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Creative climate and organisational resilience: the mediating role of innovation

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Abstract

Purpose – This study aims to investigate the mediation role of innovation between creative climate and organisational resilience.

Design/methodology/approach – The study used a cross-sectional design to collect data about the study variables from parastatal managers using self-administered questionnaires. Hierarchical regression and Medigraph were used to test hypotheses.

Findings – Creative climate has a significant association with innovation and organisational resilience. Innovation partially mediates the effect of creative climate on organisational resilience.

Research limitations/implications – The sample size was small involving only parastatals. The results may be different in an expanded public sector. The study was cross-sectional that is limited in examining long-term effects of creative climate and innovation on organisational resilience. Therefore, a longitudinal study design is proposed for future research.

Practical implications – Managers in parastatals need to provide a conducive creative climate that promotes innovations for organisational resilience.

Originality/value – The study provides empirical evidence on the mediation role of innovation in the relationship between creative climate and organisational resilience in a public sector. The evidence shows the contribution of innovation in striving for organisational resilience based on the creative climate.

Keywords Organisational behaviour, Organisation development

Paper type Research paper

Introduction

Organisations should remain useful to society by providing competitive services or products lest they lose their mandate (Lewis and Loebbaka, 2008; Scott, 2007). Organisations should be resilient to continue providing better services to society, and this requires a creative climate and innovation. Organisational resilience is the ability of the organisation to cope with change through continuous renewal of business operations to prevent decay and disuse (Stewart and O'Donnell, 2007; Scott, 2007). Organisations face challenges to the extent that they must continuously transform themselves so as to remain relevant. This is paramount in the public sector where government organisations deliver essential services to society. Unsatisfactory service delivery jeopardises the existence of society (O'Donnell, 2006).

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Some studies have, with limited empirical support, revealed that a conducive creative climate is associated with organisational resilience as mediated by innovation (Weeks, 2008; O'Donnell, 2006; Amabile, 1997). Notwithstanding the contribution of the extant literature, what remains unclear is the extent to which innovation mediates the relationship between creative climate and organisational resilience in the parastatal sector. Innovation as used in this study is a process through which managers create and implement useful changes in structures, processes and competences (OECD, 2005; O'Regan and Ghobadian, 2004; Drejer, 2000).

Whereas innovation is important in building organisational resilience, some organisations fail to build dynamic capabilities for adjusting the work processes and structures (Chaharbaghi *et al.*, 2005; Cho *et al.*, 2007), which may affect the organisation's capacity to adapt even when there is a conducive creative climate. According to the componential theory, there must be a conducive creative climate for creativity and innovation to flourish in organisations (Amabile, 1997). In this study, the componential theory is used to explain the role of a creative climate in stimulating creativity and innovation that are associated with organisational outcomes such as organisational resilience. However, extant studies have paid less attention on investigating the relationship between creative climate, innovation and organisational resilience (Panuwatwanich *et al.*, 2008; Porzse *et al.*, 2012).

The dynamic capabilities theory emphasises the need for a firm to develop and renew its organisational capabilities to remain competitive (Teece *et al.*, 1997). This theory states that firms should not only focus on exploitation of resources but also have the ability to develop and renew their organisational capabilities (Teece *et al.*, 1997). Some studies on dynamic capabilities theory have not focused on organisational resilience (Capron and Mitchell, 2009; Nielsen, 2006). The contribution of extant studies notwithstanding, the extent to which innovation mediates the relationship between creative climate and organisational resilience remains unclear, especially in the parastatal sector of Uganda. Therefore, this study examined the mediating role of innovation in explaining organisational resilience based on the creative climate.

Theory and hypotheses

Creative climate and organisational resilience

There is a need for a conducive environment for organisational renewals to be successfully implemented for adaptation and competitiveness. Based on the componential theory, Amabile (1997) and Amabile *et al.* (1996) assert that the work environment promotes creativity, innovations and ultimately organisational outcomes such as organisational resilience. According to Amabile (1997), studies have revealed that the most important elements of the innovation orientation include a value of creativity and innovation in general, an orientation towards risk (vs an orientation towards maintaining the status quo), a sense of pride in the organisation's members and enthusiasm about what they are capable of doing and an offensive strategy of taking the lead towards the future (vs a defensive strategy of simply preferring to protect the organisation's past position). Amabile adds that organisations that support creativity for innovation tend to have mechanisms for developing new ideas, for example open, active communication of information and ideas; reward and recognition for creative work; and fair evaluation of work – including work that might be perceived as a failure. Furthermore, such organisations discourage impediments to creativity, namely

organisational politics, destructive criticism and competition within the organisation, strict control by upper management and an excess of formal structures and procedures.

Ensor *et al.* (2006) found evidence in advertising agencies that work group support and lack of organisational impediments enhance creativity and competitiveness in those firms. According to Weeks, 2008; Hamel and Valikangas, 2003, perceived organisational support appears to be significant for sustainable organisational adaptation and competitiveness. This support may include provision of necessary facilities, supervisory support and team support, all of which influence innovation and organisational resilience.

Amaratunga *et al.* (2001) have outlined certain critical success factors for sustainable implementation of innovations, such as:

- frequent formal and informal communication at all levels;
- capacity building;
- reward and recognition system; and
- use of process teams and use of clear process performance measures.

Successful innovation diffusion can lead to resilience behaviours, such as adaptation, competitiveness and value (Panuwatwanich *et al.*, 2008; Montes *et al.*, 2004). From this conceptualisation, innovation seems to mediate the relationship between creative climate and organisational resilience. Panuwatwanich *et al.* (2008) emphasise the need for an innovation-supportive climate that can promote innovative and resilient behaviours. This study nonetheless does not explicitly reveal the extent to which creative climate influences organisational resilience.

More studies have revealed the importance of organisational factors in implementing renewed organisational structures, processes and competences for resilience. The way managers perceive organisational support, supervisory support and work group support determines innovation for organisational value and adaptation (Dul *et al.*, 2007; Amabile, 1997). The foregoing implies that a poor creative climate may affect the health of an organisation, a situation Panuwatwanich *et al.* (2008) argue against while advocating for a conducive creative climate that enables innovation and innovation diffusion for business excellence. Panuwatwanich *et al.* (2008) in their qualitative case study of Australian design firms found out that organisational support, supervisory support and work group support are essential for innovation and innovation diffusion which can culminate in organisational resilience.

Findings from an earlier study by Borins (2001) reveal that organisational support in the public sector, such as government innovation awards, gains sharing and recognition, can serve as an impetus to innovation and probably subsequent resilience building. Borins' findings seem to suggest that organisational support can prompt one to take an initiative to propose and/or implement ideas that can improve the health of an organisation. In this vein, the study sought to investigate the association between creative climate and organisational resilience, given that some available evidence (Muhairwe, 2010) reports that corporation managers in Uganda have limited initiative to create value in service delivery because they are preoccupied with preordained statutory mandates of the corporation; yet, they are free to innovate. From the preceding review, two hypotheses were set:

H1. There is a significant relationship between creative climate and organisational resilience.

H2. Innovation significantly mediates the relationship between creative climate and organisational resilience.

Creative climate and innovation

Organisations need to build a climate that promotes creativity (creative climate). Creativity seeks to create novel ideas that can be used to re-engineer business structures and processes (Leonard and Sensiper, 1998). Amabile (1997) describes creativity as forming something from nothing and innovation as putting that something into use. This implies that something new is generated through creativity and the idea is implemented through innovation.

