

Determining the Mediating Effects of Entrepreneurial Self-Efficacy on the Relationship between Organizational Antecedents and Entrepreneurial Orientation

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A considerable literature points to entrepreneurial orientation (EO) as an essential component in fostering organizational performance. In order to advance theoretical and empirical knowledge in the field of EO, this article undertakes an empirical inquiry into the extent to which entrepreneurial self-efficacy mediates the relationship between organizational antecedents and EO at public hospitals in South Africa. Results support the study hypotheses insofar as organizational structure and performance rewards explain a significant amount of variation in EO, while entrepreneurial self-efficacy partially mediates this relationship. The study makes a novel contribution by highlighting the significance of the connection between different organizational antecedents and EO, while additionally interpreting the mediating effect of entrepreneurial self-efficacy, in an under-researched industry and country context.

Key Words: entrepreneurial orientation, innovativeness, risk taking, proactiveness, organizational antecedents, structure, rewards, entrepreneurial self-efficacy

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Introduction

Schumpeter (1934) highlighted the role of innovation in the entrepreneurial process, and a Schumpeterian perspective of entrepreneurship, in terms of entrepreneurial organizations, is based upon their new entries (Wales et al. 2020), which offer the likelihood of ‘creatively destroying’ existing economic establishments. Drawing on a Schumpeterian perspective on innovation and entrepreneurship, entrepreneurial orienta-

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tion (EO) as an organizational strategic orientation is conceived upon firm actions, which manifests as new entries (Estrin, Korosteleva, and Mickiewicz 2020; Kuratko and Morris 2018; Wales et al. 2021). A considerable literature points to corporate entrepreneurship and specifically EO as an important element in organizational development (Covin and Miller 2014; Liu and Wang 2020; Urban 2021). EO embodies an organizational orientation towards new entry and value creation, encapsulating the entrepreneurial decisions, methods, and actions of varying organizational actors in order to generate a competitive advantage (Covin and Lumpkin 2011; Wales et al. 2021).

Notwithstanding the positive empirical findings that EO is a strategic requirement for organizations, several studies show diverse performance consequences (Poon, Ainuddin, and Junit 2006), and subsequently scholars have developed new research questions in order to progress theoretical and empirical knowledge about the field of EO and the entrepreneurial behaviour on which it is established (Covin and Miller 2014; Kuratko and Morris 2018; Liu and Wang 2020; Niemand et al. 2020). In this regard, entrepreneurship in the public sector is highly relevant considering the deficiency of relevant management skills required to foster EO and a potential misinterpretation of what it means and/or is prerequisite to be entrepreneurial in this sector (Demircioglu and Chowdhury 2020; Meynhardt and Diefenbach 2012; Maresova et al. 2020; Morais et al. 2020). Additionally, many researchers note that most EO studies focus on the private sector, where existing theories are inadequate to explain EO in the public sector (Deslatte and Swann 2020; Klein et al. 2010; Morais et al. 2020; Urban and Nkhumishe 2019).

Consequently, in recognising the gap in the literature in terms of understanding the importance of different organizational requirements necessary to foster EO in the public healthcare sector (Klein et al. 2010; Kearney and Meynhardt 2016; Kuratko and Morris 2018; Özcan and Reichstein 2009), particularly from an emerging market perspective where many firms are confronted with uncertain markets, fluctuating market systems and intense global competition (Anwar, Clauss, and Issah 2021), the research question is conveyed as follows: ‘To what extent do organizational antecedents, such as structure and rewards, influence EO through the mediating effects of entrepreneurial self-efficacy in the context of public hospitals in South Africa?’

Recognising that there is a research need for empirical evidence on innovative and EO in the healthcare sector (Carlucci, Mura, and Schiuma

2019; Deslatte and Swann 2020), this study generates a number of important theoretical and practical contributions to the management literature. By focusing on specific organizational antecedents relevant to the public sphere, the study will extend current theory in terms of understanding the mediating effects of entrepreneurial self-efficacy on the different dimensions of EO. Focusing on organizational structure and performance rewards allows for a more refined analysis, where prior research has found these antecedents to be particularly useful in the public sector context (Kearney and Meynhardt 2016; Maresova et al. 2020). Furthermore, rather than merely testing relationship links between structure, rewards and EO, a more refined approach is implemented to test the mediating effect and interconnectedness of entrepreneurial self-efficacy to the distinctive EO dimensions of ‘innovativeness, risk taking and proactiveness’ (Covin and Miller 2014, 12). Moreover, while substitute conceptualisations of organizational antecedents and EO are to be found, using existing constructs and measures has the benefit of theoretical support (Hornsby et al. 2013; Kloepfer and Castrogiovanni 2018; Kuratko, Morris, and Covin 2011; Liu and Wang 2020). Building on such established constructs allows for replicative studies to take place in the future, and, similar to other recent studies, the study adds to the understanding of mediating variables in the EO relationship with other significant variables (Niemand et al. 2020; Urban 2021).

