Exploratory and exploitative innovation influenced by contextual leadership, environmental dynamism and innovation climate

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Abstract

Purpose

Organisations have to be ambidextrous to survive in modern times. This study, therefore, aims to investigate the influence of contextual leadership on exploratory and exploitative innovation. Environmental dynamism was the moderator in this relationship, and innovation climate was the mediator.

Design/methodology/approach

The research design was a quantitative study, using a Web-based survey questionnaire, which consisted of valid and reliable scales. There were 1,204 respondents who completed the survey. Analyses included reliability, validity tests and structural equation modelling to test the hypothesised relationships among the variables.

Findings:

The results show that exploitative and exploratory innovation is predicted by the innovation climate, which in turn is predicted by contextual leadership. The findings include a slight moderating effect of environmental dynamism on these relationships. The results suggest that contextual leadership is a significant predictor for improving innovation climate.

Practical implications

As contextual leadership explains 33% of the variance in organisational climate, companies can benefit from developing their leaders to create climates that promote innovation. At increased levels of environmental dynamism, innovation efforts should increase.

Originality/value

Contextual leadership is a crucial element to build innovation-friendly workplaces. The study addresses the gap in research on the influence of contextual leadership on exploitative and exploratory innovation with the mediating and moderator effect on this relationship.

Keywords: Innovation; SEM; Leadership; Context, Climate; Environmental dynamism

Introduction

More than ever the central focus of executives is how to keep their organisation relevant and subsequently in business for years to come (Mom, Chang, Cholakova, & Jansen, 2019), however, the average lifespan of a modern multinational company is around 40 to 50 years (Goodburn, 2015). The main remedy for this dilemma is to continually evolve as an organisation either continually (exploitative innovation), radically (exploratory innovation) or both. Innovation therefore remains a burgeoning avenue for research. Successful organisations innovate by improving or exploiting their current offerings and developing radical new ones for the future. March (1991) originally defined this innovative capability for simultaneous exploration and exploitation as ambidexterity. Insufficient attention has been paid to research on the characteristics and organisational factors that enable individuals as antecedents to act ambidextrously within organisations (Raisch, Birkinshaw, Probst, & Tushman, 2009). This study's first objective is therefore to answer the call on establishing antecedents or contributing factors to improve ambidexterity in organisations.

While leadership has been established as an important antecedent to innovation in general (Bucic, Robinson & Ramburuth, 2010; Jansen, George, Van den Bosch & Volberda, 2008; Kearney & Gebert, 2009; Tung, 2016), limited research has specifically investigated the relationship between leadership and ambidexterity (Jansen, Tempelaar, Van den Bosch & Volberda, 2009; Keller & Weibler, 2015). In this regard, researchers like Probst, Raisch and Tushman (2011) advise that "[b]ecoming ambidextrous is first and foremost a leadership challenge" (p. 326).

Osborn, Hunt and Jauch (2002), as well as Osborn and Marion (2009) identified leadership practices appropriate for the modern knowledge economy, which they named contextual leadership, building on the seminal work of Uhl-Bien, Marion and McKelvey (2007). In this sense, contextual leadership is defined as leadership embedded in context (Osborn et al., 2002) or leaders being in tune with their context (Kutz, 2008). To the best of our knowledge, there are no studies which specifically investigated the influence of this type of leadership, namely contextual leadership on ambidexterity. The current study's second objective is therefore to address this gap, by investigating the influence of contextual leadership as a specific antecedent for ambidexterity or called simultaneous exploratory and exploitative innovation.

Leadership studies have however, been criticised for linear research designs and over the years, scholars called for more complex conceptual models, which include moderators and mediators in the relationships between leadership and dependent variables (Lord & Hall, 1992; Yukl, 1999). Mumford, Scott, Blaine and Strange (2002) contend that more empirical studies are required to explain the relationship between leadership and innovation, while considering contextual variables. The question remains: Which variables could increase the effectiveness of leadership's influence on ambidextrous innovative outcomes?

This study therefore included organisational innovative climate as mediator, since its influence on ambidexterity has been established in previous studies (Scheepers & Storm, 2019). Also, in line with considering context in leadership studies, the present study took dynamism or the degree of volatility of an organisation's operating environment into account, since the study was conducted in South Africa, which is perceived as a dynamic environment. For these reasons, the third objective of the current study is to investigate an organisational innovative climate as mediator and environmental dynamism as moderator variable, in the relationship between contextual leadership and ambidextrous innovation.

Literature review

Exploitative and exploratory innovation

Törner, Pousette, Larsman and Hemlin (2017) emphasise the importance of innovation to secure a company's competitiveness over the long-term. Organisations must constantly renew themselves through exploiting current competencies, called incremental innovation, while simultaneously exploring for new competencies, called radical innovation (Floyd & Lane, 2000; Wang & Chen, 2013). Exploitation is said to enhance productivity by refinement, choice, execution, and variance reduction, while exploration involves individuals in search of risk taking, experimentation, and variation (March, 1991).

A traditional school of thought advised organisations to separate exploitative and exploratory innovation by either creating separate structures to focus on the one or the other; or by temporal separation of sequentially pursuing one after the other in the life cycle of an organisation (Tushman & O'Reilly, 1996). This approach is difficult to implement due to costs associated with the separation (Turner, Swart, & Maylor, 2013). An alternative school of thought advises organisations to focus on both exploratory and exploitative innovation simultaneously in the same business unit (Gibson & Birkinshaw, 2004). The current study is therefore rather focused on contextual ambidexterity or named behavioural ambidexterity.

The ability to combine exploitation and exploration not only helps organisations to overcome the inevitable organisational inertia associated with exploitation, but also enables organisations to extract the benefit from exploitation (Levinthal & March, 1993). Nonetheless, insufficient research has been conducted on the characteristics and organisational factors that enable individuals to act ambidextrously within organisations (Raisch, Birkinshaw, Probst & Tushman, 2009). Heracleous, Yniguez and Gonzalez (2016) found organisation ambidexterity to be a path-dependent, contingent process. We argue that exploratory innovations may occur at the level of technology and market offering, but may utilise existing organizational infrastructure and the organisation's existing supply chain. Both types of innovation may therefore use existing organisational processes and infrastructure, illustrating therefore the importance of ambidexterity, which is indeed the focus of the current study.

In terms of antecedents, literature has suggested the creation of a context that promotes a behavioural orientation towards ambidexterity (Gibson & Birkinshaw, 2004). This study aims to build on this theory by including contextual variables such as organisational innovative climate, but also to extend this view by proposing leadership behaviours that create this context. Contextual ambidexterity is defined as "the behavioral capacity to simultaneously demonstrate alignment and adaptability across an entire business unit" (Gibson & Birkinshaw, 2004, p.209). It is obtained by a mix of personal characteristics and organisational mechanisms that together create context and enable individuals to pursue exploitation and exploration within the same unit (Raisch et al., 2009). Achieving contextual ambidexterity remains a challenge and research in this field provides limited direction (Wang & Rafiq, 2014). To this end, the current study offers evidence to inform organisations on antecedents required to increase contextual ambidexterity. A possible antecedent to contextual ambidexterity which the current study investigates is leadership and the next section pays attention to this variable.

Contextual Leadership

We can illustrate the requirement of leadership by way of an example, contextual ambidexterity involves individuals making choices on how to allocate their time to either exploratory or

exploitative innovative tasks. For this reason, leadership has to be able to interpret ambidexterity tensions and offer guidance and influence others to deal with these challenges in modern organisations.

