998; Miner et al., 2001a,b). Convergence here refers to both a temporal and a substantive convergence of action creation and implementation (Baker et al., 2001); with convergence considered to be “the most frequently articulated element of improvisation described across most studies” (Fultz and Hmieleski, 2021: 3).

Subsequently, more research showing how different “implementation environments” affect improvisation is called for (e.g. Masood and Nisar, 2022). This leads to the study’s research question: How do different implementation environments influence improvisation in public service organizations? In addressing this question, we seek to empirically determine implementation environments that are associated with higher and lower levels of improvisation across a range of public service organizations in a developing country. To do so, we draw on mail survey data from 208 public managers across a range of public services in Brazil.

The study reveals 4 implementation environments through cluster analysis that are associated with higher and lesser degrees of improvisation. Furthermore, additional analysis uncovers differing performance effects across the 4 environments for public service organizations. Through these findings, we make several contributions to public administration and management theory and practice. First, we build on the need to establish the implementation environment conditions behind improvisation utility in public service organizations. A need first highlighted by Sharkansky and Zalmanovitch (2000) and recently called for by Masood and Nisar (2022). Second, Hodgkinson et al. (2016) highlight how improvisation theory is biased towards Western developed country contexts, with few studies of its materialization in non-traditional contexts. This bias has also been observed in public management studies as well as the neglect of the South American continent in general and specialized business and management studies (Mellahi and Harris, 2016). We directly address these weaknesses by focusing on service settings in Brazil. Third, we make an empirical contribution to the field through the adoption of cluster analysis to reveal a series of implementation environments and their relationship to improvisation. In so doing, we build on the recent adoption of configurational approaches to examine public management phenomena (e.g. Andrews et al., 2019).

**Theoretical Background**

*Decision theory*

Decision theory is a dominant paradigm in organization and management studies, which can be traced back to the 1960s (e.g. Jeffrey, 1965), and viewed from a normative perspective (how we should reason) or a descriptive perspective (how we actually reason) (Nemkova et al., 2012); though we note the two cannot be fully separated (Bradley, 2017). The former adopts causation logic taking a particular effect as given with a focus on selecting means to create that effect (Sarasvathy, 2001). Thus, decision-making is a rational outcome of formalized planning and control (incl. systematic collection and analysis of information, option development, a detailed choice process) (Mintzberg and Lampel, 1999). The traditional rational-design model sits here and establishes a clear temporal gap between design and execution (e.g. 5-year planning cycle). That said, there are numerous approaches under the normative decision theory that reduce the temporal gap between design and execution, including ‘muddling-through’ (Lindbolm, 1968), ‘logical incrementalism’ (Quinn, 1980), ‘planned emergence’ (Grant, 2003), ‘planning comprehensiveness (Thomas and Ambrosini, 2015), ‘rolling planning’, ‘road-mapping’, ‘sprint-planning’ and ‘blitzscaling’ (for a wider discussion of adaptive forms of planning in the public management literature see Vandersmissen and George, 2023). However, a temporal gap between design and execution is still present (albeit a smaller gap) under such normative decision models.

The descriptive perspective, in contrast, is underpinned by the logic of effectuation rather than causation (Baker et al., 2003) such that whilst the means are controllable, outcomes from said means are uncertain (Sarasvathy, 2001). An effectual decision-making logic recognizes the bounded rationality of individual actors that constrains optimal decision-making (e.g., Cyert and March, 1963), and subsequently denotes decision-making as a flexible and adaptive process (Reymen et al., 2015). Though this latter perspective is often considered valuable in times of uncertainty, uncertainty should not be viewed here in binary terms but rather with recognition that the severity and duration of uncertainty vary (Courtney et al., 1997). Organizational improvisation is one approach under the descriptive decision theory (e.g. Fenik et al., 2024), which enables decision-making in time pressured situations, where limited information may be available and the situation is turbulent and/or uncertain (Eisenhardt, 1997; Hughes et al., 2020; Miner et al., 2001a). Improvisation is not only an apt approach for uncertainty attached to crises or emergency management (e.g. Halachmi, 1980; Hughes et al., 2020; Kendra and Wachtendorf, 2006; Ravazzi, 2024) but is also just as relevant to the uncertainty faced by public managers in their organizational roles; a situation heightened for public managers in developing countries (Campos and Peeters, 2022).

*Organizational improvisation and public management*

Improvisation as a public sector phenomenon was first introduced by Halachmi in 1980 in the context of emergency management, which predates its emergence in mainstream management (e.g. Crossan et al., 1996). Halachmi (1980: 98) defines improvisation as “a conscious effort to deviate from past practices in order to use situational elements in closing up performance gaps that commonly appear after a sudden change in the external environment”, consistent with the earliest conceptualizations of improvisation in the management field (Eisenhardt, 1997).