Additionally, the study context is focused on a single public sector, public hospitals, and takes place in a comparatively under-examined emerging African market context, South Africa, where the health area is one of the key pillars of economic expansion (Gauteng Department of Health 2017). The study took place in the South African public hospital sector in the Gauteng Province, which has the major share of the population in South Africa with approximately 14.7 million people residing in the province (Statistics South Africa 2018). Research shows that public healthcare ‘engrosses an enlarged share of income in developed and emerging countries alike, and innovations are needed in this sector to provide care at a reduced cost while augmenting access and furthering quality’ (Zuckerman, Dowling, and Richardson 2000). In the healthcare context, healthcare employees’ innovativeness plays a crucial role in engendering innovation, but the causes of innovative work behaviour remain largely unobserved (Carlucci, Mura, and Schiuma 2019; Deslatte and Swann 2020; Urban and Maboko 2020). In this regard, prior research results show that complementary effects of different organizational fac-

tors may positively influence entrepreneurial behaviour (Urban 2021), specifically in terms of organizational levels of EO (Niemand et al. 2020; Urban and Nkhumishe 2019; Wales et al. 2021). Consequently, the study has important research, policy and practitioner implications as it may assist policy-makers and managers to benefit from a deeper understanding of entrepreneurship as a means to tackle public organizations, and change themselves into adaptable and responsive organizations in order to innovatively deliver improved services to their societies (Morais et al. 2020; Özcan and Reichstein 2009).

The article begins with a synopsis of prior research on EO, self-efficacy and organizational antecedents. The research approach is then delineated in terms of design and which measures are used to collect data. The results are then presented and interpreted. The article ends with conclusions, practical recommendations, study limitations and potential research possibilities.

Entrepreneurial Orientation (EO)

EO and its constituent dimensions have been extensively employed across studies to describe ‘organizations demonstrating entrepreneurial behaviour and processes, where EO is operationalized as the concomitant display of behaviour reflecting innovativeness, risk taking and proactiveness’ (Covin and Lumpkin 2011, 861). The relationship between entrepreneurship and innovation is important to clarify, as not only are entrepreneurship and innovation complementary, but a combination of the two is fundamental to organizational success under conditions of a changing and dynamic environment (Kuratko and Morris 2018; Urban 2021; Wales et al. 2021). While entrepreneurship and innovation are positively related to each other and interact to ensure organizational success, scholars note that innovation has to attend to market needs, and compels entrepreneurship if it is to achieve organizational success (Pérez-Luño, Wiklund, and Cabrera 2011; Urban and Maboko 2020).

Similarly, in order for EO to be encouraged within public organizations, more flexible and organic structures are required, as bureaucratic structures characterised by inflexibility and red tape do not align with EO (Kearney, Hisrich, and Roche 2009; Morais et al. 2020). Public sector entrepreneurship has been conceptualised as ‘a form of public entrepreneurship that exists within a public or non-profit organisation to remedy legacy problems of bureaucracy, changing organizational structures, and cultures through elements of entrepreneurial orientation, that are inclined to the promotion of good governance, red tape re-

duction, customer satisfaction, employee empowerment, stakeholder involvement, and cost-efficient performance' (Urban and Nkhumishe 2019, 503). Researchers such as Kearney and Meynhardt (2016) indicate how EO in the public sphere depends on individual members assuming EO behaviours which need to be fostered by senior management and developed as a key competency where employees feel empowered to behave and act entrepreneurially (Urban 2021). Accordingly for the intention of this study, EO and its constituent dimensions are conceptualised as 'EO in a public sector organisation is demonstrated by the extent to which the top managers are inclined to favour change and innovation for the organization (the innovativeness dimension), to take business related risks (the risk taking dimension), and to take proactive strategic action (the proactiveness dimension), in order to achieve goals and objectives for the greater good of society at large' (Kearney and Meynhardt 2016, 20–1).