Managers should develop a culture that can make a climate conducive for the development of ideas from infancy to maturity where every constructive idea that is generated should be recognised and advanced for business improvement (Garcia-Morales *et al.*, 2006). The recognition of creative ideas is in line with the componential theory which states that, for creativity and innovation to flourish in organisations, there must be a conducive work environment (Amabile, 1997). Baer *et al.* (2003) in their search for what promotes innovation focused on the reward climate as a key determinant and proposed further climatic studies. This study, therefore, sought to investigate the creative climate that is conducive for improving business structures and processes. This was to answer the question: to what extent is the creative climate associated with innovation in parastatal organisations in Uganda?

The required climate for innovation may be one advocated for by Baer and Frese (2003), which they describe as climate for initiative and psychological safety. These scholars contend that organisations create climates where workers feel safe to take risks, propose new ideas and openly debate problems so as to enhance innovation in their organisations. This implies that people can identify and rectify problems in the organisation depending on the prevailing climate for initiative, psychological safety and group cooperation. This assertion is supported by a study in the private sector which found a positive relationship between climate for initiative and process innovation and climate for psychological safety and process innovation (Baer and Frese, 2003). Besides the climate for initiative and psychological safety, Montes *et al.* (2004) argue that top echelons of any organisation should recognize workers who develop innovative ideas for their business to prosper.

The individual's innovation is determined by the perceived support in the organisation (Garcia-Morales *et al.*, 2006). Porzse *et al.* (2012) examined the impact of creative organisational climate on the innovation activity of medical devices manufacturing firms in Hungary and concluded that a conducive creative organisational climate promotes innovation within companies. These scholars argue that one way for organisational recovery is to carry out innovations which require organisational support. This support may include significant financial resources, ideation time, freedom to experiment and take risks (Ekvall, 1996; Porzse *et al.*, 2012).

Klijn and Tomic (2010) reveal that development of novel ideas is highest when the work group structure is organic and of diverse composition. Innovation is enhanced if individuals support each other and are of diverse background – heterogeneous groups are preferred to homogeneous ones due to the inherent danger of groupthink (Leonard

and Sensiper, 1998). Homogeneous groups tend to be preoccupied with uniformity and conformity of ideas rather than divergence. It is divergence that can add value towards solving organisational problems. For instance, a multi-functional team can use their functional divergent expertise to creatively and innovatively change organisational systems, structures and processes through overt confrontation, adventure and/or portfolio building (Andriopoulos and Lowe, 2000).

The individuals in the team may support each other by commenting (overt confronting) about certain things, such as the process of work, communication system or service delivery system probably exploring/highlighting the weaknesses (adventuring) with a view of improvement or overhaul. According to Leonard and Sensiper (1998), organisations can maintain their structures and processes using an incentive system that is a key in encouraging structural and process creativeness and innovation. This is a call for organisations to reward individual creativity and innovation (Baer *et al.*, 2003; Amabile, 1997). Organisations then should be able to provide a conducive climate and tap any innovative gossip from anybody whether managerial, support staff or client (Garcia-Morales *et al.*, 2006; Baer *et al.*, 2003; Amabile, 1997). From this review, a hypothesis was set that:

H3. There is a significant relationship between creative climate and innovation.

Innovation and organisational resilience

Organisations must be innovative by persuading stakeholders to accept innovations and provide conditions for innovations such as the creative climate. The need to innovate is revolutionary rather than evolutionary (Christensen, 1997), and it is a necessity for survival in dynamic and complex markets and in uncertain economic circumstances. Caiden (2003) calls for a change in organisations focusing on leadership, objectives and goals, style of working, methods and processes, structure, rules and regulations, personnel, budgets, supplies, contracts and alliances to add value.

Failure to create value would probably lead to complaints and criticisms, reduced performance and collapse of internal morale, loss of talent or even outside intervention to prevent further deterioration, including forced innovation. Based on this scenario, organisations should continuously investigate and question several organisational attributes, such as organisation's objectives, goals, functions, political directives, policies, decision-making capacity, plans, authority structures, division of work, accountability, communication channels, infrastructure, procedures, processes, way of handling people, budget, financial procedures, use of talent, public image, complaints and criticisms, all of which remain organisational challenges in most parastatals (Rondinelli, 2008). In a bid to cope, organisations improve their level of adaptation, competitiveness and value (Scott, 2007).

According to Castillejo *et al.* (2009), there is a relationship between process innovations and business growth. Based on this argument, these scholars produced results to suggest that process innovations may be used as a strategic tool through which small- and medium-sized enterprises may enhance their competitiveness, given that the competitive pressure has intensified due to increased globalisation of markets. Resilient organisations must have the capability to design new business processes that are deemed fit for efficiency and effectiveness (Li-Hua, 2007; Deselnicu *et al.*, 2007).

For the new processes to be sustainable, the organisation must enable human resources to competently and committedly execute work through the processes. The

project of renewing business processes may require some level of innovation – developing new ways and methods of production, trying them out (process portfolioing) and learning from them until the best system is designed (Bawden and Ortun, 2002). Process and structural improvement can then be described as a social learning activity where different individuals pool their intellectual capital probably through adventuring and overt confronting (Andriopoulos and Lowe, 2000) to enhance innovation in either structures or processes or both so as presumably to build organisational resilience.

Hamel and Valikangas (2003) in their theoretical review state that innovation is a prerequisite for developing organisational capacity to cope with environmental changes. This implies that organisations that carry out innovations tend to improve organisational competitiveness. There is need for public managers to become entrepreneurial managers to add value in the public service value chain. For instance, Omachonu and Einspruch (2010) regard healthcare innovation to be the introduction of a new concept, idea, service, process or product aimed at improving treatment, diagnosis, education, outreach, prevention and research, with the long-term goals of improving quality, safety, outcomes, efficiency and costs. In view of this review, the hypothesis below was formulated:

H4. There is a significant relationship between innovation and organisational resilience.

Arising out of this literature review in Figure 1, the model below was developed to guide this study.

Research method

Population and sample

The population consisted of parastatal organisations in Uganda. This study was based on a sample of 62 parastatal organisations, though 51 of them participated in the study. For the unit of inquiry, members of the senior management team in each parastatal organisation were selected because they occupy strategic positions (O'Regan and Ghobadian, 2004) to report about organisational resilience which is a strategic function. To get the actual respondents, a contact person in each parastatal was requested to distribute questionnaires to his or her senior colleagues in the organisation while ensuring as much representativeness of the senior management team as possible (Baer and Frese, 2003). The study targeted seven managers to be given questionnaires with a minimum response expectation of three respondents per organisation (Baer and Frese, 2003). The total number of managers who responded to the questionnaire was 242.

