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Measuring Capacity for Innovation in Local Government Organizations

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Abstract

While innovation is widely accepted as essential to organizational success, this narrative is tied typically to long- and short-term financial performance. This perspective overlooks performance and innovation in *not-for-profit* sectors of the economy, e.g. local government. Innovation – finding and exploiting novel and effective solutions to problems – is also vital to the success of local government organizations that are faced with the task of meeting the needs of their constituencies in a changing world. This article describes a model of the psychological antecedents of innovation, and leads to a measure of organizational capacity for innovation. A case study diagnosis of a local government organization is presented. The diagnostic baseline serves as a starting point for the improvement of local government organizations' capacity for innovation, ultimately driving their ability to satisfy the needs of their constituencies, and therefore their non-financial performance.

Keywords: innovation, creativity, organization, local government, measurement, diagnosis.

Introduction – The need for innovation in organizations

The importance of innovation to organizations of all types is well established. Three decades ago, Van de Ven (e.g., 1986) reported that innovation management had become a primary concern of business and organizational leaders. Walton (2003) showed that 80% of managers regarded creativity as essential to corporate success. Anderson, Potocnik, and Zhou (2014) confirmed that innovation discussions have experienced enormous growth in the last decade. In fact, the call for innovation has reached critical proportions, with Freeman and Soete (1997, p. 266) concluding that "not to innovate is to die", while "innovate or die" is a common catch-cry in the current literature (e.g., Collis, 2010; Kriekels, 2013).

Knapper and Cropley (2000) characterized the key problem societies and organizations face as the need to deal with *change*. Both *for-profit* and *not-for-profit* organizations are confronted by discontinuous change in many domains. The impact of change is widespread, affecting production and distribution, reducing product lifecycles, driving new demands from stakeholders, increasing competition, changing supply chains, and accelerating degradation of the environment. Local governments are no less subject to these forces. Howard (2012) noted (p.5) that "The current economic, financial and policy climate requires that government services have to deliver significantly better

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performance at significantly lower cost." Most important is the fact that "This requirement extends beyond a dedication to incremental and continuous improvement…It requires a commitment to fundamental change in the way services are planned, organized and delivered." Barreto (2012, p. 356), described how organizations are confronted with changes that cause both internal and external organizational "shocks". Local government is under pressure to respond to continuous change by engaging in innovation.

The impact and benefits of change

Nussbaum (2013, p. 38) argued that a positive aspect of change is that it is causing "unmet needs" in society, and that innovative organizations – not least, local government – can meet these to their advantage. Cohen (2010) listed some specific benefits of change: enhanced stakeholder satisfaction, increased profits, competitive advantage and increasing revenue. Kleinknecht and Mohnen (2001) added improved export performance, while Yamin, Gunarsekaran, and Mavondo (1999) emphasized concrete, bottom-line outcomes, concluding that innovation leads to greater profitability. Adopting a more process-oriented approach, Miller (1983) argued that an innovative organization is good at "beating competitors to the punch", while Chan and Thomas (2013, p. 1) concluded that innovation gives organizations "a competitive edge". Finally, Anderson, Potocnik, and Zhou (2014, p. 3) referred to the ability of innovation to provide a "competitive advantage".

In many advanced economies, services form a large, and growing, proportion of economic activity. However Howard (2012), writing about the Australian context, stressed (p. 5) that while "Innovation is having a major impact in the banking, finance and insurance sectors…" nevertheless "…progress in achieving productivity gains in the government services sector of the economy has been slow." He notes, in particular, "…innovation is being seen as essential in areas such as education, health, and administration of justice." (p. 6).

Although they warned that innovation also involves substantial risks, Rosenbusch, Brinckmann, and Bausch (2011, p. 445) identified both tangible and intangible benefits (e.g. new products or services, increased productivity, greater employee satisfaction, and reduced staff turnover). Mumford, Hester, and Robledo (2012, p.8) also identified *indirect* organizational benefits (i.e., factors which *mediate* success on the bottom line) that have been linked to innovation. These include ability to respond to a crisis, improved teamwork, collaboration and organizational citizenship. Mumford, Bedell-Avers, and Hunter (2008) listed improved planning processes, and Amabile, Schatzel, Moneta, and Kramer (2004) mentioned a more intrinsically oriented workforce. Thus, the benefits of innovation are not confined to the direct production, implementation and marketing of new products, but also involve factors such as the climate in an organization, staff motivation, and job satisfaction. The benefits that have been linked to increased innovation are summarized in table 1 – many of these of direct relevance to local government.