Organizational Antecedents

Organizational antecedents are responsible for creating a supportive environment for EO to thrive within organizations, where the behaviour and entrepreneurial activity of managers and other employees are encouraged (Deslatte and Swann 2020; Morris and Jones 1999). In the private sector context, research on organizational antecedents for encouraging EO is comparatively recognised insofar as different factors need to be in place, such as relevant 'strategic goals, performance reward schemes, resources, management encouragement, and suitable organizational values which indicate to middle managers and other employees that entrepreneurial behaviour is anticipated' (Hornsby et al. 2013, 23). Research further highlights how organizational antecedents can influence workers' innovativeness both directly and incidentally through the organization's proclivity to innovate and be proactive (Carlucci, Mura, and Schiuma 2019). Other studies highlight that those organizations who innovate by learning and leveraging their internal resources and structure can achieve corporate sustainability, especially since the existing trend of strategic management is principally grounded on paradoxes, incorporating the 'simultaneity of exploratory and exploitative learning' (Wojcik-Karpacz, Karpacz, and Rudawska 2019). Several of these ingrained organizational antecedents from the private sector have been examined in the public sector context with differing results (Maresova et al. 2020; Meynhardt and Diefenbach 2012). For instance, there are contrasting views on the relationship between organizational antecedents and EO, where research highlights that the 'rigid structures of the public sector can inhibit en-

trepreneurship, and more flexibility and adaptability are required to stimulate EO' (Morris and Jones 1999). Moreover, rewards practices are crucial to performance and therefore organizational circumstances accommodating entrepreneurial behaviour must provide appropriate reward processes and systems (Hornsby et al. 2013; Kearney, Hisrich, and Roche 2009). Consequently, it has been noted that organizational antecedents in the public sector, specifically in terms of organizational structure and performance rewards, warrant further investigations to gain an enhanced appreciation of the complex and multifaceted nature of EO in this setting (Urban 2021).

ORGANIZATIONAL STRUCTURE AND EO

Organizational structure is typically viewed as critical for promoting EO (Kuratko and Morris 2018) where structural elements such as hierarchy, red tape, and reporting lines can inhibit or promote entrepreneurial behaviour within the organization. In the context of the public sector organizational structure, Kuratko and Morris (2018) argue that political interference and limited managerial independence impact directly on EO, while others show that 'high power distance' as a component of organizational structure typically inhibits organizational innovation (Strow and Strow 2018; Wojcik-Karpacz, Karpacz, and Rudawska 2019). According to others, the unyielding and highly formalised strategic plans and mechanistic structures of some public entities hamper the managers' ability to stimulate entrepreneurial behaviour amongst employees (Demircioglu and Chowdhury 2020; Kearney, Hisrich, and Roche 2009). However, for EO to take root and flourish within the public sector, greater structural flexibility and adaptability are required for an entrepreneurial culture to permeate the entire organization (Urban and Nkhumishe 2019). In this regard, in recognising that entrepreneurial behaviour can be influenced by the organizational structures, in the first case a hypothesis is formulated which reflects:

- H1 *There is a positive relationship between the organizational structure and EO innovativeness, EO risk taking, and EO proactiveness in the context of public hospitals.*

PERFORMANCE REWARDS AND EO

Rewards enhance employee motivation, and organizations with developed performance-based reward systems tend to encourage individuals to pursue challenging work which is important to foster innovation

(Hornsby et al. 2013). Organizations with well-defined performance rewards create alignment between individual and organizational goals, and encourage EO, since such reward systems tend to generate an awareness of task ownership (Hornsby et al. 2013). Nevertheless, some studies on rewards conducted in the public organizational domain suggest a negative association between rewards and some of the EO dimensions (Urban and Nkhumishe 2019). For instance, not only does a deficiency of performance rewards dissuade innovativeness and risk taking behaviour (Urban and Nkhumishe 2019), but at the same time there is also a general fear of failure as a result of a low risk organizational climate (Kuratko and Morris 2018). Nonetheless, research is evolving which shows that for EO to increase in the public sector organizations, an effectual and meaningful reward system is required, encouraging risk taking and motivation for employees to participate in innovative endeavours (Özcan and Reichstein 2009). Consequently, in line with this emerging stream of findings, it is predicted in the second instance:

