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Management Innovation and Organizational Performance: The Mediating Effect of Performance Management

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ABSTRACT

Management innovations (MIs) are widely adopted, but their influences on organizational performance are little researched in public settings. Positing that the MI-performance relationship is complex and is conditional over other characteristics of the organization, we examine the influence of MI on organizational performance both directly and indirectly through performance management (PM). PM is an important organizational process characteristic arising from public management reform and in itself influences performance. We test our hypotheses using structural equation models with data from three sources in English local governments. The findings indicate that the impact of MI on performance is not direct; it is mediated by PM. We also find that PM positively affects organizational performance. In conclusion, we discuss the implications of these findings for research and practice.

Innovations are adopted by public organizations to improve the services delivered to users and citizens, with the broad aim of improving quality of life and building better and stronger communities. Knowledge on the processes of innovation adoption and the characteristics of innovative organizations is developing in public services settings (Boyne et al. 2005; Light 1998; Rashman and Radnor 2005; Walker 2006, 2008). Literature on whether adopted innovations are actually able to deliver positive outcomes is, by contrast, in its infancy. Findings from qualitative and quantitative studies in the emerging literature are not unanimous but often suggest a positive relationship (Light 1998; Moore 1995; Osborne 1998; Walker and Damanpour 2008). However, similar to the studies of business organizations where the focus has been on performance consequences of product innovations, the emphasis in public organizations has been on the impact of service innovations.

In this article, we focus on management innovations (MIs) and examine its association with organizational effectiveness or performance. We consider the mechanisms through which MI could influence organizational performance in the public sector and examine whether its influence on performance is mediated by performance management (PM)—a widely adopted and promoted organizational process characteristic in the public sector. Our thesis stems from a concern that direct-effects models exploring the innovation-performance hypothesis are over

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simple. We posit that the process of innovation adoption is complex, and there is mounting and compelling evidence indicating that the impact of a management practice on performance is dependent on other internal organizational characteristics (Birkinshaw and Mol 2006; Jansen, Van den Bosch, and Volberda 2006).

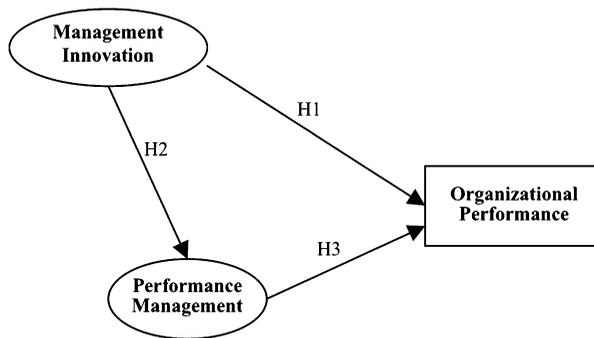
In our study, we seek to make a number of contributions. The first is to address the imbalance within the innovation literature where influence of innovation on performance has mainly been examined for product or technology-based innovations at the industry or firm level (Adams, John, and Phelps 2006; Miles 2001). The second contribution is to add to the growing body of evidence on the nature and influence of innovation on performance in public organizations by developing and analyzing both a direct and a mediated model of the innovation-performance relationship (O’Toole and Meier 1999). The third is to examine the influence of MI on PM, a main pillar of public management reforms in recent years (Boyne 2010; Heinrich 2002; Jennings and Haist 2004; Moynihan 2006). We explore these issues in English local government with data from three sources: a survey, an audited external measure of organizational performance, and documentary data from government departments and the census. We have tested our hypothesis by using structural equation modeling (SEM), a rigorous analytical procedure for examining mediating effects.

In the next section, we outline our hypotheses. This is followed by the study’s methodology and statistical results. We conclude with a discussion of our findings and their implications for future research and practice. We find no independent association between innovation and performance; rather, we demonstrate that the impact of MI on performance is mediated by PM. Figure 1 shows the study’s conceptual model.

THEORY

Reforms epitomized by the New Public Management (NPM) movement have led to major changes in organization and management of the public sector based around the notion of competitive markets and the adoption of private sector management practices. Public organizations became engaged in restructuring their organization and improving management processes in order to boost organizational performance. More recently, attention has

Figure 1
Conceptual Model



shifted to issues of governance and networking and the adoption of service improvement strategies based around enhancing organizational and management capacities (Ingraham, Joyce, and Donahue 2003; [Moore 1995](#)). We focus on two aspects of these public management reforms: introduction of MIs and PM. Though these are widely promoted, adopted, and researched, evidence linking these activities with organizational outcomes is remarkable by its scarcity (Boyne 2010; Walker 2010).

Adoption of MI

Innovation is generally defined as the generation (development) or adoption (use) of new ideas, objects, or practices ([Amabile 1988](#); [O'Toole 1997](#); [Rogers 1995](#)). The generation of innovation results in an outcome—a product, service, or practice that is new to the state of the art (or at least to an organizational population); the adoption of innovation results in the use of a product, service, or practice new to the unit of adoption—individual, team, or organization ([Damanpour and Wischnevsky 2006](#)). This study focuses on the adoption of innovation new to an organization.

Innovation adoption is a process that generally includes three phases: initiation, adoption decision, and implementation ([Damanpour and Schneider 2006](#); [Rogers 1995](#)). An innovation is implemented when it is accepted by the users (employees, clients, or customers) and is regularly used by them. Therefore, for the innovation to deliver improvements and contribute to organizational performance, it is necessary that it is implemented. This is particularly important because public organizations may adopt an innovation in search of legitimacy without fully implementing it ([Ashworth, Boyne, and Delbridge 2009](#); [Brown and Potoski 2003](#); [Feller 1981](#)).