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Outcome Benefits	Process Benefits
• Increased productivity • Competitive advantage • Increased demand • Improved export performance • Increased revenue • Greater profitability • Improved ability to attract investors • Greater ability to attract high quality staff	• Better response to crises • Improved planning • A more satisfied workforce • A more intrinsically motivated workforce • Better teamwork and collaboration • Improved organizational citizenship • Reduced staff turnover

Table 1. Examples of Specific Benefits of Innovation for Organizations.

In the case of local government, the general benefits (table 1) find application across a number of core business areas (Howard, 2012), including: asset management, waste management, community services and economic development. Measuring and improving the capacity for innovation in local government organizations is therefore a priority.

Assessing innovation in organizations

Innovation involves the generation and implementation of novel products, processes and services in organizations (e.g. D. H. Cropley and Cropley, 2015). It is widely accepted as key to organizational success. Technological advances – typically *products* – have made an enormous contribution to social progress and the prosperity of many organizations, while *service* innovation, not least in local government, is acknowledged as crucial for sustained economic progress. However, in an age of relentless change, these outcomes are not enough on their own. Innovation may include new or improved products, processes and services, but extends beyond these to incorporate the personal *creativity* that *leads to* new outcomes.

However, driven by for-profit, performance imperatives –financial and non-financial in nature – innovation is frequently examined only from the point of view of *implementation* of novel products and services, with little account taken of its *generation* – i.e. creativity. Therefore, innovation is typically assessed through *lagging* measures of outputs (e.g. market share) and outcomes (e.g. stock price). Discussions of innovation within organizational theory have also largely been limited to the study of organizational factors such as culture, work organization, or structure of the workforce. While these may include *leading* measures, many are only tenuously linked to outputs and outcomes, and therefore do little to drive organizational improvement in innovation (figure 1).

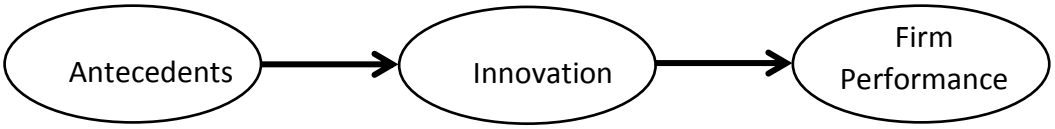

Figure 1. Innovation Inputs and Outputs

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Even where discussions of the psychological front-end (antecedents) of innovation exist, these have tended to focus on the way the organization functions (e.g., tolerance/intolerance of failure). The properties and processes within *individual actors* in the organization (e.g., thinking styles, or, personal properties), however, have received less attention. Not only do these antecedents represent *leading* measures of the innovation process, but there is also a body of knowledge linking leading measures to the *outputs* and *outcomes* that drive organizational innovation.

Nussbaum (2013, p. 15) argued that what is required to unlock the potential for innovation in organizations is to "deconstruct the creative act". This is especially relevant to local government, focused *not* on profit or market share – lagging measures that describe innovation *after it has happened* – but on leading measures that describe how effectively its people, processes and culture *will combine* to deliver a capacity for innovation.

This paper summarizes a deconstruction of creativity for organizational innovation. Creativity theory offers a detailed and encompassing framework for a differentiated analysis of organizational outcomes (i.e. products or services), the processes that lead to them, the psychological resources of the individuals who carry out the processes, and the external conditions that act upon the individuals to foster or inhibit the processes. More importantly, for local government and other not-for-profit organizations, creativity theory links the antecedents of innovation to *non-financial outcomes* and gives managers a tool for organizational change and improvement.

The front-end of innovation: creativity

The basic framework for deconstructing creativity is found in Barron (1955) and Rhodes (1961). This involves the so-called "4Ps" of creativity (figure 2):

- *Product* (tangible artefacts, intangible service);
- *Process* (thinking styles that result in useful, novel products);
- *Person* (psychological resources of individuals that support the process), and;
- *Press* (the *pressure* of the organizational environment).