- H2 *There is a positive relationship between the performance rewards and EO innovativeness, EO risk taking, and EO proactiveness in the context of public hospitals.*

Entrepreneurial Self-Efficacy

Self-efficacy is an imperative motivational concept in entrepreneurship research, where entrepreneurial self-efficacy (ESE) has been used extensively to study entrepreneurial behaviour, as it refers to the 'strengths of a person's belief that he/she is capable of successfully performing the various roles and tasks of an entrepreneur' (Chen, Greene, and Crick 1998, 75). Social cognitive theory (SCT) has much relevance to entrepreneurship in relation to the self-efficacy construct, which is structured on the supposition of a generative capability in which cognitive, social, and behaviour sub skills are organised into combined pathways of action (Bandura 1989; Newman et al. 2019). In this sense, self-efficacy is regarded as an important motivational construct that induces an 'employee's personal goals, choices, emotive reactions, effort, coping and persistence' (Bandura 1989, 14).

Previous research indicates fairly reliable results for self-efficacy as pertaining to entrepreneurial behaviour (Chen and Urban 2018), including its effect on EO (Poon, Ainuddin, and Junit 2006). In the EO literature, findings highlight the mediating effect of different variables on the connection between organizational antecedents, employees' innovative work

behaviour and EO (Carlucci, Mura, and Schiuma 2019). While several authors argue that EO has a significant direct influence on performance, others indicate that EO does not directly affect performance but is reliant on numerous internal factors and competences, which mediate its relationship to performance (Wales et al. 2020). Additionally, studies show how self-efficacy enables an individual to navigate through the rigid organizational structure of many public institutions while remaining self-motivated to deal with issues of red tape, organizational boundaries, and lack of management support (Kearney and Meynhardt 2016). Moreover, ESE been causally linked to different organizational constructs and often represents a mediation effect on the relationship between intentions, its precursors and outcomes, including aspects of EO (Anwar, Clauss, and Issah 2021). Studies indicate that as a result of mediating and interaction effects, ESE can positively influence entrepreneurial behaviour, innovation, and possibly lead to higher levels of EO (Chen and Urban 2018).

Consequently, for the intention of this article, ESE is positioned as a mediating variable which can strengthen, diminish, negate, or otherwise alter the association between the organizational antecedents and EO. Recognising that any attempts to introduce or foster EO in public sector organizations are reliant upon the entrepreneurial behaviour of the individual members, in terms of ESE, it is predicted that:

- H3a *Entrepreneurial self-efficacy positively mediates the relationship between the organizational structure and EO innovativeness, EO risk taking, and EO proactiveness in the context of public hospitals.*
- H3b *Entrepreneurial self-efficacy positively mediates the relationship between performance rewards and EO innovativeness, EO risk taking, and EO proactiveness in the context of public hospitals.*

Figure 1 displays the study model which highlights the hypotheses as per the predicted relationships between the various constructs. While the selection of the study constructs, as presented in the literature review, is by no means all-inclusive, it is recognised that there are various organizational factors and processes which regulate how EO is manifested and mediated at the firm level, and that no single set of variables can unequivocally determine the outcome of this process (Chen and Urban 2018).

Research Design

The study relied on a structured and self-reported survey to collect primary data, with a cross-sectional design. The study hypotheses were sta-

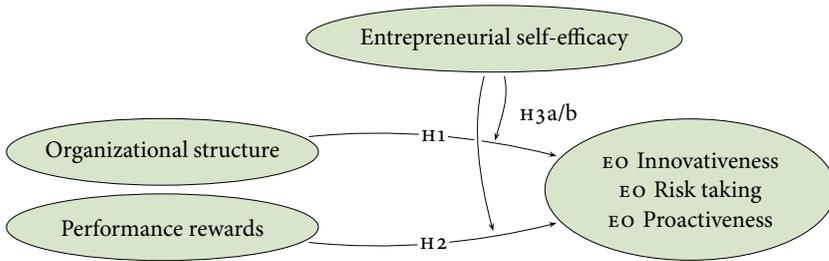


FIGURE 1 Study Model

tistically tested using regression analyses. The population for this study was the thirty-three hospitals located in the Gauteng province in South Africa that are scattered around the province (National Department of Health 2017). According to the Gauteng Department of Health *Annual Report* (2017), the department has a staff complement of 67,467 staff employed at various levels of different disciplines, of which 111 are senior managers (levels 13–16) and 15,112 are middle managers/supervisors (levels 9–12). The percentage of managers (supervision level/middle level and senior level) is approximately 23 per cent of the total population of employees, which served as the study sampling frame as these study respondents carry the requisite influence to employ resources to capitalise on accessible opportunities and engage in EO activities (Hornsby et al. 2013).