Innovation researchers have long distinguished among innovation types on the assumption that they have different attributes and antecedents and follow certain adoption processes ([Daft 1978](#); [Kimberly and Evanisko 1981](#); [Light 1998](#)). Whereas many typologies of innovation have been proposed (see [Zaltman, Duncan, and Holbek 1973](#), 31), three have been examined frequently: (1) product/service versus process innovations ([Abernathy and Utterback 1978](#); [Walker and Damanpour 2008](#)), (2) technological versus administrative/managerial innovations ([Damanpour, Walker, and Avellaneda 2009](#); [Kimberly and Evanisko 1981](#)), and (3) radical versus incremental innovations ([Cardinal 2001](#); [Germain 1996](#)). This study focuses on managerial innovation, one type of innovation whose consequences have not been widely probed in the public context.

[Birkinshaw, Hamel, and Mol \(2008, 829\)](#) reviewed the literature on managerial innovation and defined it operationally as “the generation and implementation of a management practice, process, structure, or technique that is new to the state of the art and is intended to further organizational goals.” Examples include: divisional structure, Toyota production system, total quality management (TQM), activity-based costing, modern assembly line, and quality of work life ([Birkinshaw, Hamel, and Mol 2008](#)). As these examples suggest, MI is conceptualized as a multidimensional construct, including structural, operational, and administrative processes. Further, because “newness” is defined as the state of the art, these innovations are radical and their adoption may result in major changes in the organization’s management systems and processes.

In this study, we use the definition of [Birkinshaw et al.](#) with two noteworthy modifications. First, as stated above, we focus only on the adoption, not the generation of innovation. Whereas an organization may both generate and then adopt and implement an

innovation, it is also common that the innovation is generated by one organization and is adopted by another.¹ Second, we define “newness” relative to the adopting organization, not the state of the art. This distinction is appropriate because we examine the influence of MI related to NPM reforms on organizational performance. However, it affirms that MIs examined in this study fall in the left side of innovation radicalness; that is, their adoption may produce minor changes in the organization’s management systems and processes (see, e.g., Damanpour and Schneider [2009, 516] for examples).

MIs, as compared with product/service innovations that are introduced for use by or to serve external constituents, typically aim to increase efficiency and effectiveness of the internal organizational operating and administrative processes (Adams, John, and Phelps 2006; Birkinshaw, Hamel, and Mol 2008; Boer and During 2001). They pertain to changes in structure, management systems, knowledge used in performing the work of management, and managerial skills that enable an organization to function efficiently and effectively (Hamel 2006). Therefore, we conceive MI as a two-dimensional construct: an information technology (IT) dimension and an administrative dimension. Whereas the administrative dimension captures the adoption of new management systems and processes to make the work of management more effective, the IT dimension reflects the use of new management and office information systems to advance efficiency of the organization’s operating systems and processes (Damanpour, Walker, and Avellaneda 2009). Together, they represent the introduction of new practices, processes, and techniques to further organizational adaptation and effectiveness.

MI and Organizational Performance

Only limited empirical attention has been focused upon the innovation-performance hypothesis in public agencies (Damanpour, Walker, and Avellaneda 2009; Salge and Vera 2009; Walker and Damanpour 2008). Whereas extant work does not examine performance consequences of MIs in particular, it provides evidence to support the notion that innovation may unfold and influence organizational performance in different ways—findings that corroborate Walker’s (2004) quantitative review of studies across public and private sectors that innovation influences performance positively. The balance of evidence suggests that although innovation is risky and its success is not guaranteed, its adoption enhances performance. It confirms views espoused by contingency and resource dependence theories that organizations are adaptive systems that introduce change in order to function effectively (Lawrence and Lorsch 1967; Pfeffer and Salancik 2003).

MI can play a central role in the process of changing organizations, facilitating organizational adaptation to the external environment and increasing the efficiency and effectiveness of internal processes. For instance, the adoption of MIs such as the balanced score card and TQM in public agencies seek to increase organizational performance, aligning the organization with the environmental demands of quality public services at lower costs. The critical review of Boyne and Walker (2002) indicates that TQM has positive performance consequences, but the evidence was not equivocal. Argument from institutional theory has alternatively suggested that MI may have indirect performance impacts

1 For more detail description of generation and adoption process and differences between the characteristics of innovation-generating and innovation-adopting organizations, see Damanpour and Wischnevsky (2006).

because factors driving adoption are initially focused upon securing internal and external legitimacy (Staw and Epstein 2000). Although large sample empirical studies of the relationship between MI and organizational performance are scarce, evidence from case studies repeatedly points toward the positive effects of the adoption of MIs ([Birkinshaw and Mol 2006](#); [Hamel 2006](#)). For instance, Hamel (2006) cites cases from the private sector in the early 1900s such as Mary Parker Follett's experiences of building and running community-based organizations in Boston to more modern-day MIs in nonprofit ventures such as Bangladesh's Grameen Bank. We therefore hypothesize,

H₁ Management innovation is positively associated with organizational performance.