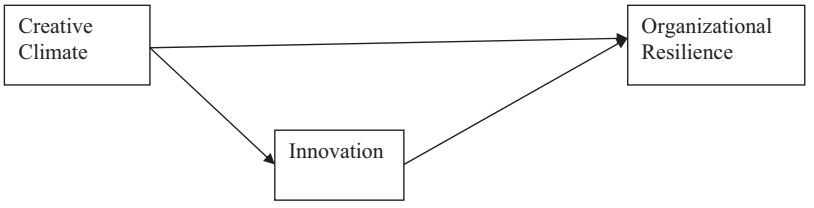

Figure 1.
Research model: the mediating role of innovation in creative climate and organizational resilience

Measures

Creative climate

The climate for creativity was used to investigate how the prevailing work environment supports creativity in parastatal organisations. To achieve this, the study used Amabile's (1997) KEYS research tool. The tool captures the perceptions managers have about their work environment. The instrument has various scales ranging from organisational encouragement, supervisory encouragement, work group support, freedom, sufficient resources, challenging work, workload pressure and organisational impediments, including criterion scales of creativity and productivity. The first three scales are categorised as those of creativity encouragement as used by Ensor *et al.* (2006) at organisational level and were accordingly adapted for this study. In adapting the scales, further reference was made to Ekvall's (1996) ten-factor creative climate questionnaire, especially on the factors of idea support, trust, challenge and conflict. The respondents were asked to show the degree of organisational support, supervisory support and work group support in their organisations by indicating how true or untrue the creative climate statements were, based on their perceptions of the climate. The scale had acceptable reliability ($\alpha = 0.881$).

Innovation

Innovation can be measured in different ways depending on the interest of the researcher. Researchers who are interested in market performance may focus their measure on product innovation, market innovation and technological innovation (Wang and Ahmed, 2004; OECD, 2005), while those studying organisational innovation *per se* may measure innovation in terms of process innovation, structural (strategic/administrative) innovation and competence (behavioural) innovation (Wang and Ahmed, 2004; OECD, 2005). In this study, the focus of innovation was on structural innovation, process innovation and competence innovation because they are more critical in building adaptive capacity for the organisation to absorb shocks.

Wang and Ahmed (2004) developed a reliable and valid Likert scale of strongly disagree-strongly agree instrument to measure innovation focusing on behaviour innovation, product innovation, process innovation, market innovation and strategic innovation. The alphas for component factors were above an acceptable level of 0.6 and the component factors converged into organisational innovation. Deselnicu *et al.* (2007) also used Wang and Ahmed's (2004) measures based on a Likert scale of less extent-large extent in their study of innovation and competitiveness. The study therefore adapted these measures focusing on structural innovation, process innovation and competence innovation. The scale had an acceptable reliability of $\alpha = 0.889$.

Organisational resilience

There seems to be no universally accepted measure of organisational resilience (McManus, 2008; Cho *et al.*, 2007). In this study, organisational resilience was measured in terms of organisational adaptation (Weeks, 2008; Mitchell and Zdmud, 2006; Hamel and Valikangas, 2003), organisational competitiveness (Li-Hua, 2007; Deselnicu *et al.*, 2007) and organisational value (Moore, 2003). These scholars believe that a resilient organisation is one that responds to the demands in the environment for survival (organisational adaptation), is efficient and effective at service delivery (organisational competitiveness) and makes itself reputable (organisational value). The scales of

organisational resilience were developed on a Likert scale and tested for reliability ($\alpha = 0.893$). In the scales, respondents indicated the extent to which certain resilience behaviours occur in their organisations.

Instrument development and validity

To ensure the validity of the instrument, the items were developed based on the extant literature in line with the operationalisation and measurement of variables stated above. The items were validated by experts to check for content validity. Furthermore, the exploratory factor analysis revealed items that were loaded on the extracted factors of the study variables. This is what is described as convergent validity as opposed to discriminant validity, where items did not load on the expected factors. Convergent validity was further established when the factor analysis extracted two convergent factors (64.6 per cent of variance explained) for creative climate, three convergent factors (69.1 per cent of variance explained) for innovation and three convergent factors (69.7 per cent of variance explained) for organisational resilience. (For details of factor analysis results see Appendix 1 and Appendix 2 for details of the scales). The use of exploratory factor analysis is limited in determining the construct validity of the instrument, as it is just exploratory and not confirmatory in testing for convergent validity and discriminant validity. There is need for future researchers who may use the scales to use confirmatory factor analysis to confirm convergent validity and discriminant validity of the scales. To control for common method bias, different scale anchors, such as degree of agreement, degree of truth and the extent of occurrence, were used, including use of negatively worded items that acted as speed bumps (Podsakoff *et al.*, 2003). The psychological separation of questions was also used in the questionnaire design. According to Podsakoff *et al.* (2003), psychological separation is an attempt to make it appear that the measurement of the predictor variable is not connected with or related to the measurement of the criterion variable. With this, questions were grouped together and put under different general topic sections to make it appear unrelated to respondents.

Data management

This involved checking for completeness, consistency and accuracy of responses which determined the usefulness of the data for further processing. For instance, there were a few cases which were discarded on realising that they were quite incomplete. During data entry, all the negatively worded scale items were reverse coded. Missing values were identified, and a few (seven) cases that had a large range of missing values were discarded leaving 235 usable cases that were aggregated into 51 cases according to the unit of analysis which was parastatal organisation. The test for common method bias using Harmans' one-factor test found limited common method variance because the test extracted 17 factors (eigenvalues > 1, total variance $= 85.1$ per cent), where the first factor did not explain majority of the variance (Podsakoff *et al.*, 2003). The variance inflation factors (VIFs) in Table III indicate limited threat of multicollinearity, as the VIFs are below 10 (Field, 2006). Descriptive statistics, correlations and regressions were generated. This was a test for mediation of innovation using the Sobel test on the basis of Baron and Kenny's (1986) mediation principles and Jose's (2008) Medgraph.

Results and discussion

The study categorised the organisations that provided the data in terms of ownership, age, size and sector. The results in Table I show that the majority (88.2 per cent) of organisations was fully owned by the government with only 11.8 per cent that were partially owned by government. Full ownership in this study refers to the organisation where government has overall control of the functioning of that organisation with exception of autonomous management and administration of the organisation. Partial ownership describes those organisations where government has limited interest by some holding share in such organisations. For the case of age of the study organisations, the majority (64.7 per cent) had existed for over 15 years, followed by 21.6 per cent which had been in existence between 11-14 years, 11.8 per cent had served between 7-10 years and with only 2 per cent that had existed between 3-6 years. The minimum age of the organisations studied was in line with the selection criterion of an organisation which should have existed for three or more years. This is in view of the fact that within this time, an organisation is expected to be undergoing or should have undergone certain reforms such as innovations, which was the interest of this study. Results about the size of the organisation reveal a fair distribution of the number of employees in different study organisations, that is those that had less than 100 were 27.5 per cent, 501-700 were 23.5 per cent, 101-300 were 19.8 per cent and with 9.8 per cent that had 301-500

Table I. Sample characteristics

	Frequency	(%)
Ownership		
Fully owned by government	45	88.2
Partially owned by government	6	11.8
Size of organisation (No. of staff)		
< 100	14	27.5
101-300	10	19.6
301-500	5	9.8
501-700	12	23.5
> 700	10	19.6
Age of organisation		
3-6 Years	1	2.0
7-10 Years	6	11.8
11-14 Year	11	21.6
> 15 Years	33	64.7
Sector		
Finance	13	25.5
Education	11	21.6
Health	3	5.9
Environment	3	5.9
Agriculture	3	5.9
Tourism	2	3.9
Telecom	2	3.9
Energy	6	11.8
Transport	4	7.8
Others	4	7.8

employees. Generally, most of the organisations used relatively large numbers of people which is one of the objectives of a parastatal. In analysing the sample distribution in the different sectors, most of the organisations studied were in the finance sector (25.5 per cent) and the education sector (21.6 per cent). This implies that most parastatals in Uganda are set up to pursue the finance and/or economic objectives, including education objectives. Another set of organisations was from the energy sector (11.8 per cent), with a relatively equal distribution of parastatals in health (5.9 per cent), environment (5.9 per cent) and agriculture (5.9 per cent), tourism (3.9 per cent) and telecommunication (3.9 per cent), though those in the transport sector (7.8 per cent) and miscellaneous (7.8 per cent) were a little more. Those in the miscellaneous sector category were cases such as standardisation and media. Generally, the Government of Uganda has set up different parastatals in different sectors to provide specialised services, despite the fact that majority are in the finance and education sectors.