Early writings and conceptualization of improvisation in the management literature drew on the Arts including jazz improvisation and improvisational theatre (Crossan, 1998; Eisenhardt, 1997; Perry, 1991; Vera and Crossan, 2004, 2005), and this body of work has been valuable in revealing a range of antecedents, influencing factors, and outcomes (see Kamoche et al., 2003). However, there is recognition that reliance on a single-metaphor may over-simplify the phenomenon at hand. Attention has since focused on an organizational conceptualization of improvisation in workplace settings; as aptly surmised by Kamoche et al. (2003):

In spite of the contribution that the analysis of jazz improvisation has made to our understanding of organizations, we urge caution in relying on a single analytical lens to develop theory, whether this be a metaphor or any other construct applied metaphorically. (p. 2032).

The jazz improvisation metaphor continues to be used effectively in certain applications, however, when adopting an organizational-lens it is evident that improvisation is often considered alongside other organizational constructs such as bricolage, adaptation, creativity and innovation (Moorman and Miner, 1998; Miner et al. 2001a,b; Baker et al., 2003). Though these related constructs have become quite commonplace in public administration and management studies, improvisation remains an often-overlooked phenomenon.

For instance, the application of bricolage to public sector settings has gained significant attention and is recognized as a critical feature of public sector work (Ferguson et al., 2013). An inherent feature of public management is continuous experimentation and interpretation of rules, hence, public managers are often referred to as “bricoleurs” (de Mattos Donadelli and Scott, 2025). This is a curious observation given that bricolage often occurs under improvisation (Weick, 1998). Consequently, we see many instances, reports and observations of improvisation in public management, albeit often indirectly. In public administration and management studies, bricolage is often conceptualized as combining known features in new ways (Barzeley and Thompson, 2010), consistent with the original definition of making-do with the means or resources at hand (Levi-Strauss, 1966). Taking an organizational perspective, Barbera et al. (2024) state that bricolage specifically refers to organizational abilities to improvise and a culture that encourages such improvisation.

Elected politicians, public managers, and field workers, who are steeped in bureaucratic administration, are observed to all engage in this process under turbulent circumstances as well as in their day-to-day management (outside of crises) (Carstensen et al., 2023). Indeed, Masood and Nisar (2022:256) contend that frontline service workers—street-level bureaucrats—“use creativity and improvisation to find contextual solutions for emergent local policy problems in response to scarcity”, though understanding of how this occurs is limited. Nevertheless, it is recognized that public managers are socialized to *act* rather than reflect, equipping them for live-action, putting out fires, and responding to requests with a ‘quick response’ ethos (Johnson and Dobni, 2016).

Some suggest that such practices require institutions to provide ‘agents’ with the autonomy to be action-oriented, allowing decisions to emerge (Carstensen et al., 2023). Others point to environmental conditions like resource scarcity as a driver of bricolage, creativity, and improvisation to solve emergent problems (Masood and Nisar, 2022). What is clear, is that for managers directly involved in service delivery, their improvisation practices go beyond discretionary implementation of a policy or minor policy divergence (Campos and Peeters, 2022); with a focus on delivery rather than analyzing, planning, or creating new policies (Masood and Nisar, 2022).

*Improvisation and implementation environments*

Despite evidence from the extant literature that improvisation is common in public management practice, there appears to have been no empirical exploration of its implementation environments (e.g. Masood and Nisar, 2022). In response to this gap in knowledge, we integrate (public) management literatures to provide an overview of the conditions likely to combine and shape improvisation propensity, or conversely, reduce the propensity of improvisation in public service organizations. We draw on the Improvisation Readiness Index developed by Hughes et al. (2020) to this end. Though Hughes et al. (2020) demonstrate the value of an organization’s improvisation readiness to confront times of crisis, improvisation and the index is not context (i.e. crisis) specific. Indeed, as the authors highlight: “The breadth of [improvisation’s] treatment across these fields is testament to the vital role improvisation is perceived to play in management practice.” (p. 487).

**Research proposition: Implementation environments**

Hughes et al. (2020: 498) outline five critical imperatives that present a range of factors that are implicitly and/or explicitly discussed as enablers of improvisation in the extant literature and comprise: the resource fluidity imperative, the strategic leadership imperative, the strategic posture imperative, the organizational resilience imperative, the innovative proclivity imperative. Below we consider each imperative in turn and situate each within the public sector. We anticipate that different configurations of these imperatives will create different implementation environments for improvisation.

*The resource fluidity imperative*

Resource fluidity concerns the accessibility of strategic resources for (re)deployment and the prevalence of agile and flexible decision practices (Hughes et al., 2020). Public organizations’ resource fluidity, real-time mobilization, and quick (re)deployment of strategic resources are support features deemed necessary for improvisation (Howlett et al., 2018). At the organizational level, public organizations must stretch existing resources (e.g. Sharkansky and Zalmanovitch, 2000) especially in resource scarce environments to think outside-the-box, which has been observed as essential to public management practice in developing countries (e.g. Masood and Nisar, 2022). While the availability of resources is an important consideration, “a wealth of resources is not needed for strategic improvisation to occur, but, by the same token, a greater abundance and ability to *[re]deploy* capital and capability, by definition, increases one's ability to exercise strategic improvisation” (Hughes et al., 2020: 490 *[emphasis added]*).