MI and PM

At the heart of public management reforms have been attempts to deal with some of the major maladies of public organizations, such as goal ambiguity, red tape, low productivity, and bureaucratic imperialism ([Rainey 2003](#); [Wilson 1989](#)). A central reform strategy has been to promote PM ([OECD 2005](#); [Pollitt and Bouckaert 2004](#)) also referred to as “managing for results” ([Moynihan 2006](#)) and “managing for outcomes” ([Heinrich 2002](#)). PM is associated with setting clear organizational goals, specifying targets and indicators to link goals to performance outcomes, and taking action to influence achievement against targets ([Boyne 2010](#); [Jennings and Haist 2004](#); [Rainey and Rhu 2004](#)). To facilitate buy-in of missions and goals and to assist with meeting targets, PM regimes seek to empower middle managers to make decisions and take responsibility of their unit's conduct and outcomes. Simultaneously, senior executives have been mandated to intervene, make corrective actions in a coordinated manner, and adapt strategy when necessary ([OPSR 2002](#); [Walker and Boyne 2006](#)).

MIs can further these organizational processes by introducing practices new to the organization. The desired, intended consequence of both MI and PM is organizational effectiveness. Therefore, innovations that assist public agencies in meeting their objectives are more likely to succeed where there is an affinity between existing goals, targets and indicators and the new practices being implemented. Over the long-term innovations may change the goals of organizations; for example, new information technologies such as Geographical Information Systems may lead to new data on client needs that could result in targeting new client groups, thus achieving important equity outcomes necessitating new targets and indicators. Innovations that are more closely tied to organizational missions and strategies will more likely help reinforce the implementation of organizational processes associated with PM.

The component elements of MI—operational and administrative—can play important roles in bridging the challenges of managing top-down and bottom-up processes. The administrative component can play a fundamental role, especially in planning and budgeting because the management control system (comprising of the budgeting system and incentive system) should “. . . motivate managers to make the same decisions senior managers would have made in the circumstances” ([Teall 1992](#), 32). The operational component, which in service organizations is mainly based on changes in information technologies and systems—where there has been substantial improvements in public organizations ([Reschenthaler and Thompson 1996](#))—is also relevant in the success of PM. Information systems facilitate the link between the corporate structure and other parts of the

organization through collection, process, and dissemination of data on performance indicators. Together, MI components facilitate organizational units' capability to introduce measures of performance consistent with overall organizational goals, thereby work in tandem to implement the overall PM system (Teall 1992). Therefore,

H₂ Management innovation is positively associated with performance management.

PM and Organizational Performance

PM sits within a tradition of rational approaches to management in the public sector (see Boyne [2010] for a review), of which the primary purpose is to “improve public management and program outcomes” (Heinrich 2002, 712). One area PM seeks to tackle is the ambiguous nature of organizational goals which can arise from the complex, multiple, and conflicting nature of many public agencies' goals—contrast garbage collection with policing or health care (Rainey 2003). Many public organizations are staffed by diverse groups of professionals who may have very different views about appropriate organizational objectives and have inadequate cross-functional management skills. These conflicts of goals and personnel can complicate coordination of activities of individuals and teams and integration of organizational units, harming organizational efficiency and effectiveness (Chun and Rainey 2005). Given these characteristics and findings, a number of studies highlight the importance of focus and clarity around the organizational mission and goals as a critical characteristic of higher performance (Rainey and Rhu 2004; Rainey and Steinbauer 1999; Weiss and Piderit 1999).

Target setting and PM is one of the key mechanisms by which the difficulty of goal ambiguity can be tackled—put simply goals are linked to outcomes. An additional purpose of target setting is to combat bureaucratic imperialism and ensure the information asymmetries between bureaucrats and other stakeholders are broken down. PM systems are needed because public organizations cannot plan for performance improvements if they are not aware of the starting point and do not have information for manager's to measure progress toward targets. These approaches reflect models of strategic planning that specifies clear targets, detailed plans, and the close monitoring of the targets. Empirical evidence increasingly points to the likely success of strategic planning, target setting, and PM in improving public service performance (Boyne and Chen 2007; Hendrick 2003; Hyndman and Eden 2001; Walker and Boyne 2006).

Appropriate structures for achieving delegation and control, and for ensuring that goals are implemented and targets are achieved, are essential for organizational effectiveness. On one hand, successful implementation of goals and targets requires top managers to intervene and change organizational direction when problems occur. Timely corrective action by top executives is one strategy to reduce the likely detrimental effects of internal conflict by offering clear lines of hierarchal authority. Such actions are among responsibilities of organizational leaders and do not necessarily reflect a centralized, vertical decision making structure. On the other hand, devolved decision making and ensuring that decisions are made as close to the users and citizens as possible increase line managers' capacity to meet targets and give them needed flexibility to respond to changing environmental circumstances. The empirical evidence on the relative merits of top management intervention and devolved management is limited and mixed in public organizations (Andrews et al. 2009). Given effective organizations require control, delegation, and

cooperation, we, therefore, propose both top managements' corrective actions and devolved management will positively affect organizational performance. Thus,

H₃ Performance management is positively associated with organizational performance.

METHODS

Sample and Data

We examined English local governments or authorities. Local authorities are elected bodies, operate in specific geographical areas, employ professional career staff, and receive approximately two-thirds of their income from the central government. They are multipurpose organizations and deliver services including education, social care, land-use planning, waste management, housing, leisure and culture, and welfare benefits. In urban areas, unitary authorities deliver all these services; in predominately rural areas, a two-tier system prevails with county councils administering education and social services and district councils providing welfare and regulatory services. In this study, we do not include district councils because our dependent variable (organizational performance) is only available for the unitary and upper-tier authorities.