The next table presents the means and standard deviations of the study variables, including results of the zero-order correlation between the main study variables and their corresponding sub-dimensions. The sub-dimensions were not theorised, have no hypotheses and are not interpreted. The sub-dimensions are shown because the study variables are multi-dimensional. The sub-dimensions were computed in their main study variables and analysed as such. The interpretation is made on the hypothesised variables.

The zero-order correlation was used to establish whether or not there were associations (Field, 2006) between the study variables as hypothesised from the literature review. The correlation results indicate bivariate association of creative climate with innovation, innovation with resilience and climate with resilience, which association does not imply causality between the variables. Causality is not assumed because the coefficients do not show cause–effect direction but simply the strength of associations (Field, 2006).

Creative climate and organisational resilience

The results in Table II also show that there is a strong, positive and significant relationship between creative climate and organisational resilience ($r = 0.663$, $p < 0.01$). Based on this finding, the implication is that the more conducive the creative climate, the higher the level of organisational resilience (Weeks, 2008). For instance, the more the organisational support such as provision of rewards or time for creativity, the better organisations cope with challenges or improve service delivery.

Creative climate and innovation

The results from Table II indicate that there is a strong, positive and significant relationship between creative climate and innovation ($r = 0.639$, $p < 0.01$). The finding suggests that changes in the creative climate of an organisation are positively associated with changes in innovations carried out in the organisation. The finding alludes to the fact that changes in the creative climate seems to be associated with the level of innovation. This is in line with Amabile (1997) who states that for creativity and innovation to flourish in organisations, there must be a conducive work environment. Indeed, Ismael (2005) also found a significant relationship between creative climate and innovation ($r = 0.473$) in the private sector.

Table II.
Zero order correlation between creative climate, innovation and organisational resilience

$n = 51$	Mean	SD	1	1a	1b	2	2a	2b	2c	3	3a	3b	3c
1 Creative climate	3.598	0.409	–										
1a Organisational support	3.403	0.482	0.689**	–									
1b Work group support	3.792	0.417	0.743**	0.028	–								
2 Innovation	3.684	0.401	0.639**	0.537**	0.386**	–							
2a Structural innovation	3.862	0.490	0.771**	0.605**	0.504**	0.674**	–						
2b Process innovation	3.453	0.491	0.414**	0.276	0.317*	0.431**	0.130	–					
2c Competence innovation	3.737	0.456	0.169	0.041	0.195	0.433**	0.109	0.325*	–				
3 Organisational resilience	3.361	0.376	0.663**	0.561**	0.397**	0.631**	0.691**	0.224	0.053	–			
3a Organisational adaptation	3.620	0.573	0.723**	0.508**	0.529**	0.495**	0.768**	0.321*	0.298*	0.632**	–		
3b Organisational competitiveness	3.478	0.491	0.246	0.151	0.200	0.087	0.097	0.323*	0.234	0.435**	0.066	–	
3c Organisational value	2.984	0.673	0.031	0.195	0.137	0.385**	0.172	0.305*	0.639**	0.488**	0.020	0.201	–

Notes: $^{**}p < 0.01$ (2-tailed); $^{*}p < 0.05$ (two-tailed)

Innovation and organisational resilience

The study revealed that there is a strong, positive and significant relationship between innovation and organisational resilience ($r = 0.631$, $p < 0.01$). The implication of this finding is that organisational resilience is associated with the level of innovation accomplished. This finding is in line with Hamel and Valikangas (2003) and O'Donnell (2006), who state that organisational resilience requires innovation. Therefore, organisations which carry out useful innovations may be in a better position to cope with environmental changes or to add value in the products and/or service delivery.

Regression of organisational resilience on creative climate and innovation

The hierarchical regression analysis that determines the contribution of each predictor variable in the regression (Field, 2006; Garson, 2010) was used. The regression coefficients are used as indicators of whether or not the contribution of each variable is significant, which further tests the validity of the hypotheses. The overall contribution of the variables is indicated by the variance explained (R^2) that also shows the explanatory power of the variables.

Hierarchical regression was used to test for the extent to which creative climate and innovation explain the variance in organisational resilience in a bid to get further evidence for support of hypotheses. The results of the hierarchical regression are presented in Table III below.

The regression results in Table III indicate that variables entered in the regression explain up to an overall 51.7 per cent of the variance in organisational resilience ($R^2 = 0.517$, $p < 0.05$) where 2.5 per cent of this variance that is attributed to the control variables are not significant ($\Delta F = 0.612$, $p > 0.05$). However, the results indicate that innovation and creative climate significantly explain 38.4 per cent ($\Delta F = 30.503$, $p < 0.05$) and 10.8 per cent ($\Delta F = 10.424$, $p < 0.05$), respectively, of the variance in organisational resilience.

Generally, in analysing Model 1 results, the control variables of age of organisation and size of organisation contribute an insignificant explanatory power of 2.5 per cent ($R^2 = 0.025$, $p > 0.05$) of 51.7 per cent total variance explained. The regression results also indicate that organisational age ($\beta = -0.034$, $p > 0.05$) and organisational size ($\beta = -0.036$, $p > 0.05$) as control variables do not have a statistically significant

$N = 51$	Dependent variable Organisational resilience			
Variables	Model 1	Model 2	Model 3	VIF
Constant	−0.189	−0.079	0.111	
Age of organisation	0.059	0.078	−0.034	
Size of organisation	0.137	−0.084	−0.036	
Innovation		0.657**	0.387**	1.914
Creative climate			0.611**	3.451
R^2	0.025	0.409	0.517	
ΔR^2		0.384	0.108	
ΔF	0.612	30.503**	10.424**	
Durbin–Watson			1.672	

Note: $^{**}p < 0.01$

Table III. Hierarchical regression of organisational resilience on creative climate, innovation

relationship with organisational resilience. This therefore may imply that age and size of parastatals in Uganda do not have an effect on organisational resilience. This seems to suggest that organisational resilience in Uganda parastatals can occur regardless of age or size of the parastatal. A similar study by Lih-Bin and Hock-Hai (2009) also found no statistically significant relationship between organisational age, size and organisational resilience in organisations in Singapore.

In Model 2, innovation was found to contribute the explanatory power of 38.4 per cent ($R^2 = 0.384, p < 0.05$). Model 2 also reveals a statistically significant relationship between innovation and organisational resilience ($\beta = 0.657, p < 0.05$), providing evidence that innovation is significantly and positively related to organisational resilience.