Therefore, the ability to quickly (re)configure and (re)deploy the existing resource base plays a pivotal role for improvisation occurrence but is dependent on organizational support to this end. Indeed, “an internal organizational climate that accepts the unconventional and decisiveness provides a fertile ground for strategic improvisation to occur” (Hughes et al., 2020: 490).

*The strategic leadership imperative*

Strategic leadership is focused on the degree of confidence in acting under uncertainty and how strategic decisions are made (Hughes et al., 2020). Confidence refers to one’s own judgment about their capability to effectively respond to a given situation to produce desired attainments (Bandura, 1989). For instance, when demands of a situation exceed the individual’s capabilities, they resort to avoidance behaviors, whereas, when they feel capable, they actively engage with the situation (e.g. Hultman et al., 2022). Confidence in one’s capabilities is associated with improvised decision-making (e.g. Akinci and Sadler-Smith, 2012; Hultman et al., 2022), possibly because improvisation is often shrouded by uncertainty, which can be unsettling and disruptive. If an individual is not confident in their abilities to cope with such situations, they are less likely to make real-time, action-oriented decisions, i.e. they are less likely to improvise. As evidence to this, Sharkansky and Zalmonovitch (2000: 327) contend that “improvisation seems to be favored by persons…who are ready to take the risks entailed in doing so or, alternatively, who are not fully aware of the risks”. The propensity to take risks is directly related to the individual’s self-efficacy; those who are risk averse would resort to avoidance behaviors while those who feel comfortable with the level of uncertainty are likely to engage in improvisation. Since public managers are socialized to ‘act’ (e.g. Johnson and Dobni, 2016), a high level of self-efficacy or confidence is expected to enable decision-makers to trust their hunches and to consequently act, without comprehensive analysis of risks.

*The strategic posture imperative*

Strategic posture concerns the role of clarity in governing action, which is stimulated by knowledge and information, and who has input into strategic decision-making (Hughes et al., 2020). Improvisation both departs from existing knowledge and builds on that same knowledge (Cunha et al., 1999). Information access can enable decisions to be taken in real-time through intuitive skills that “enables individuals to cut rapidly and effortlessly through large quantities of information” (Hodgkinson and Sadler-Smith, 2018: 475). Knowledge in this context is continuous and circular, resulting in out-of-the-box, novel, and creative thinking which characterize improvisation (Hughes et al., 2020).

As public managers progress through hierarchical levels, both throughout their careers and within organizations, they gain vital professional experience. The experience gained typically translates to the level of management individuals are employed at, such that, greater professional experience is closely matched to higher levels of management roles. The improvisation literature has identified professional experience as an antecedent of improvisation. The logic here is that experience gained allows for quicker problem diagnosis and response (Nemkova et al., 2012). Lower-level managers during policy implementation may rely on improvised decisions to overcome events or surprises, or in other words, demonstrate an “ability to alter and adapt policies on the fly” (Howlett et al., 2018: 411).

*The organizational resilience imperative*

Resilience refers to key features of the workplace climate with a focus on collaborative working principles (Hughes et al., 2020). Effective improvisation in the public arena requires the alignment of different sources of knowledge, since “knowledge may become highly relevant when the context changes” (Howlett et al., 2018: 412). Such change is a central feature of uncertainty, and consequently, Sharkansky and Zalmanovitch (2000) highlight how improvisation is more likely under time constraints and when there is insufficient information and knowledge to feed into planning processes.

However, improvisation is supported by a social infrastructure which draws on innate cognitive abilities, innate perceptual skills, experience, and formal and informal education across the organization (e.g. Vera and Crossan, 2004). Consequently, Hughes et al. (2020: 490) contend that “fostering collaboration between individuals, teams, groups, departments, and functions provides a breeding ground for experimentation and the potential for novel ideas and strategies to arise”; in other words, improvisation. This speaks directly to knowledge collection and sharing, which when done rapidly can enable improvised decision-making (e.g. Hmieleski et al., 2013), allowing impromptu action by decision-makers. A capacity to assimilate and retain critical knowledge in public organizations might, therefore, “provide a knowledge reservoir that managers may draw upon when relying on intuitive judgments or to make improvised decisions” (Hughes et al., 2018: 1047).

*The innovative proclivity imperative*

The innovative proclivity focuses on the role of the customer in decision-making and the importance of instilling creativity in the development of strategy as it unfolds (Hughes et al., 2020). A focus on ‘customer’ value and being customer-centric, where customers are viewed as individuals and are central to organizational strategizing is at the heart of this imperative (Hughes et al., 2020). With the emergence of the public service logic (PSL) as a dominant public service management paradigm (Osborne, 2021), the expectation is that improvisation affords a ‘sense and respond’ approach to the strategic provision of services (Hughes et al., 2020). Given the range of emergent local issues that confront public managers in developing countries (Masood and Nisar, 2022), the sensing ability of an outside-in perspective becomes critical to delivering the ‘value’ that might be expected, which is known to differ between service user groups (Hodgkinson et al., 2023a; Osborne et al., 2022).