Also important is the fact that these four factors comprise a *system*. Creativity, and therefore innovation, is the result of the *interaction* of the 4Ps.

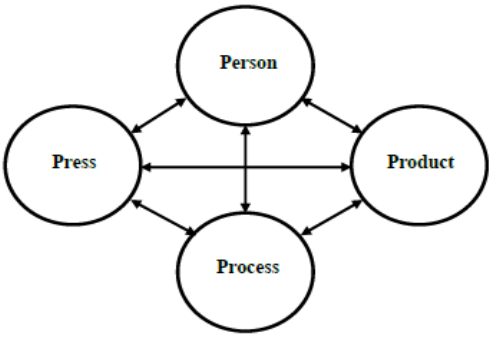

Figure 2. The 4Ps of Creativity.

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A framework for understanding organizational innovation

D. H. Cropley and Cropley (2015) explain that organizational innovation involves understanding the *interactions* among the 4Ps – person, product, process and press. These factors interact across stages, or *phases*, in the process of organizational innovation. At the same time, there are paradoxes in the innovation process – seemingly contradictory states that appear simultaneously both to favor and hinder innovation. Davila, Epstein, and Shelton (2012) support the role of distinct phases in organizational innovation, discussing the necessity of balancing creativity with value creation (p. 89). They describe the "internal marketplaces" (p. 89) in organizations that "…weigh, select and prioritize innovations for their creativity and inherent commercial value or worth to the company." Importantly, Davila, Epstein, and Shelton (2012) reinforce the conflicting and paradoxical nature of these processes, but imply, drawing on Shelton (2001), that the key to successful innovation is to balance these.

The Innovation Phase Model (IPM)

D. H. Cropley and Cropley (2008) proposed an integrated Innovation Phase Model (IPM) to describe the interaction of antecedent process, person, product and press factors (referred to as *dimensions*) across stages noting, as did Csikszentmihalyi (2006), that the creative process may include distinct phases that draw on different psychological resources. The *interaction* of the 4Ps with the phases of the innovation process (table 2) resolves the paradoxical nature of organizational innovation. Whereas Davila, Epstein, and Shelton (2012) see the balance between creativity and value creation as one of compromise, the IPM resolves the paradox – the conflicting needs of creativity and value creation – by noting that each must be applied, in full, but at the *right time* in the process. In this way, the competing needs of creativity and value creation across the 4Ps can co-exist without compromise, provided the organization understands when each takes precedence over the other.

The Innovation Phase Model was first placed in the context of organizational innovation in D. H. Cropley (2009) and D. H. Cropley and Cropley (2010) and this was followed by further discussion in the same context in D. H. Cropley and Cropley (2011). Coupling an expansion of the 4Ps model of creativity, outlined previously, with a model of seven phases of innovation – spanning problem definition and identification to solution development and implementation – the IPM specifies a matrix of intersections of specific Ps with specific phases (e.g., *Personal Motivation* in the phase of *Activation* – table 2). The cells in this matrix are referred to as *Nodes*.

The IPM then describes each of the 4Ps in terms of a dichotomy bounded by two poles. "Process", for example, is defined by *divergent thinking* at one pole and *convergent thinking* at the other. Each node has a *favorable* pole of the relevant P (from the point of view of innovation). For example, in the phase *Generation*, divergent thinking is the process most important for innovation, because generation involves the production of ideas.

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	Prepara-tion	Activation	Genera-tion	Illumina-tion	Verification	Communi cation	Validation
Process	Converg-ent	Divergent	Divergent	Convergent	Convergent	Mixed	Convergent
Motivation	Mixed	Proactive	Proactive	Proactive	Mixed	Reactive	Reactive
Personal Properties	Adaptive	Innovative	Innovative	Innovative	Adaptive	Adaptive	Adaptive
Feelings	Conser-ving	Genera-tive	Genera-tive	Generative	Conserving	Conser-ving	Conserving
Product	Routine	Creative	Creative	Creative	Routine	Routine	Routine
Press	High	Low	Low	Low	High	High	High

Table 2. The Innovation Phase Model.