This finding further supports *H4*, that there is a significant relationship between innovation and organisational resilience. Therefore, innovation, among other factors, can explain to a certain extent the variance that may occur in the level of organisational resilience in parastatal organisations in Uganda. This is in line with Hamel and Valikangas (2003), who argue that organisational resilience is associated with the level of innovation carried out by the organisation.

In Model 3, creative climate in the regression showed a contribution of 10.8 per cent ($\Delta R^2 = 0.108, p < 0.05$) of the total variance explained in organisational resilience. The results in the model also revealed a significant relationship between creative climate and organisational resilience ($\beta = 0.611, p < 0.05$). This finding is line with Ensor *et al.*'s (2006) study that provides evidence from advertising agencies that work group support and lack of organisational impediments enhance creativity and competitiveness in those firms. Still in Model 3, the beta coefficients for the control variables remained insignificant. Therefore, neither age of the organisation nor size of the organisation does influence the level of organisational resilience.

Testing for mediation

Mediation is believed to occur if the predictor variable accounts for a certain variance in the mediator variable which should also account for the variance in the criterion variable. This means that the mediator variable carries the effect of the predictor variable onto the criterion variable (Baron and Kenny, 1986). According to Baron and Kenny (1986) and Kenny *et al.* (1998), mediation occurs if the following conditions are met:

- variations in the independent variable significantly account for variance in the presumed mediator;
- variations in the mediator significantly account for variance in the dependent variable;
- variations in the independent variable significantly account for variance in the dependent variable; and
- the effect of the independent variable on the dependent variable significantly reduces when the mediator is included in the third equation.

This study examined the mediating effect of innovation on creative climate and organisational resilience. This investigation was undertaken by testing *H2*, that there is a mediation effect of innovation on the relationship between creative climate and organisational resilience. To test the hypothesis, mediation conditions were analysed by running regression models and the results are presented in Table IV below.

According to the results in Model 1 which is the regression of innovation (mediator) on creative climate (predictor), the relationship between creative climate and innovation is significant ($\beta = 0.639$, $p < 0.01$). Model 2 results which is a regression of organisational resilience (criterion variable) on creative climate also reveal a significant relationship between creative climate and organisational resilience ($\beta = 0.663, p < 0.01$). Furthermore, the results in Model 3 which is the regression of organisational resilience on both creative climate and innovation indicate that innovation has a significant relationship with organisational resilience ($\beta = 0.350$, $p < 0.01$), and the effect of creative climate on organisational resilience is also significant ($\beta = 0.439$, $p > 0.01$) though at a lower level than the original one in equation 2 ($\beta = 0.663, p < 0.01$).

Generally, the regression results support the conditions for mediation to be realised. Therefore, according to Baron and Kenny (1986) and Kenny *et al.* (1998), innovation mediates the relationship between creative climate and organisational resilience. Nevertheless, to test for the significance of the mediation, the Sobel test was conducted using the Jose's Medigraph and the results are presented in Figure 2.

The results in the figure indicate significant mediation effect of innovation between creative climate and organisational resilience ($z = 2.43, p < 0.05$). The significant z value provides evidence of support for *H2* that there is a significant mediating effect of innovation between creative climate and organisational resilience. The results further show the index ratio of 33.8 per cent with partial mediation effect of innovation because the effect of creative climate on organisational resilience remains significant though reduced at the inclusion of innovation in the equation ($\beta = 0.439, p > 0.01$). This implies that variations in creative climate affect the variations in innovation which subsequently and partially cause changes in organisational resilience. In other words, 33.8 per cent of the effect of creative climate onto organisational resilience goes through innovation, while 66.2 per cent of its effect is direct, that is changes in creative climate can directly be associated with changes in organisational resilience without going through innovation. The direct relationship seems to suggest that the creative climate remains paramount in the execution of corporate resilient behaviours such as flexible and timely service delivery, especially through organisational support.

From the findings, innovation in parastatal organisations in Uganda has some association with organisational resilience. This is in line with other studies such as

Dependent variables			
	Innovation	Organisational resilience	
Variables	Model 1	Model 2	Model 3
Creative climate	0.639**		
Creative climate		0.663**	
Creative climate			0.439**
Innovation			0.350*
B	0.470	0.525	0.348
			0.378
SE b	0.081	0.085	0.104
			0.141

Notes: $n = 51$; $^{**}p < 0.01$; $^{*}p < 0.05$

Table IV. Mediation effect of innovation on creative climate and organisational resilience

Hamel and Valikangas (2003) and O'Donnell (2006), who contended that organisational resilience is built through innovation. Innovation then appears to be a strong mediator in relationships that explain organisational resilience. Innovation is critical in building adaptive capacity which is associated with organisation resilience (McManus, 2008). However, as innovation has partial mediation, then as already stated, the creative climate was found to carry some direct effect to organisational resilience.

Conclusion and implications

This study investigated the mediating effect of innovation in the relationship between creative climate and organisational resilience. The findings contribute to the debate of creative climate and criterion variables such as performance or innovation, in our case organisational resilience. One contribution is that innovation carries a partial mediation effect from creative climate in the form of adaptive capacity for parastatal organisations to become resilient enough to resist shocks, offer better services and create public value. The adaptive capacity of parastatals can be developed through structural innovation, process innovation and competence innovation. Structural innovation may be in the form of job redesigns, programme redesign and review of action plans. Process innovation may be in the form of business process re-engineering. Adaptive capacity can also be developed through competence innovation, such as improvement of task handling behaviour, risk handling behaviour and resource handling behaviour. Because the mediation effect of innovation is partial, the creative climate has some direct effect on organisational resilience. This implies that creative climate factors such as organisational support are associated with organisational capacity to meet organisational targets, become result oriented and cope with environmental demands.

The study has provided evidence that creative climate is important for both, innovation and resilience behaviours in Uganda parastatals – implying that a conducive climate is associated with organisational innovation (Ismael, 2005; Ekvall, 1996) as well as organisational resilience (Hamel and Valikangas, 2003; O'Donnell, 2006). Thus, a good creative climate is associated with the level of adaptive capacity in an organisation. Also, changes in the creative climate of the organisation are associated with the level of organisational adaption, organisational competitiveness and organisational value. Another learning point is that the creative climate can be studied as an antecedent for mediators such as innovation as well as an antecedent for organisational resilience.

Overall, the study found that innovation has a limited mediation influence on organisational resilience because the creative climate also has a direct contribution towards organisational resilience. Furthermore, this study recognises the power of innovation in the relationship between creative climate as an antecedent to criterion variables such as organisational resilience. The recognition of innovation is based on the fact that innovation contributes a higher percentage of the variance explained in organisational resilience as compared to creative climate. Because innovation and creative climate did not explain all the variance in organisational resilience, there are other predictor variables of organisational resilience. These predictors could include networking, resource capacity and risk management. Therefore, future research may investigate the contribution of networking, resource capacity and/or risk management on organisational resilience. Furthermore, there is need for future studies to reconceptualise organisational resilience and treat it as a mediating variable, unlike this study that examined it as a criterion variable. The contribution of this study, notwithstanding research about creative climate, innovation and

organisational resilience in Uganda, is still limited; hence, researchers could undertake studies in these areas, especially in the public sector.