Organisational leadership literature has been moving away from command and control theories to emergence and adaptation (Uhl-Bien, Marion, & McKelvey, 2007). Practicing leadership in a complex world (Uhl-Bien & Arena, 2017) thus requires a focus on contextualising leadership (Hannah, Uhl-Bien, Avolio, & Cavetta, 2009). In the *Leadership Quarterly*, Oc (2018) has recently declared that contextual leadership is one of the most trending topics in leadership research. The current study intends to therefore essentially contribute to this body of knowledge.

Innovation activities are inherently complex and therefore need to be matched by an equally complex leadership approach (Zacher & Rosing, 2015), called requisite complexity (Boisot & McKelvey, 2011) to achieve ambidexterity in dynamic ways (Havermans, Den Hartog, Keegan, & Uhl-Bien, 2015). Taking a view of leadership as a dynamic process of dealing with complexity provides insights into to the leadership processes and practices that lead to dynamically achieving behaviour ambidexterity (Havermans et al., 2015).

Leadership viewed from a complex context perspective (Osborn, Uhl-Bien, & Milesovic, 2014) seems to be especially appropriate for innovation, as it proposes that innovation happens in the spaces in between connections and networks (Arena & Uhl-Bien, 2016). Contextual leadership is based on complexity theory, which proposes a dynamic perspective in which leaders adapt to environmental stimuli, and through their interactions with employees influence the mental patterns and actions of those employees. We therefore argue in this study that contextual leadership could enable ambidexterity (Havermans, Den Hartog, Keegan & Uhl-Bien, 2015).

The current study thus builds on these studies by empirically researching the influence of contextual leadership on exploratory and exploitative innovation. We argue that the contextual leadership practices described by Osborn and Marion (2009), for instance gathering feedback information from external stakeholders, such as suppliers and customers, or encouraging employees to raise difficult challenging questions, will contribute to exploratory innovation. We hypothesise further that the information and questioning behaviour would be an impetus for exploring new products. Likewise, we hypothesise that contextual leadership's demonstration of being in tune with the organisational context will be positively associated with exploitative innovation, as opportunities to improve current operations could be identified by being in touch with the organisational context. Thus, we hypothesize the following:

> *Hypothesis 1a:* Contextual leadership has a positive association with exploratory innovation.
> *Hypothesis 1b:* Contextual leadership has a positive association with exploitative innovation.

Figure 1 below illustrates the current study's main constructs and their relationships. So far, the literature review focused on the first objective of the study, namely establishing whether contextual leadership has a positive association with exploratory and exploitative innovation respectively.

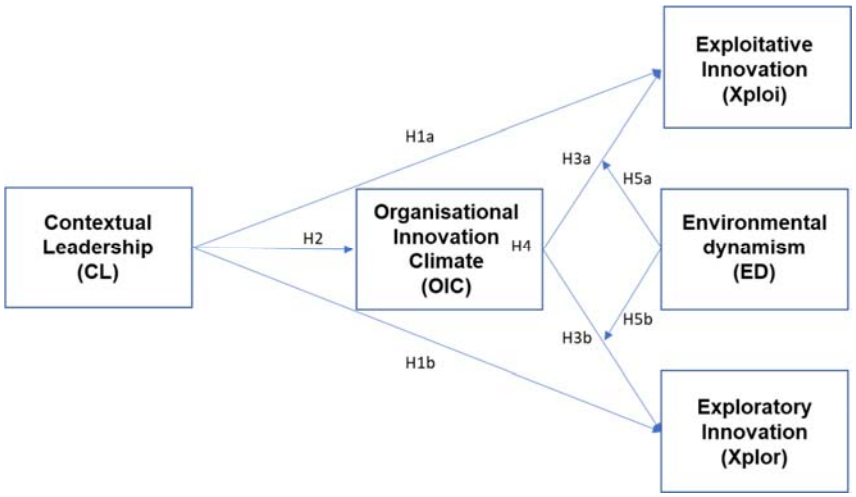


Figure 1: Conceptual model of relationships between constructs

As Figure 1 illustrates, the current study adhered to a call in literature to investigate mediator and moderating variables. The next sections offer the rationale for including organisational innovation climate as mediator variable and environmental dynamism as the moderator variable in this study.

Organisational innovation climate

Leadership cannot be considered in isolation, since leadership is just one element of a system that is much larger; viewing it without consideration for contextual variables is a reductionist strategy (Marion & Uhl-Bien, 2002). Hence, scholars have called for leadership research that account for organisational factors (Avolio, 2007).

An important component of an organisational context is the climate. Schein (2004) argues that the impact of leadership is largely transferred indirectly through the effect it has on the work environment within organisations. Organisational climate has been defined by Schneider (1975) as the shared or common perception formed by the interaction between members of an organisation. Climate has also been described as the connotations formed by employees regarding the policies, practices, and procedures they experience in an organisation (Schneider, Ehrhart & Macey, 2013).

Leadership can create a climate that is perceived by employees to be conducive to creativity and innovation (Gumusluoglu & Ilsev, 2009). There is thus considerable theoretical support in literature for expecting that leadership plays a crucial role in establishing an organisational innovation climate context (Jung, Wu, & Chow, 2008). More specifically, we hypothesise that contextual leadership creates an innovation climate by promoting experimentation through creating networks to foster collaboration across functional silos, ensuring that old and new knowledge merge to both improve current processes and develop new ones while not being prescriptive as to methods.

> *Hypothesis 2*: Contextual leadership has a positive relationship with organisational innovation climate.

An innovation climate, would in turn, encourage employees to both exploit current products and services and explore new ones.

Hypothesis 3a: Organisational innovation climate has a positive relationship with exploitative innovation.
Hypothesis 3b: Organisational innovation climate has a positive relationship with exploratory innovation.

Yukl (2009) asserts that research aimed at explaining leader influence on the two streams of innovation should not only focus on the direct effects of influence, but should also include indirect effects. Leadership promotes innovative efforts from employees by creating a climate that is perceived by employees as supportive to innovation (Gumusluoglu & Ilsev, 2009). These findings prompt the proposal to evaluate an innovation climate as a method to transmit the impact of leadership to innovation, as it will contribute to gaining a more granular understanding of the impact of leadership on the organisational outcome of innovation.

Hypothesis 4: Organisational innovation climate mediates the relationship between contextual leadership and exploitative and exploratory innovation.

Environmental dynamism

Empirical studies on the relationship between leadership and innovation that incorporates contextual variables have been conspicuously absent from the literature (Mumford et al., 2002). Consistent with the view that contextual variables need to be included in leadership studies, this study considered not only the internal organisational environment, but also the external environment.

Environmental dynamism is defined as the rate of change and the degree of instability of the environment in which organisations operate (Dess & Beard, 1984). Several authors have referred to the impact of external boundary conditions on organisational ambidexterity (Raisch & Birkinshaw, 2008), while the study of Jansen, Van Den Bosch and Volberda (2006) has been one example of limited research into the moderation effect of environmental dynamism on the relationship between antecedents and ambidexterity.

Environmental dynamism not only affects the impact of leadership on organisational outcomes (Vera & Crossan, 2004), but also the inclination towards exploitative innovation, exploratory innovation and/or ambidexterity (Auh & Menguc, 2005; Jansen et al., 2006; Lavie et al., 2010). In fact, when the dynamism of the environment increases, specifically in terms of competition, organisations must increasingly try to strike a balance between exploitative and exploratory innovation (Auh & Menguc, 2005).