The data come from multiple sources. For the dependent variable, the data are taken from a data set created by the Audit Commission (2002) (details below). The Commission acts on behalf of central government, provides audit, inspection services, and value-for-money investigations and is therefore an important external stakeholder for local governments. For control variables, the data come from UK census (details below). Data for the measures of MI and PM are from a survey of English local government. Our data have a lagged structure: the measure of organizational performance was recorded in 2005 and the measures of MI and PM in 2004, and control variables are from 2004 and earlier.

The survey was administered to a census of the 139 unitary and upper tier authorities and responses were received from 136 authorities—a response rate of 98%. The survey was pretested in 17 local authorities (and 378 respondents) and conducted electronically (Enticott 2003). Questionnaires were delivered as Excel files attached to e-mail and were, therefore, self-coding. Informants had 8 weeks to return the file by e-mail, and during this period, three reminders were sent to informants who had not responded. There were no statistically significant differences between late and early respondents.

The survey was a multiple informant survey. Multiple informant surveys aim to capture internal organizational variety in a compatible format (Phillips 1981) collecting data from informants from several managerial levels or “echelons.” Aiken and Hage (1968, 918) define an echelon, or social position in an organization, as “the level of stratum in the organization, the department or type of professional activity.” Hence, in each local authority, questionnaires were sent to two echelons—three corporate officers and four officers in each of the seven service areas mentioned above.² All survey questions were in the form of a seven-point Likert scale and informants were asked to rate their authority (for corporate officers) or service area (for service area officers). A total of 1,056 informants

² *Corporate officers* include the chief executive officer and corporate policy officers with cross-organizational responsibilities for service delivery and improvement. *Service officers* include chief officers who are the most senior officer with specific service delivery responsibility and service managers or frontline supervisory officers.

responded to the survey of which 196 were corporate officers and 860 service officers (48.4% and 22.7% response rates, respectively). To calculate an organizational mean, we first calculated a mean of corporate officers and a mean of service officers giving equal weight to each tier; the organizational score is then derived from these two means ([Aiken and Hage \(1968\)](#)). This procedure maintains variations across organizations and converts categorical data to continuous data. Furthermore, data from two tiers help overcome the sample bias problem faced in surveying informants from one organizational level only ([Bowman and Ambrosini 1997](#)).

Measures

Organizational performance (OP) was measured by the core service performance (CSP) score constructed by the Audit Commission (2002). For each of the seven service areas, the CSP score is based largely on archival performance indicators, supplemented by the results of inspection and assessment of statutory plans ([Andrews et al. 2005](#)). The archival performance indicators cover six aspects of organizational performance: quantity of outputs (e.g., number of home helps for the elderly), quality of outputs (e.g., number of serious injury on highways), efficiency (e.g., cost per benefit claimed), formal effectiveness (e.g., average school passes at 16), equity (e.g., equal access to public housing), and consumer satisfaction (e.g., satisfaction with waste collection). Inspection of services draws upon internal improvement plans, field visits, and other documentation. Statutory plans are assessed against the criteria of the service's relevant central government department. Evaluators external to the local authority conduct all assessments. Each service area is given a performance score by the Audit Commission from 1 (lowest) to 4 (highest).

After calculating the CSP score for each service area the Audit Commission derives a score for the whole organization by weighting services to reflect their relative importance by budget (the weight for education and social services is 4, for environment health and housing is 2, and for libraries and leisure, benefits, and management of resources is 1). The Commission then combines these weights with the performance score (1 – 4) for each service area to calculate the CSP. The resulting scores range from a minimum of 15 (12 in the case of county councils that do not provide either housing or benefits) to a maximum of 60 (48 for county councils). To make the CSP scores comparable across all authorities, we calculated the percentage of the maximum possible CSP score for the given local government. Therefore, the measure of organizational performance in this study is an aggregate measure across the key services areas of local governments and includes multiple indicators of performance for each service area.

MI was measured by five survey items that explore employees' perception of the introduction of new management practices and techniques (Appendix lists scales and questions). The IT innovation dimension includes new techniques primarily aimed at modifying the organization's operating processes and systems (MI1 and MI2), whereas administrative innovation dimension includes new practices mainly seeking to alter the organization's administrative processes and systems (MI3, MI4, and MI5).

PM as defined earlier has several components. First, it ensures that organizational mission and operational goals are specified, understood, and accepted across the organization (PM1, see Appendix). Second, the specification of performance targets and measures ensures the strategy, and how it is implemented tactically and operationally, is continually assessed (PM2). Third, the clear specification of objectives and their understanding across

the service areas permits devolution of control to line managers who can make local decisions based on the wider organizational mission and goals (PM3). Fourth, serious deviations from the plans that surpass the local scope and resources are communicated to top management and the corrective action is applied in the organization (PM4).³

External constraints may cloud the relationship between MI, PM, and organizational performance. Researchers have controlled for a variety of contextual factors (Andrews et al. 2005; Boyne et al. 2005; O'Toole and Meier 2003; Pettigrew, Ferlie, and McKee 1992). We tested the influence of seven factors that were used in the other studies from this data set on organizational performance: *service need*, *diversity of need* (by age, ethnic, and social class), *slack resources*, *population density*, and *change in population* (Andrews et al. 2005) and prior performance (O'Toole and Meier 1999; Staw and Epstein 2000).⁴ The definitions, measures, descriptive statistics, and correlations of control variables are available from the authors.