Theoretically, from the perspective of the dynamic capabilities, this study contributes to the principle of continuous development and renewal of various capabilities to make the organisation better. The findings of this study showed that creative climate capabilities are associated with innovation capabilities that ultimately associate with organisational resilience. The dynamic capabilities theory emphasizes the need for a firm to develop and renew its organisational capabilities to remain competitive (Teece *et al.*, 1997). In line with the dynamic capabilities theory, there is need for organisations to develop and renew their creative climate and innovation capabilities that are geared towards improving organisational resilience.

Dynamic capabilities enable the firm to react to changing market conditions by developing and renewing its organisational capabilities, thereby achieving and sustaining a competitive advantage. This study contributes evidence for the application of the dynamic capabilities theory in explaining organisational resilience based on innovation and creative climate, as extant studies did not focus on organisational resilience (Capron and Mitchell, 2009; Nielsen, 2006). The current study further satisfies Wang and Ahmed's (2004) quest for further multi-dimensional studies because research about dynamic capabilities has not reached maturity. The dimensions investigated in this study were innovation, supported by creative climate to influence organisational resilience.

Furthermore, the study provides evidence on the need for the adoption of the componential theory in organisational resilience studies. The componential theory explains creativity and innovation based on the social and psychological components necessary for an individual to be creative and innovative (Amabile, 1997). The theory is grounded in a definition of creativity being the production of novel ideas that are appropriate to organisational objectives, while considering innovation as the implementation of the ideas. According to Amabile (1997), Amabile *et al.* (1996), the social component relates to work environment factors that can stimulate creativity, such as a sense of positive challenge in the work; work teams that are collaborative, diversely skilled and idea-focused; freedom in carrying out the work; supervisors who encourage the development of new ideas; top management that supports innovation through a clearly articulated creativity-encouraging vision and through appropriate recognition for creative work; mechanisms for developing new ideas; and norms of actively sharing ideas across the organisation. There is a need for organisations to provide such work environment that can stimulate creative and innovative behaviour that could be associated with the level of organisational resilience.

The practical implications of this study are that managers of parastatals can realise organisational resilience by providing a conducive creative climate, where there is perceived organisational support for creativity and innovation and support to enhance innovation diffusion. This implies that management of the climate for innovation in an organisation is associated with organisational competitiveness. Furthermore, managers need to design human resource policies that are associated with a better climate for creativity that is associated with innovation and organisational resilience. Parastatals need to create public value through innovations or else stakeholders demand for alternative service providers which may lead to parastatal death. Government and development partners can support innovation programs that are associated with higher organisational resilience in parastatals.

The study had some limitations. First, the study was cross-sectional that captured snapshot responses. Because the data are cross-sectional, the causal order in Figures 1 and 2

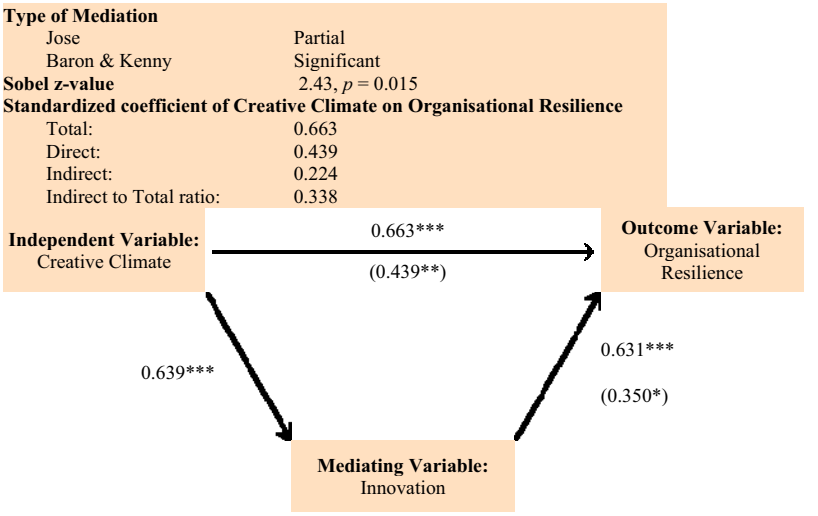

Figure 2.
The mediating role of innovation between creative climate and organizational resilience

might not be the correct order and, therefore, might not be the basis of the observed associations among the study variables. The longitudinal design can be relied on to analyse the cause–effect relationships among the variables. Second, the study used a small sample size that may have affected the statistical power and variance of the correlations, regression coefficients and the mediation results. There is a need for a study with a bigger sample size which can involve either a wider public sector or conduct a comparison with the private sector.

References

Amabile, T.M. (1997), "Motivating creativity in organisations: on doing what you love and loving what you do", *California Management Review*, Vol. 40 No. 1.

Amabile, T.M., Conti, R., Coon, H., Lazenby, J. and Herron, M. (1996), "Assessing the work environment for creativity", *Academy of Management Journal*, Vol. 39 No. 5, pp. 1154-1184.

Amaratunga, D., Baldry, D. and Sarshar, M. (2001), "Process improvement through performance measurement: the balanced scorecard methodology", *Work Study*, Vol. 50 No. 5, pp. 179-189.

Andriopoulos, C. and Lowe, A. (2000), "Enhancing organisational creativity: the process of perpetual challenging", *Management Decision*, Vol. 38 No. 10, pp. 734-742.

Baer, M. and Frese, M. (2003), "Innovation is not enough: climates for initiative and psychological safety, process innovations, and firm performance", *Journal of Organizational Behaviour*, Vol. 24 No. 1, pp. 45-68.

Baer, M., Oldham, G.R. and Cummings, A. (2003), "Rewarding creativity: when does it really matter?", *The Leadership Quarterly*, Vol. 14 No. 1, pp. 569-586.

Baron, R.M. and Kenny, D.A. (1986), "The moderator-mediator variable distinction in social psychological research: conceptual, strategic, and statistical considerations", *Journal of Personality and Social Psychology*, Vol. 51 No. 6, pp. 1173-1182.

Bawden, R. and Ortun, Z. (2002), "The concept of process management", *The Learning Organisation*, Vol. 9 No. 3, pp. 132-139.

Borins, S. (2001), "Loose cannons and rule breakers, or enterprising leaders? Some evidence about innovative public managers", *Public Administration Review*, Vol. 60 No. 6, pp. 498-507.

Caiden, G.E. (2009), "Innovation in administration", available at: http://sunzi.lib.hku.hk/hkjo/view/52/5000184.pdf (accessed 5 June 2009).

Capron, L. and Mitchell, W. (2009), "Selection capability: how capability gaps and internal social frictions affect internal and external strategic renewal", *Organization Science*, Vol. 20 No. 2, pp. 294-312.

Castillejo, J.A.M., Rochina-Barrachina, M.E., Sanchis-Llopis, A. and Sanchis-Llopis, J.A. (2009), "Do process innovations boost SMEs productivity growth?", available at: www.ivie.es/downloads/docs/wpasec/wpasec-2009-2.pdf, (accessed 9 June 2010).

Chaharbaghi, K., Adcroft, A. and Willis, R. (2005), "Organisations, transformability and the dynamics of strategy", *Management Decision*, Vol. 43 No. 1, pp. 6-12.

Cho, S., Mathiassen, L. and Robey, D. (2007), "Dialectics of resilience: a multi-level analysis of a telehealth innovation", *Journal of Information Technology*, Vol. 22 No. 1, pp. 24-35.