Organisations in exploitation mode have a good chance of survival in stable environments. However, turbulent and uncertain environments favour organisations that can utilise emerging opportunities and abandon old certainties (Hannan & Freeman, 1984; Sidhu et al., 2004). High environmental dynamism leads to uncertainty which directly affects the internal context of the organisation, potentially increasing levels of stress, anxiety, and risk (Waldman, Ramirez, House & Puranam, 2001). Employees facing dynamic external conditions are more open to the behaviour and style of their leaders and to being convinced that change is necessary.

The current study proposes specifically that the disruptive environmental dynamism has a weakening moderating effect on an organisational climate which strives to promote innovation. That is, we argue that environmental dynamism causes uncertainty, which would in turn prompt employees to take less risks to improve their sense of safety and therefore influences the positive mediation effect of the organisational innovation climate. This study thus investigated

whether the dynamic environment strengthened or weakened (moderated) the mediating effect of the organisational innovation climate on the relationship between contextual leadership and exploitative and exploratory innovation.

> *Hypothesis 5:* Environmental dynamism moderates the indirect (mediated path) relationship between contextual leadership and exploitative (5a) and exploratory innovation (5b).

In summary, this study had multiple objectives. Firstly, it aimed to advance the debate on the role of leadership in the pursuit of simultaneous exploitation and exploration. Put differently, it aimed to describe the relationship between leadership and the ability of organisations to act ambidextrously. Secondly, the study aimed to establish how an organisational innovation climate as context mediates the relationship between leadership and organisational innovation outcomes. Finally, the study aimed to investigate the moderating effect of environmental dynamism, more specifically how the influence of leadership behaviours on the organisational outcomes of innovation is affected by the condition of dynamic environments. The study thus evaluated environmental dynamism as moderator for the indirect effect (mediated path) of leadership in complexity on both exploitative and exploratory innovation, that is, ambidexterity. Figure 1, as displayed earlier in the literature review, illustrated this conceptual model of the relationships between the constructs in this study.

Through the literature review it was clear that the constructs of innovation, ambidexterity, environmental dynamism and contextual leadership have been investigated, however, the relationships between these constructs require further investigation. To the best of the authors' knowledge, the particular moderation and mediating effects in the current study (as Figure 1 illustrates), had not been researched in connection with environmental dynamism, contextual leadership and innovation. This study aims to fill that gap.

Method

This study adopted a quantitative and explanatory (deductive) approach to best evaluate the stated hypotheses developed from the literature review. The study is cross sectional in nature, as data were collected over a short period of time, allowing for a snapshot of the research problem (Babbie, 2001). As the majority of studies in the ambidexterity field have been of cross-sectional nature, it was deemed appropriate to apply the same design (Simsek et al., 2009).

Data gathering

The population in the current study comprises employees in organisations in South Africa. A sample from this population was deemed appropriate as the aim of the research was to consider relationships between the discussed variables in organisations of multiple sizes and across multiple industries. This ensured that multiple contexts were considered. The unit of analysis was the responses of the individual respondents. The data used for this research thus reflected the perceptions of individual employees on their leaders and their organisations.

A non-probability method, judgemental or purposive sampling was used to collect the data from the population (Saunders & Lewis, 2012). Although multiple organisations were approached, and those organisations were not predetermined, the nature of the questionnaire utilised necessitated a certain level of understanding of the business that all employees might not possess. The fact that all employees could not participate therefore supposes that this was not a probability sampling technique.

This study utilised a web-based survey to collect data from fifty-one organisations, because surveys can provide information that is accurate, quick, and inexpensive to obtain, and can be applied to a variety of objectives in a consistent manner (Zikmund, Babin, Carr, & Griffin, 2010). Ethical clearance was obtained from the university where the study originated. The respondents could not be identified and they were assured of confidentiality and anonymity. Respondents could withdraw at any time without penalty. Demographical data was gathered in addition to the measurement scales presented below. Respondents were asked to convey their perceptions towards statements using a Likert-type scale, featuring five anchors, from strongly agree to strongly disagree. The questions in the questionnaire were mixed to randomize them and without leading labels in the sections. An average of thirty responses were obtained in each firm from various levels in the organisations. The response rate was not tracked and therefore a limitation of the study is the inability to report on the response rate. The fact that the organisations operated in a wide range of industries should contribute to the external validity of the findings, as it aimed to avoid industry specific effects (Gibson & Birkinshaw, 2004).

Measures

Independent variables: exploitative and exploratory innovation

Based on the approach from literature, exploitative and exploratory innovation were considered as orthogonal and measured on two separate scales (Gibson & Birkinshaw, 2004; He & Wong, 2004; Jansen et al., 2009). This is the preferred method, firstly because measuring them on a single scale defines away the perception of whether firms are able to achieve both dimensions at the same time (Birkinshaw & Gupta, 2013). Secondly, achieving similar levels or a balance of both types of innovation does not amount to ambidexterity, while the goal is to maximise the attainment of both types (Simsek et al., 2009). Therefore, it is preferred to see how the independent variable affects exploitative and exploratory innovation separately. The measures for both exploitative and exploratory innovation were adopted from Jansen et al. (2006). Both scales used by Jansen et al. (2006) originally contained seven items, which included "We invent new products and services" (exploratory innovation) and "We introduce improved, but existing products and services for our local market" (exploitative innovation), amongst others.

Independent variable: Contextual leadership

Contextual leadership items for the survey were derived from the work of Osborn and Marion (2009). They indicated that contextual leadership includes focusing or patterning the attention of subordinates on the important information in the situation (Osborn & Marion, 2009). These authors also deemed developing networks as crucial to the innovation processes as it allows for connections across internal organisational boundaries. A couple of items from Kutz and Bamford-Wade's (2013) original scale on contextual intelligence were also included, because this scale had high reliability and validity. Contextual intelligence items are for example, when leaders interpret the changing environment and respond appropriately. Items included "Gathers feedback information from external stakeholders such as suppliers and customers to improve the organisation" and "Builds networks across internal organisational boundaries/ silos or functions".

Mediating variable: Organisational innovation climate

Organisations need to create an adaptive space to overcome the bias toward operational activities that tends to stifle exploratory efforts and therefore inhibits their ambidextrous capacity (Arena & Uhl-Bien, 2016). Scheepers and Storm (2018) found high reliability and validity when using this scale of innovation climate. Items included "Our organisation values

experimentation with new ideas and processes" and "Our organisation involves employees on the frontline and customers to innovate our products and services".

Moderated mediating variable: Environmental dynamism
Based on previous literature, a five-item scale aimed at measuring environmental dynamism was also included in the study (Dill, 1958; Jansen, van den Bosch, & Volberda, 2005; Jansen et al., 2006). Previous studies had proved that the scale is able to tap into the level of environmental dynamism and therefore it was assumed appropriate for use in this research. Examples of items included "Environmental changes in our local market are intense" and "Our clients regularly ask for new products and services".

Statistical analysis
Structural equation modelling (SEM) generally requires very large samples sizes. The sample size of 1 204 responses collected was considered sufficient for an attempt to fit a structural model to the data. SEM was also appropriate for the current study, in that it has been widely used in research aiming to describe the antecedents for ambidexterity. For example, Lubatkin Simsek, Ling and Veiga (2006) used SEM in their study of top management team behaviour and ambidexterity in SMEs. Jansen et al. (2009) employed SEM too to evaluate the mediating role of integration mechanisms. More recently, it has been used to evaluate the relationship between top management shared leadership and ambidexterity, including moderating and mediating variables in the model (Mihalache, Jansen, Van den Bosch, & Volberda, 2014).