Thus, in the node generation/process (abbreviated as *GenProc*) divergent thinking is vital. Conversely, in the node verification/process (*VerProc*), convergent thinking is critical for innovation, because in this phase ideas that have already been produced must be tested and evaluated. What is good for innovation in one node – whether an aspect of process, product, person or press – is not necessarily good in another node. The crucial thing is to know when and why each pole of each antecedent P is critical to innovation, and the IPM model provides this information (see table 2).

The *Innovation Phase Assessment Instrument* (IPAI) developed in D. H. Cropley and Cropley (2012) and D. H. Cropley, Cropley, Chiera, and Kaufman (2013) is derived from the IPM and offers a statistically robust and reliable measure of an organization's alignment the conditions that are ideal for innovation. In local government, as in for-profit contexts, this has particular application in driving successful organizational innovation.

Research design and methods

The case study now presented demonstrates the application of the IPAI to the measurement of innovation capacity in a local government organization. This research demonstrates that the IPAI can be used to establish a baseline measure of innovative capacity in a local government organization; both as a diagnostic tool, and as the basis for future interventions designed to improve that capacity.

Methods of analysis

A descriptive analysis of the IPAI – means and standard deviations of node, phase and dimension scores of innovation alignment – was used to conduct a SWOT (strengths, weaknesses, opportunities and threats) analysis of the target organization's capacity for innovation. Recommendations for actions to improve

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innovation are reported using the SWOT analysis, and these are enhanced by examining relationships between various internal groupings (e.g. gender, level of education) using t-tests.

Data source

Participants in this study consisted of 81 (59 male, 21 female) employees of a single local government organization covering a town (population approx. 5,000) and surrounding area (total population approx. 12,500) in the state of Queensland, Australia. Ages of participants ranged from 18-24 years (6 participants) through to 65+ (3 participants) with the most common age band being 50-54 years (18 participants). The level of education of participants spanned high school, through to various levels of university education. The most common level of education consisted of professional/trade qualifications (30 participants). All organizational units of the local government organization were represented in the sample, with a majority located in Engineering Services (42 participants). The participants' experience as employees of the organization ranged from 0-5 years (27 participants) through to more than 35 years (5 participants). Finally, the majority of participants (70) were employed on a full-time basis by this local government organization.

Procedure

Participants were given the option of either: (a) being directed to a website where the survey instrument was hosted online, or: (b) completing a hard copy of the survey instrument. This was necessary, as some employees did not have regular access to computers.

Measures

The primary source of data for this study was the *Innovation Phase Assessment Instrument* (*IPAI*), developed and described by D. H. Cropley and Cropley (2012) and D. H. Cropley, Cropley, Chiera and Kaufman (2013), and most recently placed in the wider context of organizational innovation in Cropley and Cropley (2015). The underpinning IPM (table 2) establishes a framework of 42 unique *nodes* that each describe a particular intersection of antecedent dimension and phase.

The IPAI used in this study consists of 168 dichotomous choice items – four per node – consisting of a common stem "In this organization…" and a series of unique statements such as "… staff helps to define the goals of their work." Participants respond to each statement by indicating whether that item is *true* or *false* about their organization, in the normal course of events. Each response is then compared to the theoretical ideal condition, defined in the IPM, to determine a *mean percentage alignment* of the organization to the conditions and characteristics favorable to innovation. The result is a matrix of 42 node scores that describe the degree to which the organization is aligned to the conditions ideal for innovation, for each unique intersection of dimension and

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phase (see table 2). In addition, aggregate scores for phases and dimensions are also computed.

Reliabilities (Cronbach's alpha) for the IPAI have been shown (D. H. Cropley, Cropley, Chiera & Kaufman, 2013) to be excellent for the 168-item scale (α = .96), as well as for the 42 nodes (α = .96). In addition, when items were pooled across individual phases to yield scores on six antecedent subscales, alphas remained acceptable, ranging from .74 to .87. Similarly, pooling items across the antecedents yielded seven subscales for phases, with alphas ranging from .74 to .81. A more detailed discussion of the scale properties is given in D. H. Cropley, Cropley, Chiera, and Kaufman (2013).

In the present study (n = 81), Cronbach's alpha for the full 168-item scale was .947. For the 42-item scale defined by the nodes, Cronbach's alpha was also .947. For subscales defined by the seven phases, Cronbach's alpha was .945, while for subscales defined by the antecedents, Cronbach's alpha was .931. All of these figures are excellent and indicate very high level of consistency in the responses. Demographic variables measured in this case study included age, gender, level of education, length of experience in the organization, and work type (individual or group).