Therefore, improvised strategic actions enable greater immediacy and impact in the co-creation of value as there is no delay between the traditional, and transactional, production and consumption of service. This outside-in approach to strategic thinking and action positions the user as central to services and manifests in the practice of listening to customers and co-creating value (Hodgkinson et al., 2023a) contemporaneously through improvisation by the service organization. Improvisation becomes key to a customer-centric approach as it holds the customer at its heart and is based on four principles: (1) *Contrast* assumptions in strategies adopted to challenge existing norms for new approaches/solutions/answers to emerge (2) *Combine* service features that may have traditionally been viewed as separate, for enhanced value creation through new combinatorial possibilities, (3) *Constraints* can become opportunities to build strengths through greater imagination, (4) *Context* similarities and differences to the past can bring to the fore experiential knowledge for new possibilities that sit outside an established single narrative (Brandenburger, 2019; Hughes et al., 2020).

As stated, we expect that the above conditions will influence the propensity of improvisation in public service organizations, but we hold no *a priori* expectations about the potential for, or range of, combined effects on improvisation. This potential will be explored in the following sections.

**Research Methods**

*Setting and data collection*

We examine how improvisation materializes across public service organizations in Brazil. The public sector in Brazil has overtime become characterized by continual reform changes in pursuit of a wider modernization agenda. Due to the large number of municipalities, it has become a rich ground to examine public management phenomena but remains overlooked relative to other country contexts (Gomes and Lisboa, 2021). The study’s target population was public service organizations from across the five regions in Brazil: North, Northeast, Central-West, South, and Southeast. The sampling procedure drew on a public database of public organizations in Brazil and was extended through a “snowballing” strategy. Contact information of public managers was manually retrieved from the websites of public sector organizations included in the database. A survey questionnaire was prepared in English before forward translation to Portuguese and back-translation to English to ensure the items remained true to the original questionnaire. The questionnaire was subsequently transferred to an electronic platform and in doing so we followed best practices and ensured neutrality of wording, random placement of measurement scales, short questionnaire length and clear instructions for completion to reduce the potential for common method variance (CMV). A pilot study was undertaken prior to launch and feedback received at this stage informed the final questionnaire.

A single-informant approach was adopted with an electronic survey questionnaire sent to 5812 managers, each representing different service organizations, and administered by email. We received a final total of 208 responses, a response rate of 3.6%. There are several reasons for the lower response rate of the study found in the review of response rates by Mellahi and Harris (2016): first, South America is an under-represented continent in general business and management research which may explain why Mellahi and Harris (2016) found that of the 20 countries represented in their review, Brazil-based studies reported the lowest response rate of all; second, most public sector workers in Brazil are unionized and Mellahi and Harris (2016) report that studies which relied on union members responses reported the lowest response rates against all other respondent types; third, conducting an online survey without prenotification is recognized to result in the lowest average response rate relative to other modes (e.g. face to face) according to Mellahi and Harris (2016) but was necessary given geographical and resource constraints. Collectively, these reasons explain why the response rate reported may be considered ‘low’ relative to convention, but this should be deemed a ‘necessary evil’ to advance public management research beyond Western developed country contexts.

The average number of full-time employees across the service organizations was 957. Meanwhile, average role tenure for respondents was 4.6 years with average number of employment years with the service organization being 12.74 years. In response to the question “To what extent do you feel you possess knowledge regarding the questions asked in this questionnaire?”, respondent averaged 4.12 out of 5 indicating a high degree of knowledge regarding the questions posed (1=no knowledge / 5=full knowledge). Similarly, in response to the question “To what extent do you believe the responses given by you accurately reflect the ‘realities’ of your organization?”, respondents averaged 4.00 out of 5 (1=no knowledge / 5=full knowledge). Taken together these scores indicate high respondent appropriateness and confidence in the data generated.

*Measures*

The underlying imperatives that enable improvisation to materialize are captured by adapting all the items from the Improvisation Readiness Index, developed by Hughes et al. (2020). While the index is non-sector specific, some items required adaptation to ensure appropriateness of items for the research setting. For instance, original items that specifically referenced ‘business model’ were reworded to refer to ‘service model’, as it was felt that the original terms would not be appropriate for public service organizations. All measurement items for the respective imperatives are treated as formative as per the spirit of Hughes et al.’s (2020) conceptualization and are presented in Appendix A.