Table 1 provides descriptive statistics and correlations for MI, PM, and organizational performance.

Analysis

We used two analytical methods. First, to test the mediation effect of PM in the relationship between MI and organizational performance, we used SEM. The software employed was EQS 6.1. The maximum likelihood method, combined with the method of robust standard estimators, was used to overcome restrictions due to the nonnormality of the data (Satorra and Bentler 2001). The overall fit of the models was evaluated by a combination of absolute, incremental, and parsimonious fit indexes recommended by Hair et al. (1992) and Jöreskog and Sorbom (1993). Before the hypothesized model was estimated, the measurement scales of multi-indicators MI and PM were assessed by conducting confirmatory factor analysis (CFA) (Bagozzi 1981). OP was a single indicator and was thus assumed not to contain measurement errors. The conceptual model (figure 1) consists of one exogenous variable (MI) and two endogenous variables (PM and OP). Second, we conducted hierarchical regression analyses to ensure that the influence of MI and PM on performance is beyond and above that of control variables.

Table 1
Means, SDs, and Correlations

	Mean	SD	Minimum	Maximum	Correlations	
(1) MI (.80)	5.12	0.54	3.50	6.66	1	
(2) PM (.73)	5.26	0.45	3.34	6.30	.38**	1
(3) OP	68.02	8.79	40.0	90.00	.04	.35**

Note: Reliability coefficients (Cronbach's alpha) for the scales are in parenthesis; $n = 136$.

** $p < .01$ (two tailed).

3 To test if MI and PM are different constructs, we ran an EFA. Analysis clearly isolated two factors that correspond to MI (eigenvalue 1.618, minimum correlation .595) and PM (eigenvalue 3.502, minimum correlation .665).

4 Prior performance was included because (1) performance of most organizations, especially public organizations, alter incrementally through time (O'Toole and Meier 1999); and (2) inclusion of an autoregressive term helps controlling for unspecified correlates of performance, ensuring that coefficients for MI and PM are not biased (Pedhazur 1982).

RESULTS

Measurement Models

The MI

As stated above, the MI construct was conceptualized and measured as a two-dimensional factor. The reliability and convergent validity of MI measurement model were assessed by a CFA. Because of the saturation of the second-order measurement model, the validation of the scale was conducted in a first-order model with a covariance between the dimensions. The goodness-of-fit indexes of the five-item MI scale with two dimensions are provided in Appendix. The incremental fit indexes (comparative fit index [CFI] = .94, incremental fit index [IFI] = .94) exceeded the recommended minimum value of 0.90 (Hair et al. 1992), although the nonnormed fit index (NNFI) was low (.85). Nevertheless, the values of the rest of the indexes together with a high NFI (.92, not shown in Appendix) assures the good fit of the data. The absolute fit index root mean square error of approximation (RMSEA) (= .116) was slightly high, but the parsimonious normed chi-square (NC) index (= 2.80) was lower than the maximum value of 3.0 (Kline 1998). Besides, the Cronbach's alpha was .80 and all the loadings were greater than 0.60, surpassing the minimum value recommended of 0.50 (Hair et al. 1992). The convergent validity of the scale was examined by the composite reliability of the construct (Werts, Linn, and Jorekog 1974), reaching a value of 0.80. These tests guarantee that the MI scale fulfills the psychometric properties necessary in measurement scales (Hair et al. 1992).

The PM

To check the unidimensionality of the PM construct, we conducted an exploratory factor analysis (EFA). A single dimension was extracted, with the lowest loading item (PM4) higher than 0.62. The CFA showed that all the indices have adequate fit (NNFI = .98; CFI = .99, IFI = .99; NC = 1.7; RMSEA = .035) and Cronbach's alpha (.734) is satisfactory (Appendix). The standardized loadings from the CFA for all items were higher than 0.50, with the exception of PM4 (0.45). This low loading is also reflected in the composite reliability of the scale (0.59), pointing out the limited number of items employed in the measurement of a multidimensional and conceptually complex construct such as PM. However, the robustness of the rest of indexes guarantees the validity of the scale.

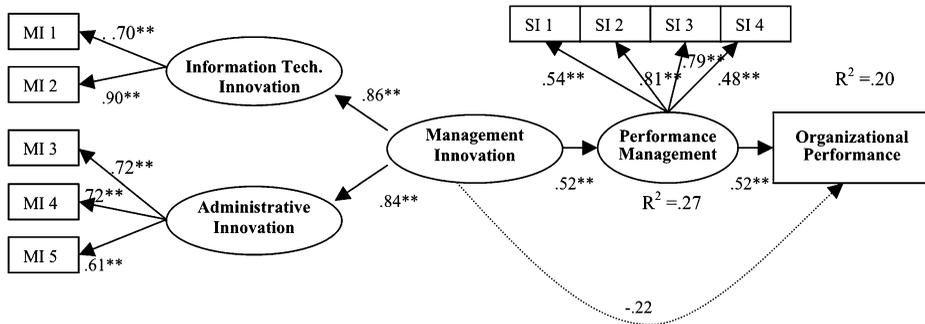
Structural Model

We tested the hypotheses jointly by the structural model (Model 1, figure 2). Applying the maximum likelihood method, all the indices indicated that the hypothesized model had adequate fit to the data (NNFI = .93; CFI = .95, IFI = .95; NC = 1.38; RMSEA = .054). Figure 2 also contains the parameter estimates for the main predictors, significance levels, and proportions of explained variance (R^2).