Moreover, SEM was relevant to the current study, because SEM simultaneously performs different multivariate techniques such as factor and regression analysis, describing the relationships between multiple dependent and independent variables simultaneously (Mancha & Leung, 2010). It can determine the extent to which a theoretical model such as the one proposed in this study is supported by the set of data collected (Mancha & Leung, 2010).

Results
Sample characteristics
Of the 1 204 respondents, 737 were male and 467 were female. Regarding education level, 13.8% of respondents had matric, 23.5% held a diploma, 25.9% a degree, and 36.8% a postgraduate degree. The sample contained a large number of respondents from the financial services and manufacturing industries. This might place some limitation on the applicability of the findings to other industries. Nevertheless, the sample is believed to have covered a sufficiently wide range of industries. The age of the respondents spread from 20 to 60 years, with 71.7% of the respondents older than 30 years. With respect to the distribution of respondents along the racial dimension, 42.4% of the respondents were white and 34.6% were black, while the rest were Indian, Mixed race (or called Coloured in South Africa) and Asian. Regarding the period of employment, 77.4% of respondents had worked at their organisations for longer than 3 years when the response was collected. This implies that on average the respondents would have a good level of understanding of the markets in which their organisation competed, as well as of the internal workings of the organisation.

The distribution of respondents represented a wide array of disciplines, including finance, human resources, information technology, marketing, and operations. In terms of the organisational level at which respondents found themselves at the time of the study, 66.4% were at a supervisory level or higher, while 4.2% of the respondents were at an executive level in their organisations. Respondents should have insight into the organisations' innovation initiatives, since they mostly held managerial positions and their tenure was mostly longer than

three years. Of the respondents, 52.8% resided in organisations that employed more than one thousand employees. As could be expected after evaluating the organisational size dimension of the sample group, 89.6% of the organisations in which the respondents resided were older than ten years. Only 5% of the sample group found themselves in what would be perceived as young entrepreneurial firms, less than 5 years old. This presents definite limitations on the applicability of results of this study to younger organisations.

The value for skewness and kurtosis between -2 and +2 is considered acceptable to prove normal univariate distribution (George & Mallery, 2010). The items of the scales had satisfactory skewness and kurtosis values. It can therefore confidently be stated that the assumption of normality was met.

Measurement model

The measurement model was assessed using confirmatory factor analysis (CFA). Refinement was required of the following scales:

Environmental dynamism's modification index revealed that three of the five items needed to be removed, due to low factor loadings. This was quite surprising, as Jansen et al. (2005; 2006) had proved reliability of this scale multiple times and had used it in various studies. The two items that remained, namely "Our clients regularly ask for new products and services" and "In our local market, changes are taking place continuously", still captured the essence of environmental dynamism and therefore it was decided not to discard the scale but keep it in the study with only these two items. This decision placed limitations on the conclusions that could be drawn from the results of the analysis involving this scale. There were no issues with the innovation climate scale as all the items were retained and no co-variance between the error terms of individual items was found.

With regard to the exploitative and exploratory innovation scales, one item was removed from the exploitative innovation scale, due to a low factor loading, namely "Lowering the costs of internal processes is an important objective". This scale had been developed and used by Jansen et al. (2006) and Jansen et al. (2009) in two separate studies. In both studies the seventh item had also been removed after exploratory factor analysis. They unfortunately had not explained why this occurred. They did, however, find the resulting six-item scales valid and reliable with respective Cronbach's Alpha coefficients of .77 and .86. The Cronbach's Alpha in this study for the resultant six-item scale for exploitative innovation was .897 and that for the seven-item exploratory innovation scale .911, which proved that both scales were reliable.

Of the nineteen items of contextual leadership, four had to be removed, due to low factor loadings and the wording might not have been clearly understood by respondents. The fifteen items that were left attained a Cronbach's Alpha coefficient of .958, which implied that it was a reliable scale. Therefore, these items were retained for the subsequent analysis. After refinement of the model, the model presented satisfactory fit indices: $\chi 2$ =2388,950; $\chi 2/df$ = 4.126; AGFI = .870; TLI = 0.938, CFI = .943, NFI = .926, RMSEA = .051.

Validity and reliability

As recommended by Hair et al. (2010), convergent validity was assessed using factor loading (standardised estimates) which is expected to be above .5, Average Variance Extracted (AVE) expected to be above .5 (Chin, Gopal, & Salisbury, 1997), and Composite Reliability (C.R.) above .7, though .6 is sometimes permissible (Bagozzi, & Yi, 1988). Table 1 below illustrates the reliability and validity assessment.

Table 1: Reliability and validity assessment

Items	Factor load-ings	P Value	Cronbach Alpha	CR	AVE
Exploratory innovation			.911	.902	.59
Xplo1 We invent new products and services	.771	***			
Xplo2 Our organization accepts demands that go beyond existing products and services	.746	***			
Xplo3 We experiment with new products and services in our local market	.792	***			
Xplo4 We commercialize products and services that are completely new to our organisation	.781	***			
Xplo5 We frequently utilize new opportunities in new markets	.809	***			
Xplo6 Our organization regularly uses new distribution channels	.761	***			
Xplo7 We regularly search for and approach new clients in new markets	.715	***			
Exploitative innovation			.897	.91	.606
Xploi1 We frequently refine the provision of existing products and services	.784	***			
Xploi2 We regularly implement small adaptations to existing products and services	.752	***			
Xploi3 We introduce improved, but existing products and services for our local market	.838	***			
Xploi4 We improve our provision's efficiency of products and services	.834	***			
Xploi5 We increase economies of scales or cost advantages due to scale/ size of operation in existing markets	.717	***			
Xploi6 Our organization expands services for existing clients	.739	***			
Organisational innovation climate			.904	.907	.623
OIC1 Informal groupings are seen as a valuable source for effective change in our organisation	.563	***			
OIC2 Our organisation has effective systems for integrating new innovative products and processes back into the organisational systems and structures	.726	***			
OIC3 Our organisation has an enabling climate for innovation	.859	***			
OIC4 Our organisation involves employees on the frontline and customers to innovate our products and services	.849	***			
OIC5 Our organisation values experimentation with new ideas and processes	.871	***			
OIC6 Our organisation protects innovative groups and processes against the bureaucratic organisational forces	.824	***			
Contextual leadership			.958	.958	.601
CL1 Creates linkages between entities inside the organisation and with outside stakeholders	.797	***			
CL2 Has political skill of sizing up group politics for the benefit of the department or business unit	.665	***			
CL3 Builds networks across internal organisational boundaries/ silos or functions	.752	***			
CL4 Gathers feedback information from external stakeholders such as suppliers and customers to improve the organisation	.764	***			
CL5 Encourages employees to raise difficult and challenging questions that others may perceive as a threat to the status quo	.798	***			
CL6 Initiates discussions on what is important, not what to do and how to do it	.795	***			
CL7 Connects employees with a broad variety of potential information sources such as those people with relevant information	.817	***			
CL8 Injects ideas and information into the system for it to process to create energy for change	.836	***			
CL9 Tells stories to illustrate important learning points	.78	***			
CL10 Frames our change projects in ways that appeal or speaks to the interest of particular stakeholders	.772	***			
CL11 Demonstrates being in tune with the organisational and external environment or context	.795	***			
CL12 Adapts his/her communication to different ethnic cultures in the organisation	.686	***			
CL13 Provide opportunities for diverse employees to interact in a non-discriminatory manner	.776	***			
CL14 Has a forward-looking mentality - sense of direction for where the organisation is going in the future	.786	***			

CL15 Investigates relevant contextual variables that are or might influence the organisation	.796	***			
Environmental dynamism			.684	.684	.52
ED1 Our clients regularly ask for new products and services	.732	***			
ED2 In our local market, changes are taking place continuously	.71	***			

Notes:

***: significance at 0.01 level.

CR= composite reliability; AVE: Average variance extracted

The overall result indicates a good reliability of all the scales involved in this study as Cronbach's alpha coefficients were both above .7, with the exception of environmental dynamism of which the value was .684. Yet, it is marginally acceptable according to Field (2013). Table 1 above shows that the factor loadings of all constructs were above the recommended threshold of .5 (Field, 2013). The AVEs of all constructs were also above the usual cut-off of .5 (Chin et al., 1997). CR ranged from .684 to .958, which meets the recommended criterion of .6 (Bagozzi, & Yi, 1988). This confirms that there was convergent validity in all the constructs pertaining to the model, which means that all the items in the constructs converged towards the concept measured by the construct.