Christensen, C.M. (1997), *The Innovators Dilemma: When New Technologies Cause Great Firms to Fail*, Harvard Business School Press, Boston, MA.

Deselnicu, D.C., Rusu, C. and Martin, I. (2007), "Innovation process and competitiveness in romanian SMEs".

Drejer, A. (2000), "Organizational learning and competence development", *The Learning Organisation*, Vol. 7 No. 4, pp. 206-220.

Dul, J., Ceylan, C. and Hendriks, H. (2007), "A practical instrument to measure the creativity potential of the work environment", *Proceedings of the 10th European Conference on Creativity and Innovation*, *Copenhagen*, *14-17 October*.

Ekvall, G. (1996), "Organisational climate for creativity and innovation", *European Journal of Work and Organisational Psychology*, Vol. 5 No. 1, pp. 105-123.

Ensor, J., Pirrie, A. and Band, C. (2006), "Creativity work environment: do UK advertising agencies have one", *European Journal of Innovation Management*, Vol. 9 No. 3, pp. 258-268.

Field, A. (2006), *Discovering Statistics Using SPSS*, Sage, London.

Garcia-Morales, V.J., Llorens-Montes, F.J. and Verdu-Jover (2006), "Antecedents and consequences of organisational innovation and organisational learning", *Industrial Management and Data Systems*, Vol. 106 No. 1, pp. 21-42.

Garson, G.D. (2010), "Multiple regression", available at: http://faculty.chass.ncsu.edu/garson/PA765/regress.htm (accessed 17 October 2010).

Hamel, G. and Valikangas, L. (2003), "The quest for resilience", *Harvard Business Review*, Vol. 81 No. 9.

Ismael, M. (2005), "Creative climate and learning organization factors: their contribution towards innovation", *Leadership & Organisation Development Journal*, Vol. 26 No. 8, pp. 639-654.

Jose, P.E. (2008), "MedGraph-I: a programme to graphically depict mediationamong three variables: the internet version, version 2.0", available at: www.victoria.ac.nz/staff/paul-jose-files/medgraph/medgraph.php (accessed 20 October 2010).

Kenny, D.A., Kashy, D. and Bolger, N. (1998), "Data analysis in social psychology", in Gilbert, D., Fiske, S. and Lindzey, G. (Eds), *Handbook of Social Psychology*, 4th ed., McGraw-Hill, New York, NY, pp. 233-265.

Klijn, M. and Tomic, W. (2010), "A review of creativity within organizations from a psychological perspective", *Journal of Management Development*, Vol. 29 No. 4, pp. 322-343.

Leonard, D. and Sensiper, S. (1998), "The role of tacit knowledge in group innovation", *California Management Review*, Vol. 40 No. 3.

Lewis, A. and Loebbaka, J. (2008), "Managing future and emergent strategy decay in the commercial aerospace industry", *Business Strategy Series*, Vol. 9 No. 4, pp. 147-156.

Lih-Bin, O. and Hock-Hai, T. (2009), "An empirical study of IT-enabled enterprise risk management and organizational resilience", *CONF-IRM 2009 Proceedings*, Paper 19, available at: http://aisel.aisnet.org/confirm2009/19

Li-Hua, R. (2007), "Benchmarking China firm competitiveness: a strategic framework", *Journal of Technology Management in China*, Vol. 2 No. 2, pp. 105-118.

McManus, S.T. (2008), "Organisational resilience in New zealand", PhD Thesis, University of Canterbury, Upper Riccarton.

Mitchell, V.L. and Zdmud, W.R. (2006), "Endogenous adaptation: the effects of technology position and planning mode on IT-enabled change" *Decision Sciences*, Vol. 37 No. 3.

Montes, F.J.L., Moreno, A.R. and Fernandez, L.M.M. (2004), "Assessing the organizational climate and contractual relationship for perceptions of support for innovation", *International Journal of Manpower*, Vol. 25 No. 2, pp. 167-180.

Moore, M.H. (2003), "Creating public value through state arts agencies".

Muhairwe, W.T. (2010), *Making Public Enterprises Work, From Despair to Promise: A Turn Around Account*, Fountain Publishers, Kampala.

Nielsen, A.P. (2006), "Understanding dynamic capabilities through knowledge management", *Journal of Knowledge Management*, Vol. 10 No. 4, pp. 59-71.

O'Donnell, O. (2006), *Innovation in the Irish Public Sector*, Institute of Public Administration, Dublin.

OECD (2005), *Oslo Manual: Guidelines for Collecting and Interpreting Innovation Data*, 3rd ed., OECD Publishing, Paris.

Omachonu, V.K. and Einspruch, N.G. (2010), "Innovation in healthcare delivery systems: a conceptual framework", *The Public Sector Innovation Journal*, Vol. 15 No. 1, pp. 1-20.

O'Regan, N. and Ghobadian, A. (2004), "The importance of capabilities for strategic direction and performance", *Management Decision*, Vol. 42 No. 2, pp. 292-313.

Panuwatwanich, K., Stewart, R.A. and Mohamed, S. (2008), "Validation of an empirical model for innovation diffusion in Australian design firms", *Construction Innovation*, Vol. 9 No. 4, pp. 449-467.

Podsakoff, P.M., Mackenzie, S.B. and Lee, J.Y. (2003), "Common method biases in behavioural research: a critical review of the literature and recommended remedies", *Journal of Applied Psychology*, Vol. 88 No. 5, pp. 879-903.

Porzse, G., Takacs, S., Csedo, Z., Berta, Z., Sara, Z. and Fejes, J. (2012), "The impact of creative organizational climate on the innovation activity of medical devices manufacturing firms in Hungary", *European Journal of Business and Management*, Vol. 4 No. 13, pp. 1-11.

Rondinelli, D.A. (2008), *Public Enterprises: Unresolved Challenges and New Opportunities Can Public Enterprises Contribute to Development? A Critical Assessment and Alternatives for Management Improvement*, United Nations, NewYork, NY.

Scott, W.R. (2007), "Institutional theory: contributing to a theoretical research programme", in Smith K.G. and Hitt, M.A. (Eds), *Great Minds in Management: The Process of Theory Development*, Oxford, New York, NY, pp. 373-393.

Stewart, J. and O'Donnell, M. (2007), "Implementing change in a public agency: leadership, learning and organisational resilience", *International Journal of Public Sector Management*, Vol. 20 No. 3, pp. 239-251.

Teece, D.J., Pisano, G. and Shuen, A. (1997), "Dynamic capabilities and strategic management", *Strategic Management Journal*, Vol. 18 No. 7, pp. 509-533.

Wang, C.L. and Ahmed, P.K. (2004), "The development and validation of the organisational innovativaness construct using confirmatory factor analysis", *European Journal of Innovation Management*, Vol. 7 No. 4, pp. 303-313.

Weeks, R. (2008), "Nurturing a culture and climate of resilience to navigate the white waters of the South African dual economy", *Journal of Contemporary Management*, Vol. 5 No. 1, pp. 123-136.

Further reading

Hair, J.F., Anderson, R.E., Tatham, R.L. and Black, W.C. (1998), *Multivariate Data Analysis*, Prentice-Hall, Englewood Cliffs, NJ.

Sekaran, U. (2008), *Research Methods for Business*, John Wiley & Sons, New York, NY.