Hypothesis 1 was not supported as the path coefficient between MI and organizational performance is not significant ($-.22, p > .05$).⁵ However, the path coefficient between MI

5 The direct effect of MI on performance is significant at the .10 level, however. This negative effect, after discounting the positive effect mediated by PM, may arise because of the possible disruptive impact of innovation and short-term (1 year) lag in our model. Longitudinal data are needed to confirm.

Figure 2
Path Coefficients for the Hypothesized Model



$\chi^2 = 42.76$; d.f. = 31; NNFI = .93; CFI = .95; IFI = .95; NC = 1.38; RMSEA = .054

* $p < .05$, ** $p < .01$

and PM is positive (.52, $p < .01$), supporting Hypothesis 2. MI explains 27% of variance in PM. Hypothesis 3 was also supported as the path coefficient between PM and organizational performance is positive and significant (.52, $p < .01$).

Additional Analysis

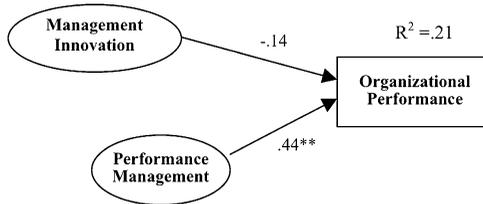
Alternative SEM Model Evaluation

The hypothesized model (Model 1) is a partially mediated model since the effect of MI on organizational performance is considered both directly and indirectly through PM. To shed more light on the MI-performance relationship, we conducted additional SEM analyses to test the validity of nonmediated and fully mediated models (figure 3). Model 2 is a nonmediated model and assesses the independent effects of MI and PM on performance; Model 3 is a fully mediated model and has the same number of paths as Model 2. These models allow the comparison of direct and indirect effects of MI on performance. Since Models 1–3 are nested models, we compared the fit of the hypothesized model (Model 1) and the alternative models (Models 2 and 3) by the significance of change in chi squared.

In Model 2, the data did not fit adequately (NNFI = .72; CFI = .75; IFI = .81; NC = 2.35; RMSEA = .101), delineating that hypothesized model is superior to the nonmediated model. In Model 3, the data fit well (NNFI = .92; CFI = .94; IFI = .95; NC = 1.43; RMSEA = .057) and the chi-square was greater than that in Model 1 ($\chi^2 = 42.76$ versus 45.89); however, the difference between the chi-squares was not significant ($\Delta\chi^2 [1] = 3.13$, $p > .05$). Because Model 3 is more parsimonious than Model 1 and the difference in chi-square is not statistically significant, this alternative model is considered better than the hypothesized model. Thus, the data indicate that the path between MI and performance in Model 1 does not represent any improvement in explaining performance; that is, MI affects organizational performance mainly through PM.

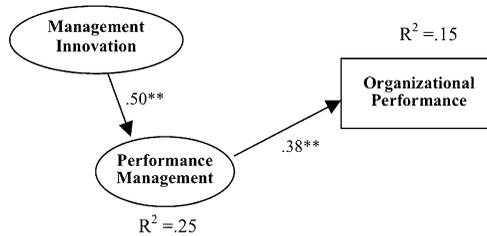
Figure 3
Alternative SEM Models

Model 2. Non-mediated model. Direct effect of management innovation and performance management on organizational performance



$\chi^2 = 79.94$; d.f. = 34; NNFI = .72; CFI = .75. IFI = .81; NC = 2.35; RMSEA = .101

Model 3. Fully-mediated model. Indirect effect of management innovation through performance management on organizational performance



$\chi^2 = 45.89$; d.f. = 32; NNFI = .92; CFI = .94. IFI = .95; NC = 1.43; RMSEA = .057

* $p < .05$, ** $p < .01$

Stepwise Regression Analysis

Whereas SEM is the most suitable model for analyzing the mediating effects as it allows inclusion of both observed and unobserved (latent) variables in MI and PM constructs, it restricts the number of parameter (variables) that can be included per a certain sample size and the addition of nonsignificant control variables usually deteriorates the fit of the model (Kline 1998). Therefore, we tested the influence of the control variables first by regressing organizational performance on each of the seven control variables alone. None of the regression models or regression coefficients was statistically significant ($p > .05$). Then, we conducted a multiple regression analysis regressing performance on all controls and prior performance (organizational performance in year 2004). With exception of the coefficient for prior performance ($p < .001$), none of the regression coefficients was significant ($p > .05$). Therefore, we only considered prior performance for the stepwise regression analysis.⁶

⁶ The regression models with the control variables are available from the authors.

Table 2
Stepwise Regression Results^a

	Model 1	Model 2	Model 3
MI	.03	-.11	-.03
PM		.39***	.20*
Prior organizational performance (year 2004)			.54***
<i>F</i>	.14	9.66***	27.63***
Adjusted <i>R</i> ²	-.01	.12***	.38***
Change in <i>R</i> ²		.13***	.26***

^aThe dependant variable is organizational performance (year 2005). Table entries are standardized regression coefficients.

p* < .05, *p* < .01, ****p* < .001.