The discriminant validity (how well the constructs discriminated between one other) was assessed through the comparison between the Squared Root of the AVE and the highest correlation, as illustrated in Table 2.

Table 2: Correlation and square root of AVEs

	Xploit	Xplor	OIC	CL	ED
Xploit	**.779**				
Xplor	.803	**.768**			
OIC	.744	.782	**.790**		
CL	.472	.439	.568	**.776**	
ED	.617	.675	.556	.306	**.721**

Note: Xploit: Exploitative innovation; Xplor: Exploratory innovation; OIC: Organisational Innovation Climate; CL: Contextual Leadership; ED: Environmental Dynamism

Diagonals represent the square root of the AVE. Other entries represent the correlations coefficient between the constructs.

There was discriminant validity concern for the construct Exploitative and Exploratory innovation, because the square root of AVE was below the correlation between these two constructs (r=.803). However, as (Farrell, 2010) points out, the discriminant validity issues of two sub-constructs pertaining to the same construct are not supposed to be of concern. Given that these two scales were subconstructs of the bigger construct ambidexterity, it is expected that these two scales would have a strong correlation. Considering that this correlation is theoretically justified, the discriminant validity concern mentioned was not an issue.

In conclusion, the relationships illustrated in the measurement model fit the data satisfactorily. All the instruments used in the measurement model were reliable and valid in the South African environment. Given that the confirmatory factor analysis (CFA) provided satisfactory results, we proceeded to fit the structural model. The measurement model is presented in Figure 2 below.

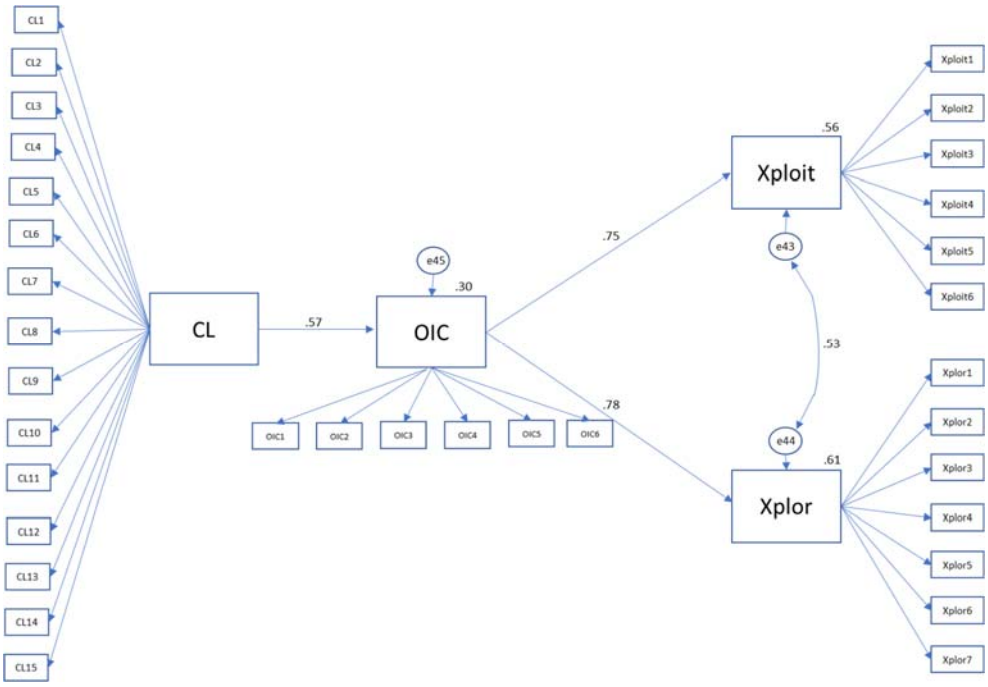


Figure 2: Measurement model

The model had a good fit as informed by the following model fit indices:
X2 = 2252.564; Df= 518; X2/Df= 4.349; AGFI= .870; CFI= 0.944; TLI= .939; NFI= .928; RMSEA= .053.

As indicated in Figure 2 above, exploitative innovation and exploratory innovation are predicted by innovation climate, which in turn is predicted by contextual leadership. The model is able to explain a considerable percentage of the variance of exploitative innovation (56%), exploitative innovation (61%), and innovation climate (33%).

The relationships among constructs are illustrated in Table 3.

Table 3: Path relationships among constructs

IV		DV	Standardised estimates (β values)	*p values*	S.E.	Variance explained of DV
Context lead	--->	OIC	.571	.001	.024	.33
OIC	--->	Xploit	.747	.001	.058	.56
	--->	Xplor	.782	.001	.067	.61

Notes: IV: Independent variables; DV: Dependent variables; SE: Standard Error; OIC: Innovation climate; Xploit: Exploitative Innovation; Xplor: Exploratory Innovation; Context lead: Contextual leadership

From the column for standardised estimates, it appears that innovation climate has almost an equal effect on exploitative (β= .75) and exploratory (β= .78) innovation. All relationships are significant (p< .5). These results are confirmed by low standard errors. The model explains 33% of the variance of innovation climate, 56% of the variance of exploitative and 61% of the variance of exploratory innovation.

These results suggest that contextual leadership is a significant predictor for improving innovation climate. The behaviours described by the latent variable contextual leadership are associated with an organisational innovation climate as was expected from the examination of relevant literature. Organisational innovation climate also significantly predicted both exploitative- and exploratory innovation. The structural model further materialised (double headed-arrows) a strong and significant correlation between the exploratory and exploitative (r=.53; p-value <.001) innovation. However, as the two innovation streams are suggested in this study to form part of the larger construct of ambidexterity, this is not a concern.

Mediation analysis

The mediation analysis followed a regression-based approach developed by Hayes (2013) in a computational tool called PROCESS. Table 4 below summarises the outputs obtained from PROCESS.