Appendix 1

Rotated component matrix[a]

KMO = 0.866
Bartlett's test of sphericity
$p < 0.05$

	Component	
	Work group support	Organisational support
WGS2	0.853	
WGS4	0.827	
WGS1	0.727	
SS1	0.721	
SS2	0.686	
WGS1	0.621	
OS3		0.817
OS4		0.790
OS7		0.778
OS1		0.751
SS3		0.661
SS5		0.577
Eigen values	3.901	3.849
Variance explained (%)	32.512	32.077
Cumulative variance explained (%)	64.589	32.512

Notes: Extraction method = principal component analysis; rotation method = varimax with Kaiser normalization; [a]rotation converged in three iterations

Table AI.
Creative climate

Rotated component matrix[a]			
KMO = 0.802 Bartlett's test of sphericity $p < 0.05$	Component		
	Competence innovation	Structural innovation	Process innovation
CI3	0.816		
CI5	0.791		
PI1	0.778		
SI4	0.730		
PI2	0.675		
CI6	0.650		
CI1	0.645		
SI5		0.825	
SI2		0.759	
SI1		0.676	
SI7			
PI4			0.910
PI5			0.576
Eigen values	4.696	2.602	1.686
Variance explained (%)	36.121	20.014	12.972
Cumulative variance explained (%)	69.107	56.135	36.121

Table AII.
Innovation

Notes: Extraction method = principal component analysis; rotation method = varimax with Kaiser normalization; [a]rotation converged in five iterations

Rotated component matrix[a]

KMO = 0.866
Bartlett's test of sphericity
$p < 0.05$

	Component		
	Organisational adaptation	Organisational competitiveness	Organisational value
OC6	0.891		
OA4	0.859		
OA1	0.849		
OV2	0.848		
OA2	0.834		
OA5	0.801		
OC5	0.791		
OA3	0.773		
OV5	0.695		
OV7	0.587		
OC1		0.878	
OC4		0.773	
OV1		0.589	
OC3		0.522	
OC2		0.519	
OA7			0.865
OV6			0.852
OV4			0.735
Eigen values	7.287	3.119	2.139
Variance explained (%)	40.484	17.329	11.886
Cumulative variance explained (%)	40.484	57.813	69.699

Notes: Extraction method = principal component analysis; rotation method = varimax with Kaiser normalization; [a]rotation converged in 5five iterations

Table AIII.
Organisational Resilience

Appendix 2

CREATIVE CLIMATE

This is very untrue	This is untrue	I am not sure	This is true	This is very true
1	2	3	4	5

A	**Organisational Support**						
OS1	Our organization rewards new ideas	1	2	3	4	5	
OS2	Our organization does not tolerate risky initiatives ®	1	2	3	4	5	
OS3	Our organization allocates resources to facilitate generation of new ideas	1	2	3	4	5	
OS4	Our organisation provides relevant technology for creativity	1	2	3	4	5	
OS6	Our organization does not recognize new ideas ®	1	2	3	4	5	
OS7	Our organization encourages generation of new ideas	1	2	3	4	5	
OS8	Our organization does not trust the ideas we generate ®	1	2	3	4	5	
B	**Supervisory Support**						
SS1	Our supervisor encourages use of diverse skills	1	2	3	4	5	
SS2	In our organization, supervisors facilitate creativity	1	2	3	4	5	
SS3	In our organization, supervisors set creativity objectives	1	2	3	4	5	
SS4	There is no supervisory transparency in our department ®	1	2	3	4	5	
SS5	In our organization, supervisors consult with their staff	1	2	3	4	5	
C	**Work Group Support**						
WGS1	We challenge each other's work in our team	1	2	3	4	5	
WGS2	We provide the work support required by any member of our team	1	2	3	4	5	
WGS3	Communication in our teams is not open ®	1	2	3	4	5	
WGS4	We work in a friendly teamwork atmosphere	1	2	3	4	5	
WGS5	Disagreements in our teamwork are constructively resolved	1	2	3	4	5	

INNOVATION

I strongly disagree	I disagree	I am not sure	I agree	I strongly agree
1	2	3	4	5

A	**Structural Innovation**						
SI1	We redesign different strategies to meet our objectives	1	2	3	4	5	
SI2	We review the functions of departments in our organization	1	2	3	4	5	
SI3	We do not review performance plans in our organization ®	1	2	3	4	5	
SI4	We improve our systems of handling organization risks	1	2	3	4	5	
SI5	We review our programmes	1	2	3	4	5	
SI6	We have failed to improve on the time our customers take to get served ®	1	2	3	4	5	
SI7	We review the job descriptions of different jobs in our organisation	1	2	3	4	5	
SI8	We have failed to improve the methods of delivering our services ®	1	2	3	4	5	
B	**Process Innovation**						
PI1	We redesign the flow of work by the use of information communication technology	1	2	3	4	5	
PI2	We design the internet to deliver our services	1	2	3	4	5	
PI3	We do not improve the internet to deliver our services ®	1	2	3	4	5	
PI4	We change the flow of work by eliminating certain activities	1	2	3	4	5	
PI5	We change the flow of work by merging certain activities	1	2	3	4	5	
C	**Competence Innovation**						
CI1	We improve our leadership behaviours	1	2	3	4	5	
CI2	We do not improve our customer service behaviours ®	1	2	3	4	5	
CI3	We improve our conduct of handling information resources	1	2	3	4	5	
CI4	We make new networks for our organization	1	2	3	4	5	
CI5	We improve our task performance behaviours	1	2	3	4	5	
CI6	We change our behavior of handling organizational resources	1	2	3	4	5	

(*continued*)

Figure A1.

ORGANISATIONAL RESILIENCE

Not at all	To some extent	I am not sure	To a large extent	To a great extent
1	2	3	4	5

A	**Organisational Adaptation**						
OA1	Our services conform to the regulatory standards	1	2	3	4	5
OA2	We have put our assets to good use	1	2	3	4	5
OA3	We have made service delivery is flexible	1	2	3	4	5
OA4	We have maintained our reputation	1	2	3	4	5
OA5	Our service delivery is in line with our customers' needs	1	2	3	4	5
OA6	Our organization has failed to overcome a number of challenges ®	1	2	3	4	5
OA7	We have coped with the political interests in our organisation	1	2	3	4	5
B	**Organisational Competitiveness**						
OC1	We can sustain our operations with limited funding	1	2	3	4	5
OC 2	We serve our customers in a short time	1	2	3	4	5
OC 3	Our customers can easily access our services	1	2	3	4	5
OC 4	We can succeed in service delivery amidst resource constraints	1	2	3	4	5
OC 5	We achieve our set targets	1	2	3	4	5
OC 6	Our organization is result oriented	1	2	3	4	5
C	**Organizational Value**	1	2	3	4	5
OV1	Our cost control is satisfactory	1	2	3	4	5
OV2	Our stakeholders are satisfied with our operations	1	2	3	4	5
OV3	The people we serve are not satisfied with our service delivery ®	1	2	3	4	5
OV4	Our staff are satisfied with the organization	1	2	3	4	5
OV5	There are minimum complaints over the use of our services	1	2	3	4	5
OV6	Most people wish to work with our organisation	1	2	3	4	5
OV7	Funding organizations are willing to fund our operations	1	2	3	4	5

Figure A1.

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