Improvisation was captured by items adapted from Nemkova et al. (2015) using 5-point Likert scales (to ensure consistency with the scaling adopted for the imperative measures). The authors disaggregate improvisation into three component elements: spontaneity (CR = .71), creativity (CR = .86), and action orientation (CR = .71). All but one of the items from the original 13-item scale were drawn upon and the original wording adapted to suit the research context. For instance, Nemkova et al. (2015) focused on the decision-making processes of international businesses and consequently situated items within this context. By de-contextualizing the items, the original measurement intention remains while enhancing the face validity of the measures for public service organizations. The only item not included was ‘*When it is called for, we will make decisions “on the hoof”*’ as this was screened out due to confusion arising during translation and back-translation in the pilot stage.

Service performance was captured for the purposes of additional analysis on a 5-point semantic differential scale based on the work of Boyne (2002). While the focus of the exploratory study is squarely on implementation environments for improvisation, we felt it appropriate to also account for the potential performance effects of improvisation as additional analysis. The authors adapted Boyne’s (2002) performance dimensions of Responsiveness Outcomes (CR = 0.72) and Democratic Outcomes (CR = 0.65). Measurement items for improvisation and service performance are reported in Appendix B.

*Common Method Variance*

To test for CMV, we begin with a Harman one-factor test. The presence of CMV would produce a single solution in a factor analysis of all items, or a substantively dominating single factor arising in the factor analysis solution. The analysis revealed a multi-factor solution accounting for 60.20% of total variance with the highest single construct derived accounting for merely 8.99% of total variance. While the outcomes of the one-factor test, alongside the *a priori* safeguards explained earlier, provide confidence that CMV is not a concern, we proceed to also conduct a limited marker variable test. We use a theoretically unrelated variable to the constructs examined to conduct a marker variable test. The marker variable chosen is ‘Job Tenure’, operationalized as the number of years the respondent has been in their current position. CMV problems exists if the constructs examined in this study correlate with this market variable. Correlation analysis reveals this is not so (with correlation ranging between -.06 and .04). Thus, CMV bias does not appear a threat, but we recognize that these tests cannot fully eliminate the potential for bias.

*Data Analysis*

By taking a sample of public service providers and classifying observations across multiple variables (Ketchen and Shook, 1996), cluster analysis opens the possibility for researchers to identify latent patterns that may not otherwise be identifiable or readily apparent through observation or some other statistical analysis. As such, a cluster analysis approach is highly appropriate to address the research question posed in this exploratory study.

Following established approaches, a two-stage cluster analysis procedure was followed using SPSS Statistics 29 to triangulate the findings and provide added rigor to the analysis approach. Hierarchical clustering provides the first step in empirically determining compact spherical clusters of public service organizations that share similar scores across the improvisation readiness variables (e.g. Ward, 1963). From this initial analysis, a four-cluster arrangement became the dominant solution based on an assessment and evaluation of the scree diagrams, dendogram, and agglomeration statistics. Accordingly, this solution provided the best fit for the data. Next, we employed non-hierarchical clustering using the K-means method which allows for each observation to change cluster membership according to the recomputed centroids (e.g. Ketchen and Shook, 1996), to ensure the final clustering solution optimized within-cluster similarities and between-cluster differences. A stable four-cluster solution comprising statistically distinct clusters came to the fore to confirm the final solution of clusters, which are labeled and summarized in Table 1 below.

**… Insert Table 1 About Here…**

Discriminant analysis on the four-cluster solution is displayed in Table 2 and the three discriminant functions illustrate the distinctions between the cluster centroids. Finally, analysis of variance is performed to examine the data and reveal insights into the identified clusters and their meaning for improvisation (see Table 3). It is noted that significant differences are found across all clusters for all imperatives for improvisation, thereby rejecting the null hypothesis that there are no simultaneous group differences based upon the strategic imperatives for improvisation.

**…Insert Tables 2 and 3 About Here…**

The four identified clusters, then, are described as follows:

C1 = **Hybrid Improvisers**: generally well-developed architecture for improvisation. Examination of these scores in line with the IRIS dimensions and their definitions reveal much hybridity in C1-based organizations where deliberate and emergent elements are mixed together in their architecture. Their architectural elements reflect a hybrid approach to strategizing that favor improvisation but from an approach that balances both deliberateness and emergence (see their leadership imperative score) relative to other clustered counterparts.

C2 = **Structured Improvisers**: Leadership imperative tends towards the traditional planning model of strategy-making, implying a high level of deliberateness in their architecture. But, distinct from any other cluster, *Structured Improvisers* have extremely well-developed necessary building blocks in place across all other improvisation imperatives to result in a high degree of improvisation readiness, with consistently higher mean scores across all strategic imperatives.

C3 = **Flexible Planners**: Deliberateness from the planning approach is revealed in their architecture based on the scores on leadership and resilience imperatives, which reflect caution and bureaucratic structures in their architectural design. Their architectural strengths lie in resource fluidity, strategic posture, and innovation proclivity that enable adaptiveness and flexibility in strategy such that improvisation can occur.