Results

The purpose of the IPAI is to indicate the extent to which the organization is *aligned* to the states of the antecedents that favor innovation in each phase. For this reason, the key descriptive statistic is the frequency count of aligned responses. Table 3 presents these as a percentage of the total responses for each node. The higher the frequency count – i.e. the higher the percentage figure – the more the organization is aligned to the favorable states of the antecedents *for that node*.

A summary of the descriptive statistics (mean, standard deviation and range) for individual alignment scores for nodes, phases and dimensions is shown in table 4.

Measure	M (%)	SD (%)	Range (%)
Node Alignment (%)	52.4	10.4	42.0
Phase Alignment (%)	52.4	5.6	14.1
Dimension Alignment (%)	52.4	3.7	10.0

Table 4. Means and SDs for Node, Phase and Dimension Alignments (%).

Tests of normality indicated that all node, phase and dimension scores were normally distributed and therefore amenable to parametric analysis.

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	Prepara-tion	Activation	Generat-ion	Illumina-tion	Verifica-tion	Communica-tion	Valida-tion	Dime-nsion
Process	49.4	**62.7 (S)**	45.4	58.3	54.0	43.2	45.7	51.2
Motiva-tion	48.8	52.2	49.1	**72.2 (S)**	**71.9 (S)**	**65.1 (S)**	**30.2 (W)**	55.6
Personal Properties	61.4	**34.9 (W)**	**39.5 (W)**	47.2	**62.7 (S)**	**66.4 (S)**	53.1	52.2
Feelings	**39.8 (W)**	58.0	**67.6 (S)**	49.4	61.4	57.1	57.4	55.8
Product	56.5	47.5	51.9	52.8	58.6	**65.4 (S)**	**41.4 (W)**	53.4
Press	**42.0 (W)**	49.7	**32.7 (W)**	**37.7 (W)**	49.1	62.3	47.2	**45.8 (W)**
Phase	49.6	50.8	47.7	52.9	**59.6 (S)**	**59.9 (S)**	**45.8 (W)**	

(S) indicates a Strength (value is > 1SD above the mean); (W) indicates a Weakness (value is < 1SD below the mean).

Table 3. Innovation Alignment by Node (cell), Phase (column) and Dimension (row) – (% Alignment to Ideal)

Discussion

The goal of innovation diagnosis using the IPAI is to characterize the organization's existing capacity for innovation as a first step towards *managing* that capacity. Equally, the diagnosis establishes baseline for innovation diffusion – of special relevance to local government organizations. In other words, before an organization's capacity for innovation can be improved, it is first necessary to understand where its strengths and weaknesses lie – where is it currently well-aligned to the ideal conditions for innovation, and where is it currently poorly aligned? This can be conducted in one of two contexts – internal or external – and at one of three levels (node, phase/dimension, overall). In the absence of normative data – sector-wide benchmarks – and with a focus on continuous improvement, the most meaningful analysis is to examine *relative* (i.e. internal) strengths and weaknesses *within* the target organization.

Interpretation of the results begins with a discussion of the overall alignment for the whole dataset (52.4%). With alignment ranging from 0% to 100%, it is obvious that this figure represents a modest level of alignment to conditions ideal for innovation in the target organization. During the period in question, the organization employed a total of 169 staff. With a sample size of 81, assuming a 95% confidence level, and for a mean alignment of 52.4%, the confidence interval is 7.9%. In other words, across the entire organization, and for the full population of employees, it can be assumed that the actual, true, alignment lies between 44.5% and 60.3%. While useful as a cross-organizational benchmark, and for monitoring changes in response to interventions within the target organization, this level of analysis is of limited value in formulating actions for remediation and improvement of local government organizations.

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A diagnostically more useful analysis must drill down to a deeper level – or unit of analysis – and must also examine the internal, *relative* strengths and weaknesses of the organization. To this end, means and standard deviations of each node, phase and dimension percentage alignment are used to define categories in a SWOT-type analysis. The categories of *strength*, *weakness*, *opportunity* and *threat* were defined by bands of standard deviation above and below the mean (see table 5).