Table 4: Output of mediation analysis from PROCESS

Outcome variable	**Indirect, direct and total effects**							
Exploitative innovation	Indirect effect of CL on Xploit							
	Effect	Boot SE	BootLLCI	BootULCI	*p*-value Sorbel Test			
	.284	.020	.245	.327	.000			
	Direct effect of CL on Xploit							
	Effect	SE	t	p	LLCI	ULCI		
	.105	.027	3.925	.000	.053	.158		
	Total effect of CL on Xploit							
	Effect	SE	t	p	LLCI	ULCI	R-sq	F
	.389	.026	14.838	.000	0.337	0.440	0.201	220.17
Conclusion	**Partial mediation**							
Exploratory innovation	Indirect effect of CL on Xplor							
	Effect	Boot SE	BootLLCI	BootULCI	*p*-value Sorbel Test			
	.378	.024	.335	.429	.000			
	Direct effect of CL on Xplor							
	Effect	SE	t	p	LLCI	ULCI		
	.038	.026	1.490	0.136	-.012	.088		
	Total effect of CL on Xplor							
	Effect	SE	t	p	LLCI	ULCI	R-sq	F
	.416	.029	14.122	.000	.358	0.474	0.275	390.86
Conclusion	**Total Mediation**							

Note: Note: Xploit: Exploitative innovation; Xplor: Exploratory innovation; OIC: Organisational Innovation Climate; CL: Contextual Leadership; ED: Environmental Dynamism; BootLLCI and BootULCI means bootstraps lower and upper level of confidence interval

Table 4 provides information about the indirect, direct, and total effect of X (CL) on Y (Xploit and Xplor). A bootstrap confidence interval approach confirmed by a Sorbel test was applied to address statistical inference for the indirect effect. PROCESS generated the bootstraps lower

and upper level of confidence interval (see column BootLLCI and BootULCI) of the 1 000 bootstrap estimates of the indirect effect. When the interval between BootLLCI and the BootULCI does not straddle zero, and the p-value is < .05, the indirect effect is considered confidently significant at 95%.

Concerning the relationship between contextual leadership and exploitative innovation, Table 4 shows an indirect effect different from zero with 95% confidence interval (BootLLCI = .245; BootULCI= .327; p-value < .05; β = .284). The estimated direct (β =.105; t= 3.925; p < .05) and total (β =.389; t= 14.838; p < .0001) effect of contextual leadership on exploitative innovation is statistically significant. There is therefore a partial mediating effect of organisational innovation climate on the relationship between contextual leadership and exploitative innovation.

In conclusion, although contextual leadership has a statistically significant relationship with exploitative innovation, this relationship is stronger when passing through the mediator organisational innovation climate. The presence of this climate therefore strengthens the effect of complexity leadership on exploitative innovation, thus providing support for hypothesis 4.
Concerning the relationship between contextual leadership and exploratory innovation, Table 4 shows an indirect effect different from zero with 95% confidence interval (BootLLCI = .335; BootULCI= .429; p-value < .05; β = .378). The estimated direct effect of contextual leadership on exploratory innovation (β =.038; t= .026; p > .05) is statistically not significant and the total (β =.416; t= 14.122; p < .0001) effect of contextual leadership on exploratory innovation is statistically significant. There is therefore a total mediating effect of organisational innovation climate on the relationship between contextual leadership and exploratory innovation.

The conclusion on this analysis is therefore that contextual leadership has no direct effect on exploratory innovation. The effect is only perceptible when passing through the mediator organisational innovation climate. Hence, the presence of this climate enables the effect of contextual leadership on exploratory innovation, providing further support for hypothesis 4.

Moderation Analysis

The moderation analysis follows a regression-based approach developed by (Hayes, 2013) in a computational tool called PROCESS. Moderation effect of environmental dynamism on the relationship between the organisational innovation climate and exploitative innovation: Table 5 below indicates the regression analysis as described by the equation mentioned above. The level of confidence (LLCI and ULCI) and the p-value of the interaction variable are the first elements to consider when assessing the moderation effects (Field, 2013; Hayes, 2013). As a rule of thumb, when the lower level of confidence interval (LLCI) and the upper level of confidence interval (ULCI) comprise zero, it means that zero cannot be confidently ruled out as a probable value for this path regression. This is translated by a p-value superior to the common threshold of .05 suggesting that there is no moderating effect.

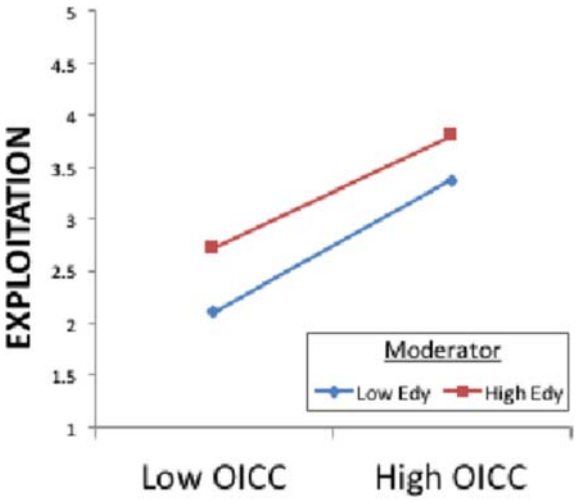
Table 5: Moderation effect of environmental dynamism on the relationship between organisational innovation climate and exploitative innovation

	coeff	SE	T	*p*	LLCI	ULCI
Constant	3.936	.018	220.08	.000	3.901	3.972
ED	.175	.023	7.59	.000	.130	.220
OIC	.484	.024	20.52	.000	.437	.530
Interaction (OIC X ED)	-.059	.021	-2.76	.006	-.101	-.017
Conclusion: Moderation effect						

Note: SE: standard error; LLCI: Lower Level of Confidence Interval; ULCI: Upper level of confidence interval

As the *p*-value of the interaction in the table above is below .05 and the LLCI and ULCI do not include zero, we can confidently conclude that there is a moderation of environmental dynamism in the relationship between organisational innovation climate and exploitative innovation ($\beta_{interaction}$= -.059; *p-value<.05*). The section "R-square increase due to interaction" below indicates how the moderation affects the relationship between contextual leadership and organisational innovation climate.

R-square increases due to interaction(s): The R^2 change (0.01) shows the moderation effect of environmental dynamism increases the variance explained of organisational innovation climate by 1% (R2-chng = .01; F = 13.06). Although the size of this effect is marginal, it is statistically significant. To visualise this moderating effect, Figure 3 is presented below.



Note: OICC: organisational innovation climate; Edy: environmental dynamism

Figure 3: Moderating effect of environmental dynamism on the relationship between organisational innovation climate and exploitative innovation

The graph shows that increased environmental dynamism dampens the positive relationship between organisational innovation climate and exploitative innovation. This effect is however very weak albeit statistically significant.

Moderation effect of environmental dynamism on the relationship between organisational innovation climate and exploratory innovation:
The table below indicates the regression analysis as described by the equation mentioned above.

Table 6: Moderation effect of environmental dynamism on the relationship between organisational innovation climate and exploratory innovation

	coeff	SE	t	p	LLCI	ULCI
Constant	3.721	.020	187.390	.000	3.682	3.759
ED	.260	.025	10.483	.000	.211	.308
OIC	.588	.023	25.807	.000	.543	.632
Interaction (OIC X ED)	-.044	.017	-2.613	.009	-.077	-.011
Conclusion: Moderation effect						

Note: SE: standard error; LLCI: Lower Level of Confidence Interval; ULCI: Upper level of confidence interval; ED: Environmental Dynamism; OIC: Innovation Climate

The *p*-value of the interaction in the table above is below .05 and the LLCI and ULCI do not include zero. This suggests that there is a moderating effect of environmental dynamism in the relationship between organisational innovation climate and exploitative innovation ($\beta_{interaction}$= -.044; *p-value<.05*).
The R^2 change above (.002) shows that the moderation has little effect on the relationship between organisational innovation climate and exploratory innovation. The moderation effect of environmental dynamism increases the variance explained of the climate by .2% (R2-chng = .002; F = 5.99). Although the size of this effect is marginal, it is statistically significant.
To visualise this moderating effect, the following plot is presented in Figure 4:

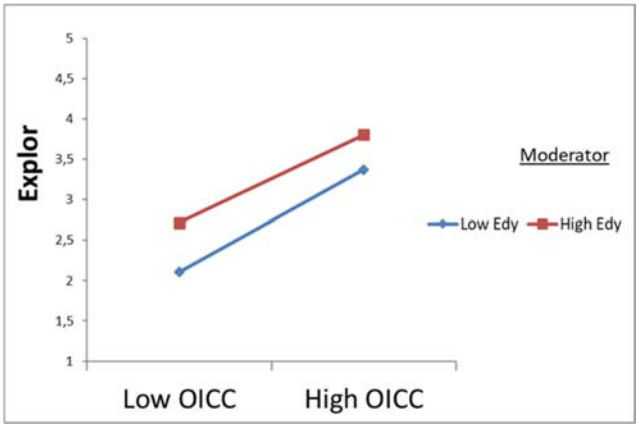


Figure 4: Moderating effect of environmental dynamism on the relationship between organisational innovation climate and exploratory innovation

The graph shows that environmental dynamism dampens the positive relationship between organisational innovation climate and exploratory innovation. This effect is however slight albeit statistically significant.