C4 = **Unprepared Improvisers**: these organizations exhibit deficiencies across the board in terms of improvisation readiness. By comparing their profile with the descriptors in the IRIS instrument (Hughes et al., 2020), *Unprepared Improvisers* architecturally have (a) limited access to resources and are constrained in their ability to redeploy resources; (b) leadership that lack confidence to act under uncertainty and tend towards caution; (c) siloed and bureaucratic characteristics that compromise resilience; and (d) an inward-focus eschewing creative thinking and customer-centricity.

**…Insert Tables 2, 3, and 4 about Here…**

**Results**

Cluster analysis reveals four distinct implementation environments for improvisation. To further examine the data, multivariate analysis of variance was performed to test the null hypothesis of no simultaneous group differences based upon the three dimensions of improvisation. Based on significant differences found across groups (e.g., significant *F*-values for mean differences) as displayed in Table 4, the null hypothesis is rejected.

**…Insert Table 4 About Here…**

However, to reveal insights into the nature of significant differences between the groups on each dimension of improvisation (spontaneity, creativity, action orientation), a second stage of analysis is necessary. To this end, analysis of variance with *post hoc* analysis (Tukey test) is employed to investigate the nature of between-group differences along each facet of improvisation.

***Hybrid Improvisers*** are superior to *Flexible Planners* (C3) and *Unprepared Improvisers* (C4) on both spontaneity and creativity. Spontaneity is where they excel in terms of improvisational behavior while also exhibiting the second highest on creativity and action orientation. Hybrid Improvisers, then, are high-level improvisers for the most part, though the *Structured Improvisers* (C2) are generally stronger on action (statistically significant). They are superior to both C3 and C4 on resources, leadership, resilience, and innovation proclivity. They are significantly stronger than C2 for leadership and C4 for strategic posture.

***Structured Improvisers*** are very adept at creativity and action, which makes sense along with the spontaneity score given their structured approach and where their strengths lie in terms of IRIS. *Structured Improvisors* are consistently stronger than *Flexible Planners* and *Unprepared Improvise* on all improvisation dimensions and then superior to all other clusters for action orientation. *Structured Improvisers*, then, are high-level improvisers overall whose design elements provide insights into how to maximize improvisation in public service organizations. They are superior to both C3 and C4 for resources, strategic posture, resilience, and innovation proclivity. They are also significantly stronger than C1 on strategic posture and resilience imperatives.

***Flexible Planners*** are able to improvise vis-à-vis their *Unprepared Improviser* counterparts, but their cautious nature does standout in that they are not as adept at improvisation (spontaneity, creativity, or action orientation) relative to *Hybrid Improviser* and *Structured Improviser* types. Though not a ‘bad’ design, *per se*, public service organizations architecturally structured as *Flexible Planner* types must, ultimately, realize their limitations and work accordingly. This cluster is significantly superior to C4 on three IRIS imperatives, namely resource fluidity, strategic posture, resilience, and innovation proclivity.

***Unprepared Improvisers*** are lacking in the foundational building blocks of improvisation and so are architecturally hamstrung in their ability to improvise to any degree. With consistently the lowest mean values across all dimensions of improvisation, Unprepared Improvisers must rethink their design pathway and consider strengthening aspects of their architecture to improve their situation. Cluster 4 has the weakest architecture relative to the other clusters in all imperatives but for strategic leadership, where this cluster is significantly superior to C2 and C3. Collectively, this should undermine their ability to improvise.

*Additional Analysis*

Significant differences are examined for between the four design architectures for improvisation along multiple dimensions of public service performance:

***Hybrid Improvisers*** are more responsive also relative both to *Flexible Planners* and the *Unprepared Improvisers* too. However, *post hoc* tests reveal they are no better than anyone else though in terms of democratic outcomes, and indeed are significantly worse so when compared with *Structured Improvisers*.

***Structured Improvisers*** excel at responsiveness and democratic outcomes, which makes sense given their action orientation (and citizen centricity form their foundational building blocks). Generally, public service organizations designed and structured in this manner are high-level performers on the whole.

***Flexible Planners*** are once again superior vis-à-vis their unprepared counterparts with decent performance levels in responsiveness and democratic outcomes. However, their deficiencies relative to *Structured Improvisers* are clear. In conclusion, once again it is not a ‘bad’ design, as such, but *Flexible Planners* are limited in their ability to consistently outperform other architectures.

***Unprepared Improvisers*** are deficient across the board on improvisation, and this then shows when looking at performance outcomes. Their unprepared approach is stifling their ability to perform to any high level, which is arguably consistent with logic set forth by Hughes et al. (2020). Lacking the foundational building blocks of improvisation seemingly hamstrings their ability to perform to any high degree as *Unprepared Improvisers* are consistently weaker across the board on performance relative to counterparts that have a more developed improvisational architecture.