We examined three models (Models 1–3, Table 2), entering MI, PM, and prior organizational performance (measured by 2004 CSP score) as explanatory variables, respectively.⁷ Model 1 was not significant ($F = .14$, $p > .05$), but Models 2 and 3 were ($p < .001$). Further, the regression coefficient in Models 1 was not statistically significant ($p > .05$). In Model 2, only the coefficient for PM was significant ($.39$, $p < .001$). In Model 3, only the coefficients for PM and prior organizational performance were significant ($.20$, $p < .01$ and $.54$, $p < .001$, respectively).⁸ These results confirm the findings from the SEM analysis (Model 1), delineating that PM, but not MI, affect organizational performance.

DISCUSSION

In this study, we have examined independent and joint effects of MI and PM on organizational performance. We conducted statistical tests using structural equation models in a sample of English local governments. The main findings from this study are that (1) MI does not have a direct impact on organizational performance, (2) PM directly affects organizational performance, and (3) the effect of MI on organizational performance is fully mediated by PM.

The literature on innovation and performance in the public and private sectors led us to hypothesize that there would be a positive relationship between MI and organizational performance. Our analysis, however, indicates that PM mediates this relationship (Model 3, figure 3). Although the balance of evidence on the direct effect of innovation on performance is weighted toward positive findings, previous research has not examined the possible mediating effects of other variables. Therefore, our study's findings signal the need for more extensive research on the innovation-performance relationship counting for the mediating role of organizational attributes and processes.

Indeed, there are spots of evidence in previous research that raises the possibility of the so-called “pro-innovation bias” (Rogers 1995). First, as stated above, the patterns of adoption, antecedents, and consequences of different types of innovation are not necessarily the same. Further, the bulk of knowledge on adoption comes from the private sector

⁷ To test for the mediation effect, we also implemented the approach suggested by Baron and Kenny (1986). The results did not shed any further light on the conceptual model (they are available from the authors). Thus, in keeping with recommendations from Judd and Kenny (1981), we present the final stages of the stepwise regression.

⁸ We also tested nonlinear effect of PM on performance (i.e., testing whether too much emphasis on PM could be detrimental to performance). The coefficient of the quadratic term of PM was nonsignificant ($p > .05$), and other results remained unchanged.

and manufacturing in particular. These studies have predominately focused on technology-based product and process innovations and have examined means of appropriating benefits that determine the technological trajectory, leading to a focus on “product or technology life cycle” models and discontinuous radical technological change (Abernathy and Utterback 1978; Anderson and Tushman 1991). These technology-driven models are perhaps not suited to an understanding of the adoption of innovations in public service organizations, especially MIs. This and other studies (Borins 1998; Moore and Hartley 2008; Walker 2008) are making progress in deciphering evidence on innovation types in public organizations. For example, Moore and Hartley (2008) argue that innovation types are more blurred and dimensional in the public sector, and rather than following a linear trajectory, public agencies may simultaneously adopt innovations, making the successful adoption of one innovation dependent upon another. However, this research stream is still in its infancy. More work needs to be undertaken for understanding the adoption of different innovation types and their distinct impact on organizational performance in public organizations which may in the future offer alternative interpretations of the adoption and impact of MI than those offered here.

Second, large-sample empirical studies of the influence of MI on organizational performance are scarce. Evidence has come mainly from case studies (Gold 1982; Hamel 2006; Light 1998). Our probing of the MI, PM, and performance relationship supports the case study contention that MI is a force for good; however, it adds that the relationship between MI and performance is subject to the focal organization’s ability to have in place management systems and effectively manage organizational processes to implement its mission and strategies. Hamel (2006, 75–6) associates MI with “. . . changing how managers do what they do.” In order to “change how managers do what they do” and for the adoption of MI to enhance performance, mechanisms to ensure that the adopted innovation is successfully implemented are necessary. Our research findings suggest that PM brings a degree of congruence between MI and performance. For public services managers, this finding implies that for gaining the greatest rewards from the introduction of MI, they need to ensure that appropriate PM frameworks are in place because without them the likely performance gains from MI will not materialize. Given that we have only examined one set of organizational processes, future innovation research should investigate the role of other key processes (e.g., strategy formulation and content, leadership, communication, and conflict resolution) as mediators or moderators of MI and performance.

Third, as explained above, as process innovations, antecedents, and consequences of MIs are often contrasted with product/service innovations. For instance, “performance-gap” and “first or early mover advantage” perspectives suggest that product/service innovations have a more direct effect on organizational outcomes than process/MIs (Roberts and Amit 2003; Wischnevsky and Damanpour 2006). According to these perspectives, changes in management systems and processes may affect the organization as a whole and could have consequences for organizational outcomes; however, their effect is more indirect and takes more time to occur than changes in products or services. In public service organizations, for example, the introduction of new services to assist elderly people to remain in their homes rather than move into residential or hospital care is likely to see a very immediate and positive effect on effectiveness of these services to this constituency. By contrast, the adoption of a new budgeting system may take a number of years to impact on

the allocation of resources and may need other mechanisms to ensure that new budgeting processes are embedded into the organization. Therefore, one interpretation of our findings is that the negative affect of MI on performance (albeit at the .10 significance level) is a result of the short time lag (one year) in our study. Additional research using longitudinal data is required to compare and contrast performance consequences of MIs in different public services and examine in greater detail the time lags between the adoption of MIs and their impacts on performance.