Discussion

Contextual leadership and organisational innovation climate

Contextual leadership explains 33% of the variance in organisational innovation climate. This supports the findings of previous studies that leadership is an important antecedent of climate (Jung et al., 2003). By focusing the attention of employees, developing networks, and staying aware of the context, contextual leadership creates a climate that fosters innovation.

When leaders are able to create a climate that supports innovation, they can significantly increase organisational creativity, and therefore also innovation (Yukl, 2001). It is evident that the behaviours of contextual leadership are especially suited to create such a climate, as they frame the important contextual variables, delegate authority downward and promote diverse networks to form and self-organise. These are all important antecedents for innovation (Howell & Avolio, 1993; O'Reilly & Tushman, 2004; Uhl-Bien, Marion, & McKelvey, 2007).

Organisational innovation climate and ambidexterity

The findings in this study reaffirm the theorised conceptual relationships found by previous research in the domain, for example, the study indicates that organisational innovation climate does have a positive and significant relationship with both exploitative and exploratory innovation. Organisational innovation climate explains 56% and 61% of the variance in exploitative and exploratory innovation respectively. Because both streams of innovation are supported in almost equal measure, organisational innovation climate should support ambidexterity.

There are several examples of empirical research that also support the notion that an innovation climate is an antecedent for innovation (Jung et al., 2003; Jung et al., 2008). The innovation climate of the organisation has been shown to be one of the most important predictors of employee creativity, which is closely related to innovation (Mumford et al., 2002).

Mediation effect of organisational innovation climate

Whereas a partial mediating effect of organisational innovation climate on the relationship between contextual leadership and exploitative innovation exists, contextual leadership has a statistically significant relationship with exploitation. This relationship is stronger when passing through the mediator innovation climate. This implies firstly that when leaders focus or pattern the attention of their followers, create networks, and understand and communicate the context, exploitative innovation efforts might increase. Secondly, this positive effect is even more pronounced when leaders encourage informal groupings, let employees and customers engage, foster experimentation, and protect innovative groups against the bureaucratic processes of the organisation, thus establishing an organisational innovation climate.

Through the creation of an organisational innovation climate, leaders magnify their influence on employees towards improving current processes, products, and services, thereby making the organisation more efficient in its traditional areas of strength. The innovation climate thus strengthens the effect of contextual leadership on exploitative innovation. This finding is consistent with the finding of Wang et al. (2013) that an organisation's innovation climate mediates the relationship between leadership and innovation. A climate that promotes the efficient sharing of resources and encourages employees to find new and creative ways of doing things should support both exploitative and exploratory efforts. The finding that it only partially mediates the relationship could possibly be explained by the fact that the construct of organisational innovation climate is biased to support exploratory innovation. Nevertheless, the objective was to show that it would have a positive relationship with both innovation types, and therefore ambidexterity.

Furthermore, there is a total mediating effect of innovation climate on the relationship between contextual leadership and exploratory innovation. There is, however, no direct effect of contextual leadership on exploratory innovation, which is rather surprising. This means that patterning the attention, creating networks, and understanding and explaining context do not have a direct positive effect on exploratory innovation. This finding in itself is contradictory to mainstream literature that suggests networking and diversity (Jehn et al. 1999) as antecedents for exploratory innovation. It is not clear which aspects of contextual leadership could inhibit the construct to have a relationship with exploratory innovation. This could be an area for further research.

The effect of contextual leadership on exploratory innovation is only perceptible when passing through the mediator innovation climate. The presence of innovation climate therefore enables the effect of contextual leadership on exploratory innovation. Leadership can increase the innovative behaviour of followers by influencing employees to perceive a climate as supportive to innovation (Gumusluoglu & Ilsev, 2009). The finding is therefore consistent with the expectations created by the literature review. Moreover, a climate for innovation seems to be the only way to allow the influence of contextual leadership on followers towards exploratory efforts.
Based on their review of literature, Eisenbeiss, Knippenberg and Boerner (2008) suggest that the effect of climate on innovation is influenced by contingencies. Therefore, it is necessary to discuss how the environment within which these relationships exist influences its strength.

Moderator effect
Gilbert (2005) found that the perceived threat engendered by a dynamic environment could increase organisational routine rigidity and therefore stifle innovation. The results from this research seem to correspond with this finding.

The current study found a moderation effect of environmental dynamism in the relationship between organisational innovation climate and exploitative innovation. The moderation effect of environmental dynamism increases the variance explained of organisational innovation climate slightly, but statistically significantly by 1%. The coefficient of the interaction is negative. Explorative innovation increases as the level of organisational innovation climate increases, both at low and high environmental dynamism. At higher levels of environmental dynamism, the impact of organisational innovation climate is, however, reduced. The direction of the relationship is unexpected. Lavie et al. (2010) suggest that environmental dynamism is an antecedent of both exploitation and exploration. Therefore, at increased levels of environmental dynamism, it is expected that innovation efforts should increase to stay relevant.

Waldman et al. (2001) found that high environmental dynamism leads to uncertainty, which directly affects the internal context of the organisation, potentially increasing levels of stress, anxiety, and risk; thus, leadership increases firm performance more under conditions of uncertainty. This finding supports the view of Vera and Crossan (2004). However, in highly dynamic environments, leadership through the mechanism of organisational innovation climate is not more effective at fostering innovation, or more particularly here, exploitative innovation.

Furthermore, Hannan and Freeman (1984) maintain that exploratory innovation is more suitable in highly dynamic environments than exploitative innovation. Therefore, the inclination of employees in highly dynamic environments would be to focus on exploration rather than exploitation. This could be one possible explanation for the reduced positive relationship between leadership and exploitative innovation. A second reason could be that,

opposed to the view of Vera and Crossan (2004), the effectiveness of management strategies could be decreased when increasingly complex stimuli are injected into the organisation, creating stress and anxiety within the minds of organisational members. This should be investigated more closely.

In this study, it is encouraging to see that, although the positive relationship between contextual leadership and exploitative innovation is reduced at high environmental dynamism, the relationship remains positive and significant under high environmental dynamism. This bodes well for the fact that contextual leadership enacted through organisational innovation climate is less susceptible to changes in the environment and therefore more robust. The moderation effect of environmental dynamism increases the variance explained of organisational innovation climate by 0.2%. Although the size of this effect is marginal, it is statistically significant.