**Discussion**

*Contributions to theory*

Improvisation has been largely overlooked as a valid management practice in public administration and management due to the misconceptions that such an approach is reckless and chaotic (Capano and Toth, 2023). Whilst such misconceptions were held in the management discipline throughout the early 2000s, there has since been recognition of the value of improvisation for organizational decision-making and the vital role it plays in the daily lives of managers (Vera and Crossan, 2004). In seeking to build knowledge on improvisation in public service organizations as called for (e.g. Masood and Nisar, 2022), we address the question of how different implementation environments influence improvisation in public service organizations.

The findings of the exploratory study reveal four implementation environments to which public service organizations belong. The maturity of public service organizations against each imperative directs cluster membership by identifying those service organizations that are internally similar across the five IRIS imperatives. Consequently, significant differences between clusters can then be revealed. The findings reveal how all public service organizations display implementation environments that are supportive of improvisation and all public service organizations engage in improvisation, albeit to lesser and greater degrees. The findings thus both support observations of improvisation by public managers in developing countries and the relationship between conditions and actions (e.g. Campos and Peeters, 2022). Specifically, those public service organizations that belong to C1 (Hybrid Improvisers) and C2 (Structured Improvisers) demonstrate the most developed environments for improvisation and correspondingly display the greatest levels of improvisation. In other words, they enable the materialization of improvisation. This shows that improvisation can be consciously and systematically developed and deployed through the ‘right’ implementation environment conditions, advancing knowledge on this identified gap in public management research (Masood and Nisar, 2022).

In showing the necessary implementation environment conditions for improvisation, our intention is not to undermine the value of normative decision-making approaches but to increase awareness of improvisation and the descriptive decision school of thinking. Indeed, normative decision approaches such as planning can take multiple forms, as discussed by Johnsen (2022) and shown by Hodgkinson et al. (2023b). Improvisation, however, is a descriptive approach to decision-making that can be beneficial for performance. The most developed implementation environments for improvisation also experience the greatest levels of performance across responsiveness and democratic outcomes. While the study does not claim causality here, it infers that improvisation is a positive approach for the realization of critically important performance outcomes. The findings in relation to performance thus challenge the negative connotations of the phenomenon.

There is a long and well-established literature on the prevalence and value of emergent decision-making in management practice, as championed under the Mintzberg-ian school of thinking. Indeed, improvisation is not a new phenomenon to the field having been first identified and revealed over four decades ago (Halachmi, 1980). Yet, public administration and management scholars have been somewhat shy in exploring improvisation compared to related constructs. It is established that improvisation occurs outside of crisis events and is recognized in the daily lives of public managers (Hodgkinson and Hughes, 2023). The study goes beyond these surface-level insights to show (i) the implementation environments that support improvisation, (ii) the pervasiveness of improvisation as seen across all public service organizations sampled (to lesser and greater degrees), and (iii) the high performance associated with public service organizations that exhibit the greatest degree of improvisation, the findings suggest there is great value in the examination of improvisation especially since for many public managers, the need for improvisation finds them as much as managerial preference (Johnson and Dobni, 2016). Nevertheless, our findings support the contention that improvisation is not necessarily a positive management practice and will not lead to desired goals *de facto* (Vera and Crossan, 2005).

*Implications for practice*

Extending the need for new knowledge on the relevance and appropriateness of improvisation, the exploratory study highlights how and when improvisation can be realized and cultivated for specific performance outcomes pertinent to public services. Specifically, the implementation environments identified can be used by public service organizations both to serve as a tool to benchmark their current profile and to ascertain which cluster they themselves are situated. C1 or C2 provide a guide as to the ‘right’ environment for improvisation to flourish, which should carry benefits for performance.

Upon examining the mean values across the imperatives for each cluster, it is interesting to note that for the two clusters that exhibit the greatest proclivity to improvise and experience the greatest performance scores, the leadership imperative has the lowest respective mean value in both groups. This observation suggests that improvisation flourishes when leadership evaluate evidence, make reasoned judgments, promote consistency, exercise caution, and encourage planned behaviours alongside a supportive environment for improvisation. We therefore make the case to practice that they combine approaches from the normative and the descriptive schools of decision theory for hybrid decision-making.

**Limitations and future research**

There are several limitations of the study to note. First, we employ a survey instrument that targets single informants across public service organizations. Though appropriate for this exploratory study, broadening this out to include multiple informants from the same organization would add further robustness to the analysis and interpretation of the findings. Second, a cross-sectional research design is employed along with correlation-based analyses, consequently, we do not and cannot claim causality between design configurations, improvisation, and service performance. Thirdly, the sample population is a range of services across Brazil and given the high heterogeneity across emerging economies, we caution against generalizing the findings across other emerging economies especially those from outside of South America. Finally, the study does not capture how improvised solutions are generated and selected as this was beyond its scope. A worthy avenue of future research is thus to reveal the micro-foundations of public management improvisation.