Primary data was collected from the sampled population through an online structured and self-reported survey instrument, over a three-month period. These online surveys used an anonymous link developed through Qualtrics (study data collection platform), allowing respondents to confidentially complete the questionnaire (Cooper and Schindler 2014). Strict ethical procedures were followed where permissions were sought and obtained from the relevant hospital and/or regional head office, allowing staff to participate voluntarily and anonymously in the survey. Initially, 2500 questionnaires were uniformly disseminated across all hospitals at various levels of care, including central/tertiary, district/provincial hospitals within the Gauteng region. After several data collection attempts, 255 responses were received, yielding a 10.2 per cent response rate. However, due to missing responses the final sample was 172 responses, which were judged adequate for online surveys (Cooper and Schindler 2014). To test for sampling bias, *t*-tests realised no significant differences ($p > 0.10$) between respondents who replied

earlier versus later in terms of submissions, based on the type of hospital surveyed, which suggests that the sample emerges to be descriptive of the population from which it is extracted.

MEASURING INSTRUMENTS

Entrepreneurial orientation (EO), as the dependent variable (DV), was operationalised by means of prevailing conceptualisations of EO, in respect of the three dimensions of innovativeness, risk taking and proactiveness (Covin and Lumpkin 2011; Kearney and Meynhardt 2016). EO was evaluated with nine items along a 'seven-point bi-polar Likert scale,' measuring each of the three dimensions. The language in the survey was modified to more accurately reflect the public-sector context. Items such as the following questions were included on each dimension: 'These new services are because of modifications or extensions to existing services,' 'Our hospital is characterised by risk taking of senior management in seizing and exploring risky growth opportunities' and 'Our hospital is characterised by a top management philosophy that emphasises both exploration and experimentation of new service delivery ideas.'

Organizational antecedents, as the independent variables (IVs) were operationalised on prior constructs as refined by Hornsby et al. (2013), which have been used considerably and are documented as valid and reliable scales (Kuratko and Morris 2018). Organizational structure, measured with 6 items, was concerned with the manner in which an organisation is designed through either an organic or mechanistic structure, and includes questions on decision making structures, nature of specialization, distribution of power and departmentalization. Performance reward was operationalised with five items relating to 'type of systems, their usage and alignment to entrepreneurship.' To safeguard uniformity in scales 'a seven-point Likert scale' comparable to EO was employed.

ESE, as the mediating variable (MV) was operationalised in terms of 'the strength of a person's belief that he/she is capable of successfully performing the various roles and tasks of an entrepreneur' as identified by Chen, Greene, and Crick (1998, 77). A seven-point Likert scale was used and the language of the instrument was revised accordingly to ensure that it is aligned to the public hospital context. These included questions such as: 'I have confidence in my ability to manage all challenges imposed by external forces and solve problems in my environment,' and 'I have confidence in my ability to identify and design new services to improve patients/clients service outcomes.'

DATA ANALYSIS QUALITY CHECKS

The study followed the Baron and Kenny (1986) method when conducting mediation analysis. Several prescribed steps were undertaken to confirm the results on SPSS and SAS to complete the Sobel test for mediation.

Care was taken to minimise any potential risks pertaining to common-method-bias. The survey ensured that all questions were in a 'counter-balanced' question order (Cooper and Schindler 2014), and due to anonymity it was anticipated that respondents would answer each question truthfully. Furthermore, statistically to minimise bias, convergent and discriminant validity testing using factor analysis was employed to ensure that distinct factors were being analysed.

To determine if any of the control variables in terms of sample characteristics had any significant interactions with the hypothesised relationships, different 'comparisons of means tests were performed to calculate the consequences of single control variables on the DV in separation to other control variables' (Cooper and Schindler 2014). However, both *t*-test and individual one-way ANOVA tests indicated no significant statistical differences in the DV in this regard.