	Weakness	Threat		Opportunity		Strength
Node (SD = 10.4)	<42.0%	42.0 – 52.4%		52.4 – 62.6%		>62.6%
Phase (SD = 5.6)	<46.8%	46.8 – 52.4%		52.4 – 58.0%		>58.0%
Dimension (SD = 3.7)	<48.7%	48.7 – 52.4%		52.4 – 56.1%		>56.1%

Table 5. *Relative* Strengths, Weaknesses, Opportunities and Threats

Applying the categories set out in table 5, the analysis of the target organization moves to the examination of *phases* and *dimensions*. Phases represent the aggregate of the antecedent dimensions (process, motivation, etc.) at each key stage of the innovation process. At this level of analysis, the local government organization indicated two outright *strengths* (M > 58.0%) – for the phases of verification and communication – as well as a single weakness (M < 46.8%) in the phase of validation (in bold in table 3). These phase results suggest that the target local government organization is most adept at those phases of innovation that involve defining a single, optimal "solution" to a service problem (verification) and translating this into a working prototype (communication) – i.e. the back-end, value-creation stage of innovation. However, the phase results suggest that this strength in the latter, exploitation phase of innovation is compromised by a weakness in final implementation, or introduction into service, of that solution.

Analyzing the organization by *dimension* – the aggregate of each antecedent across multiple phases (i.e., the rows in table 3) – the target local government organization indicated no outright strengths (M > 56.1%), and a single weakness (M < 48.7%) – for the dimension of press (organizational climate) – shown in table 3. The weakness in the dimension press suggests a general misalignment of organizational climate across all phases of the innovation process in this organization. The dynamic nature of the innovation process demands that successful organizations exhibit flexibility and adaptability. The dimension results suggest that the organization is struggling to do the right things at the right time with respect to organizational climate. This may be caused by a lack of understanding among managers of active innovations phases relative to a given project, and a weakness in managing the organizational climate relative to these

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phases.

In order to understand further the factors contributing to the strengths and weaknesses identified in phases and dimensions, and to develop more specific remedial actions, the next level of analysis examines individual *nodes* (see table 3). Eight nodes present as weaknesses (M < 42.0%), while eight nodes also present as strengths (M > 62.6%) for this organization. These data show that the strengths and weaknesses identified at the level of phases and dimensions can be attributed more specifically to strengths/weaknesses in particular nodes. For example, the weakness in the dimension press arises from particular weaknesses in that dimension in the phases of preparation, generation and illumination. This more specific identification of the locus of weaknesses assists in formulating advice for remediating these weaknesses.

Similarly, the strengths in the phases of verification and communication are driven by strengths in a cluster of specific nodes associated with motivation and personal properties, while the weakness in validation is driven by specific weaknesses in motivation and the nature of the product. Not only do the alignment scores for phase, dimension and node provide a snapshot of the organization's capacity for innovation, they allow the construction of specific hypotheses directed at improving weaknesses and maintaining strengths. This process of analysis and interpretation is further aided by a comparison differences among groups within the organization.

Inter-group analyses

The size of the sample obtained (n=81) places some constraints on the analysis of differences between groups. A power analysis based on the overall sample size shows that, for an alpha of .05, and setting the power criterion at .80, a moderate-to-large effect size (0.7 SD) would be obtained only when the groups being compared contained at least 35 members. For these reasons, comparisons between groups were conducted using only t-tests, where possible setting groups sizes to be roughly equal. Tests of normality for the node, phase and dimension scores indicated no major violations of normality, and the data are therefore suitable for parametric analysis.

Independent samples t-tests were conducted to compare phase, dimension and node scores for a range of different groups in the local government organization. Table 6 shows all groups/variables for which statistically significant differences of at least moderate effect size (eta squared) were found ($p < .05$).

Comparing males and females, no differences were found for any group comparison in relation to either phase or dimension alignment scores for the target organization. Statistically significant differences were found only in five nodes, with the magnitudes and effect sizes summarized in table 6. For the organization in question, in five nodes, males evaluated the organization as better aligned to innovation than females. Two of these nodes (ActPer and GenPer) were weak overall, suggesting that females evaluated alignment in these nodes as *especially* weak. Action to address these weaknesses therefore

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would be informed by the specific knowledge that males and females in the organization perceive these differently.