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**Table 1.** Final cluster solution with mean and standard deviation values

|  |  |  |  |
| --- | --- | --- | --- |
| **Imperative** |  | **Cluster** | ***F*** |
|  | **Full Sample**(n = 208) | **C1** (n = 48) | **C2** (n = 44) | **C3** (n = 82) | **C4** (n = 34) |  |
| *Resource Fluidity* | 3.15 (.45) | 3.33 (.42) | 3.38 (.48) | 3.08 (.36) | 2.81 (.37) | 16.85\*\* |
| *Strategic Leadership* | 2.48 (.49) | 2.96 (.40) | 2.19 (.38) | 2.29 (.30) | 2.66 (.56) | 40.32\*\* |
| *Strategic Posture* | 3.26 (.43) | 3.30 (.42) | 3.53 (.40) | 3.28 (.31) | 2.78 (.35) | 28.02\*\* |
| *Organizational Resilience* | 3.02 (.55) | 3.34 (.35) | 3.61 (.36) | 2.77 (.30) | 2.37 (.37) | 117.52\*\* |
| *Innovation Proclivity* | 3.14 (.60) | 3.28 (.40) | 3.83 (.38) | 3.05 (.30) | 2.28 (.43) | 118.80\*\* |
|  |  |  |  |  |  |  |
| **Cluster Identity** |  | **Hybrid Improvisers** | **Structured Improvisers** | **Flexible Planners** | **Unprepared Improvisers** |  |

\*\* *p* ≤ 0.01

**Table 2.** Discriminant analysis

|  |  |
| --- | --- |
| **Imperative** | **Standardized discriminant function coefficients** |
|  | **Discriminant function 1** | **Discriminant function 2** | **Discriminant function 3** |
| Resource Fluidity | .27 | .17 | .30 |
| Strategic Leadership | -.06 | .91 | .35 |
| Strategic Posture | .12 | -.14 | .68 |
| Organizational Resilience | .57 | .35 | -.60 |
| Innovation Proclivity | .63 | -.25 | .21 |
| Eigenvalues | 3.12 | .73 | .05 |
| Cluster 1 Centroid | .86 | 1.40 | .13 |
| Cluster 2 Centroid | 2.47 | -.52 | -.26 |
| Cluster 3 Centroid | -.59 | -.68 | .20 |
| Cluster 4 Centroid | -2.99 | .34 | -.32 |

**Table 3.** Cluster differences

|  |  |  |  |
| --- | --- | --- | --- |
| **Imperative** | **Cluster [group means (S.D.)]** | ***F*-ratio** | **Tukey test****(*p*≤ .05)** |
|  | **Hybrid Improvisers (C1)** | **Structured Improvisers****(C2)** | **Flexible Planners (C3)** | **Unprepared Improvisers (C4)** |  |  |
| Resource Fluidity | 3.33 | 3.38 | 3.08 | 2.81 | 16.85\*\* | C3<C1; C4<C1; C3<C2; C4<C2; C4<C3.  |
| Strategic Leadership | 2.96 | 2.19 | 2.29 | 2.66 | 40.32\*\* | C2<C1; C3<C1; C4<C1; C2<C4; C3<C4. |
| Strategic Posture | 3.30 | 3.53 | 3.28 | 2.78 | 28.02\*\* | C1<C2; C4<C1; C3<C2; C4<C2; C4<C3. |
| Organizational Resilience | 3.34 | 3.61 | 2.77 | 2.37 | 117.52\*\* | C1<C2; C3<C1; C4<C1; C3<C2; C4<C2; C4<C3. |
| Innovation Proclivity | 3.28 | 3.83 | 3.05 | 2.28 | 118.80\*\* | C1<C2; C3<C1’ C4<C1; C3<C2; C4<C2; C4<C3. |

\*\* Statistically significant where *p* ≤ 0.01.

**Table 4.** Cluster differences for Improvisation and Performance

|  |  |  |  |
| --- | --- | --- | --- |
| **Dimension** | **Cluster [group means (S.D.)]** | ***F*-ratio** | **Tukey test****(*p*≤ .05)** |
|  | **Hybrid Improvisers (C1)** | **Structured Improvisers****(C2)** | **Flexible Planners (C3)** | **Unprepared Improvisers (C4)** |  |  |
| Spontaneity | 3.90 | 3.63 | 3.48 | 3.47 | 3.91\*\* | C3<C1; C4<C1. |
| Creativity | 3.70 | 4.01 | 3.27 | 2.61 | 26.52\*\* | C3<C1; C4<C1; C3<C2; C4<C2; C4<C3. |
| Action Orientation | 3.65 | 4.02 | 3.57 | 3.00 | 11.94\*\* | C1<C2; C4<C1; C3<C2; C4<C2; C4<C3. |
|  |  |  |  |  |  |  |
| Responsiveness Outcomes | 3.42 | 3.75 | 3.31 | 2.88 | 9.00\*\* | C4<C1; C3<C2; C4<C2; C4>C3. |
| Democratic Outcomes | 3.32 | 3.98 | 3.41 | 2.82 | 10.45\*\* | C1<C2; C3<C2; C4<C2; C4<C3. |

\*\* Statistically significant at *p* ≤ 0.01.