Exploratory factor analysis (EFA) was used to evaluate the validity of the study constructs where the Kaiser-Meyer-Olkin Measure (κMO) of Sampling Adequacy showed a value of 0.842, above the minimum acceptable value of at least 0.5, and the Bartlett's Test of Sphericity was significant with an approx. Chi-Square 1666.753(136) (p -value = 0.000 < 0.05) (Cooper and Schindler 2014). Principal Axis Factoring with the Promax with Kaiser Normalization Rotation Method was used and showed that in some cases, several cross/multiple loadings were present on the extracted factors, especially on items in relation to proactiveness and performance rewards. Consequently, several items were eliminated because they either had communality (< 0.3) or had factor loading less than 0.4 and were loading onto more than one factor.

Table 1 shows the final factor pattern matrix, after several iterations and eliminations, where four factors were extracted and explained a total of 69.23 per cent of the variance. Cronbach's Alpha was calculated for each construct to assess the reliability of the scale for the retained items and the results indicate values all above the 0.70 threshold (Cooper and Schindler 2014). Adopting this final factor solution resulted in a change to the study hypotheses where the EO dimension of proactiveness and innovativeness

TABLE 1 Final Factor Pattern Matrix

Constructs		Factor			
		1	2	3	4
EO: Risk taking (EORT)	Q11_EO_RT Our hospital is characterised by seeking of unusual, novel solutions to problems by managers	0.965			
	Q10_EO_RT Our hospital is characterised by risk taking of senior management in terms of seizing and exploring risky growth opportunities	0.858			
	Q12_EO_RT Our hospital is characterised by a top management philosophy that emphasises both exploration and experimentation of new service delivery ideas	0.740			
	Q13_EO_RT Our hospital encourages managers to take calculated risks with new ideas	0.634			
Organizational structure and rewards (OSR)	Q18_Rewards My manager helps me get my work done by removing obstacles/challenges		0.898		
	Q21_Rewards My supervisor will give me special recognition and acknowledgement if my work performance is good		0.746		
	Q17_Org_Structure Communication in our reporting structure is both top-down and down-up		0.731		
	Q15_Org_Structure Our reporting structure does not hinder the ease and speed with which we approve new projects and exploit new opportunities		0.557		
	Q16_Org_Structure The empowering environment encourages employee creativity and innovativeness		0.473		
	Q14_Org_Structure Our hospital structure is flat to facilitate the fluid flow of communication		0.464		

Continued on the next page

were merged into a single construct named innovativeness/proactiveness (EOINPR) and the organizational antecedents were consolidated into a single construct named organizational structure/rewards (OSR). Hence the study hypotheses were changed to reflect the EFA results:

TABLE 1 *Continued from the previous page*

Constructs	Factor			
	1	2	3	4
EO: Innovative-ness/proactive-ness (EOINPR)	Q4_EO	These new services are because of modifications or extensions to existing services	0.950	
	Q6_EO	Our hospital is characterised by proactive management that is always prepared for all expected incidences.	0.891	
	Q6_EO	Our hospital has introduced new services in the past two years.	0.882	
	Q7_EO	Our hospital has introduced new creative operational processes compared with those of other hospitals.	0.491	
Entrepreneurial self-efficacy (ESE)	Q1_ESE	I am confident that I have the necessary skills and knowledge to grow beyond my current job status.		0.784
	Q2_ESE	I have confidence in my ability to manage all challenges and solve problems caused by external factors		0.642
	Q3_ESE	I have confidence in my ability to identify and design new services to improve patients/clients s . . .		0.636
	Q4_ESE	I have confidence in my ability to supervise, delegate duties and train other employees		0.619

NOTES Extraction Method: Principal Axis Factoring. Rotation Method: Promax with Kaiser Normalization. Rotation converged in 6 iterations.