Groups	Node	Magnitude	Effect Size*
Gender: Male (n=59), Female (n=21)	GenPer (t(57.1) = 3.327; p = .002)	Mean Difference = 19.5, 95% CI: 5.02 – 33.96	Moderate – Large (eta squared = 0.124)
	ActFee	+	Moderate
	ActPer	+	Moderate
	ComPre	+	Moderate
	IllProd	+	Moderate
Age: ≥50 Years (n=43), <50Years (n=38)	ActPer (t(79) = 2.207; p = 0.03)	Mean Difference = 11.17; 95% CI: 1.09 – 21.24	Moderate (eta squared = 0.058)
	IllProd	-	Moderate
	PreProd	+	Moderate
	ValFee	+	Moderate
	ValMot	+	Moderate
	ValPer	+	Moderate
Level of Education: ≤High School (n=34), >High School (n=47)	ComPre (t(79) = 2.866; p = .005)	Mean Difference = 16.71; 95% CI: 5.11 – 28.31	Moderate (eta squared = 0.094)
	GenFee	+	Moderate
	IllMot	+	Moderate
	ValProc	+	Moderate
Experience in the Organization: ≤10 years (n=46), >10 years (n=35)	VerProd (t(79) = 2.407; p = .018)	Mean Difference = 11.20; 95% CI: 1.94 – 20.45	Moderate (eta squared = 0.068)
	IllFee	+	Moderate
Work Type: Mixed or Team only (n=52), Mostly individual (n=29)	PreMot (t(79) = 2.139; p = .036)	Mean Difference = 12.85; 95% CI: 0.89 – 24.08	Moderate (eta squared = 0.055)
	ComPer	+	Moderate

*Effect sizes (eta squared): .01 = small effect; .06 = moderate effect; .14 = large effect.

Table 6: Target Organization Group Differences (≥Moderate Effect size)

In relation to age, older participants evaluated the organization as better aligned than younger participants in five nodes. Three of these were weak nodes overall (ActPer, GenPer and ValMot) suggesting that younger participants evaluated alignments in these nodes as especially weak. In addition, the node ActPer was evaluated as particularly weak by younger female participants. Leaders in this organization seeking to address these weaknesses would therefore tailor their actions accordingly.

For level of education, participants with a high-school-only level of education evaluated four nodes as better aligned than participants with a post-secondary

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level of education. For two of these nodes (IllMot and GenFee) the less highly educated participants rated the nodes as especially strong. Participants with less than 10 years' experience in the organization rated two nodes as stronger than their more experienced counterparts, although neither of these two nodes was a strength or weakness overall. Finally, participants who are working mostly on their own rated two nodes as less well aligned, with one of these (ComPer) strength overall, suggesting that those participants working in teams, or both individually and in teams saw this node as a particular strength.

Limitations

One noteworthy limitation of this study is the sample size (n=81) relative to the total population of employees (n=169). The principal impact of this is to increase the confidence interval (i.e. margin of error), thus expanding the range of alignment scores over which it can be assumed that the true figure lies for the full population. To improve this figure, it would be necessary to sample a larger proportion of the members of the organization in question. As is the case with all research of this type, sample size plays an important role in the conclusions that can be drawn from the data. The impact of sample size on the confidence interval is particularly important for smaller populations, and therefore future research into local government innovation must endeavor to maximize sample sizes if meaningful, and broadly generalizable, conclusions are to be drawn.

Conclusion

Local government organizations must fulfill a dual role in relation to innovation. They must be both *generators* of innovation – developing new ways to deliver effective services to their constituents – and also *implementers* of innovation – adopting and diffusing new and effective services developed, for example, by central governments. In both cases, the success of local government organizations is tied to their alignment to the antecedents of innovation. Critically, this alignment requires the successful organization to manage a set of innovation *paradoxes* – the conditions and characteristics that favor organizational innovation are dynamic, and change depending on the stage of the innovation process. Thus, the successful local government innovator proactively manages the characteristics of the person, the process, the product and the press, to ensure that the right things are done at the right time. The IPAI equips leaders with a highly differentiated insight into the innovation strengths and weaknesses of their organization, making it possible to target improvements most effectively.

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