Finally, we are able to conclude that the emphasis on organizational processes in public management reforms could play an important role in public agencies. There has been skepticism surrounding the adoption of many management reforms that have sought to tackle the maladies of vague goals or high levels of red tape (see, e.g., Fountain 2001). Our findings challenge these arguments by demonstrating that PM mediates the effect of innovation on performance and have a positive influence of its own. At the heart of PM are “goals,” “targets,” “indicators,” “systems of control,” and “delegation of authority” to line managers. Together, they direct employees to their activities by clarifying organizational missions and goals, provide PM systems to detail the necessary information on progress, and devolve responsibility to service managers to help achieve the wider organizational goals. Overall, these processes achieve the aim of influencing the likelihood that employees will behave in ways that lead to the attainment of organizational objectives and allow organizations to benefit from the adoption of MIs. They support the emerging evidence on impact of PM in public organizations: that it is a force for good and is not dysfunctional such as moving resources from where they are required to meet need or resulting in gaming (Boyne 2010; Kelman and Friedman 2009).

The latter point raises some challenging issues for the research of public agencies. We have studied the relationship between IM, PM, and performance from a rational perspective. An alternative explanation for the adoption of MI may be found in institutional theory. Institutional theory proposes that organizations may adopt innovation and change to seek legitimacy or to enhance internal or external reputation and may do this through three mechanisms of mimetic, coercive, and normative isomorphism (DiMaggio and Powell 1983). Mimetic isomorphism offers that organizations in uncertain environments are likely to imitate the actions of successful organizations, even if those actions are not clearly justifiable or may not result in better outcomes (Wischnevsky and Damanpour 2006). Our study was not designed to test this assertion; however, we offer two ideas regarding the role of mimetic isomorphism for future research. More generally, whereas an organization may adopt some MIs that have gained currency and are adopted by leading organizations, unless MIs produce favorable outcomes, this imitation process will not last for long. Longitudinal research both at the level of innovation and organization is needed to examine this assertion. More specifically, our findings in support of mediation effect of PM suggest that MIs without existence of other organizational processes do not affect performance positively. As noted above, research on a wide range of mediating factors is necessary before one can conclude that the adoption of MI due to mimic isomorphism is helpful or harmful to organizational performance.

We have sought to implement the most robust research design with the data available. However, there are a number of limitations that need to be accounted for when interpreting our results. First, the data are not longitudinal. We were able to include a 1-year time lag in our models, but we did not have the data necessary for testing the relationships between

MI, PM, and performance over time. Thus, it is possible that subtle and more complex relationships emerge using longitudinal analysis. Second, the CSP score is a robust multidimensional measure of organizational performance. However, the way the Audit Commission construct this variable means that it is not possible to isolate different dimensions of performance. It could be that MI affects dimensions of performance differently, and multiple measures might tease out alternative relationships. Third, we have tested the influence of only one mediating variable. Other variables may intervene and mediate the relationship between MI and performance. Future research with larger sample sizes can confirm our findings by including wider range of mediating variables. Fourth, it is possible that the findings are an artifact of English local government in the early part of the twenty-first century. This relates to ways in which they are structured and operate and the particular package of services that they deliver. Further research in different public sector settings, for example, health services or uniformed services, and in different contexts is required to ascertain if our results hold sway elsewhere.

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APPENDIX

Measurement Model Properties

Item	Dimensions and Indicators	Mean	SD	Loadings ^a	R ²
MI					.80 ^b
IT innovation dimension					
MI1	New information technology	5.22	0.76	0.70	.48
MI2	New management information systems	5.36	0.74	0.90	.81
Administrative innovation dimension					
MI3	New approaches to service planning and budgeting	5.18	0.65	0.74	.54
MI4	New approaches to organizational improvement (e.g., reengineering, quality management)	4.84	0.79	0.70	.49
MI5	New management processes (e.g. new job descriptions, establishing new teams of staff)	5.01	0.73	0.64	.41
Covariance between dimensions = 0.715**					
χ ² = 11.2157; df = 4; NNFI = .85; CFI = .94; IFI = .94; NC = 2.80; RMSEA = .116					
Cronbach alpha = .80					
Reliability coefficient Rho = .83					
<i>Question instruction:</i> Please indicate the following were a major part of the management approach being adopted in your authority/service between April 2003 and April 2004.					
Range: 1 = disagree to 7 = agree.					
PM					.59 ^b
PM1	The authority's mission, values, and objectives are clearly and widely owned and understood by all staff in the authority and service areas	5.30	0.66	0.85	.73

Continued

Appendix (continued)**Measurement Model Properties**

Item	Dimensions and Indicators	Mean	SD	Loadings ^a	R ²
PM2	There is a well-developed framework of clear performance measurement and targets to drive what we do	5.79	0.58	0.75	.56
PM3	Control is devolved to service managers	5.18	0.58	0.53	.28
PM4	When our results deviate from our plans, the decisions to take appropriate corrective action usually comes from top management or politicians	4.75	0.61	0.45	.20

$\chi^2 = 2.3$; $df = 2$; NNFI = .98; CFI = .99; IFI = .99; NC = 1.7; RMSEA = .035

Cronbach alpha = 0.73

Reliability coefficient Rho = 0.76

Question instruction: Please indicate the extent to which you agree with the following statements about your authority/service between April 2003 and April 2004.

Range: 1 = disagree to 7 = agree

^aLoadings are standardized ($p < .01$ for all).

^bComposite reliability.

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