- H1 *There is a positive relationship between the organizational structure/rewards and EO innovativeness/proactiveness in the context of public hospitals.*
- H2 *There is a positive relationship between the organizational structure/rewards and EO risk taking in the context of public hospitals.*
- H3a *Entrepreneurial self-efficacy positively mediates the relationship between the organizational structure/performance rewards and EO innovativeness/proactiveness in the context of public hospitals.*
- H3b *Entrepreneurial self-efficacy positively mediates the relationship between the organizational structure/performance rewards and EO risk taking in the context of public hospitals.*

TABLE 2 Descriptive Statistics and Correlations

	Descriptive Statistics		Pearson's Correlation Coefficients			
	M	SD	1	2	3	4
1. OSR	4.35	1.43	1			
2. ESE	6.18	0.78	0.21***	1		
3. EORT	4.46	1.46	0.67***	0.26***	1	
4. EOINPR	5.17	1.40	0.39***	0.07	0.51***	1

NOTES M – variable mean, SD – standard deviation, *** $p < 0.01$.

Results and Discussion

Table 2 displays the mean scores, standard deviations and Pearson correlation coefficients amongst the study variables. Descriptive statistics were calculated, with the highest mean score observed for ESE. There was a strong positive correlation between EOINPR and EORT ($r = 0.51$, p -value < 0.01), and a moderate correlation between OSR that was positive and significantly related to both EORT ($r = 0.67$, p -value < 0.01) and EOINPR ($r = 0.39$, p -value < 0.01). There was a very weak and insignificant correlation between ESE and EOINPR ($r = 0.07$, p -value > 0.1), while the correlation between ESE and EORT was positive and significant ($r = 0.26$, p -value < 0.01). Furthermore, collinearity diagnostics were computed which reveal ‘variable inflation factor (VIF) values’ of >1 , which are ‘valued as acceptable and can be understood as no evidence of significant incidence of multicollinearity’ (Cooper and Schindler 2014).

Multiple linear regression was conducted to test the study hypotheses using forced entry, since the control variables were not included in the study model, and thus there was no order of entry designed for the predictor variables. Fundamentally, two models were formulated, denoted by the following equations: (a) Model A = $EOINPR = (b_0 + b_1 OSR) + \varepsilon_i$; (b) Model B = $EORT = (b_0 + b_1 OSR) + \varepsilon_i$.

Hypothesis 1 (H1) and hypothesis 2 (H2) were tested with a two-step linear regression approach to reflect each of the hypotheses separately, where step 1 (Model A) used only EOINPR as a predictor variable, and EORT was used in step 2 (Model B) to account for any additional variance in OSR. The results with the coefficients are presented in table 3, which shows two columns in terms of Model A (H1) and Model B (H2). The coefficients of determination (R^2) was unchanged at 15 per cent for Model A (H1), while a slight change from 45 per cent to 44 per cent was observed with respect to Model B (H2). In both models the relationships

TABLE 3 Regression Results for H1 and H2

		Model A		Model B	
		B	β	B	β
Model 1: EOINPR	Intercept	5.17***	0.00	5.17***	0.00
	OSR	0.38***	0.39	0.39***	0.39
	R ²	0.15		0.15	
Model 2: EORT	Intercept	4.46***	0.00	4.46***	0.00
	OSR	0.69***	0.67	0.66***	0.65
	R ²	0.45		0.44	

NOTES *** $p < 0.01$.

determined by the regression coefficients were positive and statistically significant, and subsequently H1 and H2 are both supported. These findings reaffirm similar findings from prior studies where a positive relationship between organizational structure and EO has been reported (Kearney, Hisrich, and Roche 2009). This positive relationship is important insofar as middle-level managers who function in an organic/flat formation seem to demonstrate higher levels of EO. The rationale for such a relationship may well be prevalent due to structures which encourage less red tape, better collaboration and support, as well as less convoluted communication; all lead towards creating perceptions that entrepreneurial actions are recognised and rewarded (Hornsby et al. 2013).

Hypothesis 3a (H3a) predicted that entrepreneurial self-efficacy positively mediates the relationship between the organizational structure/performance rewards and EO innovativeness/proactiveness. Hypothesis 3b (H3b) predicted that entrepreneurial self-efficacy positively mediates the relationship between the organizational structure/performance rewards and EO risk taking. Both of these hypotheses were tested with mediation regression analyses where the mediation parameter comparisons results are displayed in table 4 and 5, respectively.