With an increase in environmental dynamism, the effect of organisational innovation climate on exploratory innovation is dampened, as illustrated by the lower gradient of the slope of the red line in Figure 4. The overall relationship between this climate and exploratory innovation remains positive. Similar to the discussion above, this again provides evidence that contextual leadership through innovation climate has a consistent positive relationship with exploratory innovation, irrespective of the level of environmental dynamism. The relationship is therefore moderated albeit only fractionally. Sidhu et al. (2004) found that environmental dynamism leads to an expanded search for information or increased exploration. Moreover, Kim and Rhee (2009) suggest that an exploratory orientation would fit better within a dynamic environment. Dynamism should therefore provide imputes for exploratory innovation and thus the notion that it weakens the effect of leadership towards exploratory innovation is unexpected. A plausible explanation for this finding could be that the effectiveness of leadership's impact through an innovation climate is reduced by environmental dynamism.

The contradiction found here could also be related to the fact that routine rigidity, as conceptualised by Gilbert (2005), is potentially increased by environmental dynamism. While it might be easy for leadership to redirect resources and so overcome resource rigidity, it could be more difficult to change the processes within the organisation that utilise those resources. This will, in effect, nullify leadership's efforts toward an innovative outcome and might even impact it negatively.

Theoretical implications

This study was aimed at evaluating contextual leadership as an antecedent of behavioural ambidexterity as defined by Gibson and Birkinshaw (2004). The objective was to show that contextual leadership has a positive relationship with both exploitative and exploratory innovation, unlike transformational and transactional leadership which are typically only related to one type of innovation (Jansen et al., 2009). The study went further by simultaneously evaluating contingencies which could affect leadership towards the outcome of innovation, as suggested by other authors in the field of leadership theory (Eisenbeiss et al., 2008). By and large, the findings from the research were at least partially supported by the existing body of research on leadership, organisational climate, and ambidexterity. This study contributes to this body of knowledge by proposing contextual leadership as an antecedent of ambidexterity while considering conditional variables of the relationship.

First of all, it was found that contextual leadership has a positive relationship with organisational innovation climate. This finding supports the notion that leadership could create

a climate that fosters innovation, or at the very least, create the perception with employees that innovative behaviour is accepted and even desirable. It therefore validates the notion that the behaviours described in the scale for contextual leadership can foster a climate which potentially positively influences both exploitative and exploratory innovation, which obviously is a fundamental requirement for any leadership theory that aspires to promote ambidexterity. This finding contributes to literature as it answers the call by Mumford et al. (2002) for empirical evidence of the behaviours that would promote a climate that supports innovation.

Secondly, this study indicates that organisational innovation climate has a positive relationship with both exploitative and exploratory innovation. Although the scale used to describe innovation climate is different from those utilised by previous authors such as Jung et al. (2008), Wang et al. (2013) and Jaiswal and Dhar (2015), the positive relationship between innovation climate and innovation was reconfirmed. The contribution from this research is that a distinction is made between exploitative and exploratory innovation and it is shown that innovation climate has a positive relationship with both these streams. It could therefore support organisational ambidexterity. The findings of the current study contribute to literature on ambidexterity by providing empirical evidence that contextual leadership can foster ambidexterity, but only if an appropriate organisational innovation climate is present.

The contribution of this research is therefore to show that the external environment should be considered in future models where the aim is to investigate and identify antecedents for both innovation steams individually, or ambidexterity as an outcome. In addition, this study also answers the call by Raisch and Birkinshaw (2008) for research that shows how different antecedents (leadership and climate) interact to promote organisational ambidexterity. To add, this research has responded to Yukl (2009) in providing a more comprehensive model of the influence of leadership on exploitative and exploratory innovation respectively. This study suggests that organisations can move towards ambidexterity by developing managers to display the behaviours that characterise contextual leadership.

Practical implications for organisations

With regard to recruitment of leaders, contextual intelligence, as part of the behavioural repertoire of potential employees, might be a crucial element to consider if organisations aim to build innovation friendly workplaces. The implications of this study's findings include the need to develop ambidextrous leaders who can cognitively attend to the complex demands of holding concepts that are in tension with each other, simultaneously in their mind, like exploratory and exploitative innovation. These leaders must also be able to do what is needed to integrate innovations that arise from both exploitative and exploratory innovation into the main business and introduce them to market.

The results from the research in terms of organisational innovation climate have further implications for human resource management beyond leadership development, or recruitment. The findings suggest that if organisations want to increase ambidexterity, they have to focus their efforts on creating a climate that supports it. Moreover, the impact of leaders employing the behaviours of contextual leadership on employees towards innovative outcomes will be amplified in such a climate. Employees will also contribute to such a climate, thus potentially creating a virtuous cycle, stimulating increased innovation throughout the organisation.

Furthermore, promoting informal groupings and protecting innovative groups from the bureaucratic structures of organisations should become a central focus of leaders within large

organisations. The environment must encourage experimentation, but more importantly, have effective systems for capturing the results of innovative behaviour and reaping the rewards.

Leaders should be cognisant of the impact of the environment their organisations operate in. Although the impact of environmental dynamism as illustrated in this study is small, there is sufficient evidence to prompt organisations to take notice and try to mitigate the potential downside of increased dynamism. Moreover, leaders need to be cognisant of organisational inertia resulting from the perception of external threats caused by dynamic environments and find ways to overcome this. Leadership would benefit from realising the weakening effect of their impact under conditions of higher dynamism, even despite an innovation climate. Therefore, to be innovative, leadership must be vigilant and introduce more organisational support mechanisms for employees under these circumstances.

Limitations

The first limitation related to the selection of the sample is the fact that it only included organisations in South Africa. This may impose certain limitations on the generalisation of the results across cultures, as culture dimensions such as collectivism, power distance, and uncertainty avoidance affect inclination towards innovation (Mueller et al., 2013). This could put limitations on the applicability of the results of this study outside the boundaries of South Africa, as all the data were collected from organisations in South Africa. The cross-sectional nature of the study can also cause problems with regard to the interpretation of results, as concurrent measurement of variables does not capture directional influences that require the passage of a finite amount of time to be exposed (MacCallum & Austin, 2000). This implies the concession that the relationship found through relational statistics does not prove causality. Nevertheless, the relationships shown contribute to current and build on past literature on the enactment of ambidexterity in modern organisations.

Suggestions for future research

Firstly, future studies might take a different methodological approach to gain an even more fine-grained understanding of the antecedents of ambidexterity. Simsek et al (2009) propose a qualitative and/or longitudinal approach as this allows for an understanding of the evolution of ambidexterity in organisations.

Secondly, Lavie et al. (2010) have shown that the industry in which an organisation operates affects its balance of exploitative and exploratory innovation. In evaluation of the same relationships in future, it would be worthwhile to conduct this study in specific industries, such as the manufacturing industry, to see how context might be conducive to ambidexterity.

In the third place, although it was found that contextual leadership has no direct relationship with exploratory innovation, behaviours such as creating linkages between entities inside the organisation and with outside stakeholders, amongst others, have been indicated to have a direct relationship with exploratory innovation. Future research could evaluate different contingencies for this relationship that might affect the strength and direction of the relationship. This study has focused on leadership behaviour, working through climate within a dynamic environment as an antecedent for organisational ambidexterity. Future research might include other antecedents, such as organisational culture.

Conclusion

This study indicates that contextual leadership is important in the influence towards exploitative and exploratory innovation. Furthermore, 0the effectiveness of leadership is

largely determined by the context within which it resides; thus, a more conducive context could improve leadership effectiveness. Consequently, organisations must create an organisational innovation climate, especially in highly dynamic environments.

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