Table 4, in terms of H3a, highlights that OSR significantly predicts EOINPR in path *c* of the model, where $F(8,163) = 6.17, p < 0.01, R^2 = 0.23, \beta = 0.422, p < 0.01$, and suggests that when OSR increases by 1 unit, EOINPR increases by 0.23 units. OSR + ESE together significantly predict EOINPR in path $c' = (a \times b)$, $F(9,162) = 5.48, p < 0.01, R^2 = 0.23$. Similarly, ESE significantly predicts EOINPR in path *b*, where $F(9,162) = 5.48, p < 0.01, R^2 = 0.23, \beta = 0.06, p = 0.66$, but was not significant. In terms of the Sobel Test, path *a* = 0.09, path *b* = 0.06, path *c* = 0.422 and

TABLE 4 Mediation Results for H3: ESE Effect on OSR and EOINPR

	OSR > EO_I			OSR + ESE > EO_I			OSR > ESE		
	B	SE	β	B	SE	β	B	SE	β
Intercept	3.50***	0.32		3.58***	0.80		5.69***	0.19	
OSR	0.42***	0.07	0.42	0.42***	0.07	0.42	0.09**	0.04	0.09
ESE				0.06	0.13	0.06			
F	6.17***			5.48***			2.00**		
R ²	0.15			0.15			0.09		

NOTES Notes for parameters: B = unstandardized parameters, β = standardized parameters, *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.

TABLE 5 Mediation Results for H3: ESE Effect on OSR and EORT

	OSR > EO_RT			OSR + ESE > EO_RT			OSR > ESE		
	B	SE	β	B	SE	β	B	SE	β
Intercept	1.48***	0.26		0.11	0.66		5.69***	0.19	
OSR	0.69***	0.06	0.67	0.67***	0.06	0.65	0.09**	0.04	0.09
ESE				0.25**	0.11	0.13			
F	19.61***			18.40***			2.00**		
R ²	0.50			0.51			0.09		

NOTES Notes for parameters: B = unstandardized parameters, β = standardized parameters, *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.

path c' (path $a \times$ path b) = 0.417. H3a is therefore not supported since the addition of the new variable (ESE) does not change the significant path; this means that the effect is very small, hence not significant.

Table 5, in terms of H3b, highlights that OSR significantly predicts EORT in path c , where $F(8,163) = 19.61$, $p < 0.01$, $R^2 = 0.50$, $\beta = 0.69$, $p < 0.01$, and suggests that when OSR increases by 1 unit, EORT increase by 0.5 units. ESE significantly predicts EORT in path b , where $F(9,162) = 18.40$, $p < 0.01$, $R^2 = 0.51$; $\beta = 0.24$, $p < 0.05$. The Sobel Test revealed that path $a = 0.09$, path $b = 0.24$, path $c = 0.69$ and path c' (path $a \times$ path b) = 0.66. When the mediator (ESE) was added, the slopes for OSR changed significantly, since adding ESE as a mediator causes a small change to the R -square value changes, meaning ESE plays a small role in explaining the variability in EORT. Hypothesis 3b is therefore supported, indicating the presence of partial mediation by ESE on the relationship between OSR and EORT.

These empirical findings can be interpreted in relation to prior studies and theory which specify that an important set of entrepreneurial capabilities are higher levels of *ESE*, which enable individuals to recognise innovations and engage in risk taking (Chen, Greene, and Crick 1998). This relationship is reaffirmed with the positive findings obtained in the present study, insofar as higher levels of *EO* seem to involve a dynamic interplay between organizational antecedents, such as organizational structure and rewards and *ESE*. Such interactions between organizational structure and rewards, *ESE*, and *EO* highlight the usefulness of employing social cognitive theory (*SCT*) in terms of explaining interactions between behaviour, personal factors, and contextual influences (Bandura 1989). Research shows that an entrepreneur who is high in *ESE* is likely to 'exert more effort for a greater length of time, persist through setbacks, and develop better' (Chen, Greene, and Crick 1998). Such behaviour is important in the public sector, since in order to behave entrepreneurially employees often have to reveal higher levels of *ESE* (Kearney and Meynhardt 2016). Moreover, the mediating effect of *ESE* on the relationship between organizational antecedents, such as structure and rewards, and *EO* is increasingly recognised in healthcare organizations (Carlucci, Mura, and Schiuma 2019). Such findings highlight the relevance of entrepreneurship as an effective means for public bureaucracies, such as public hospitals, to convert themselves into adaptable, more proactive units that deliver improved services through innovative practices (Kearney, Hisrich, and Roche 2009). Healthcare and public hospitals take in an enlarged share of income in developed and emerging countries alike, and *EO* has the ability to supply healthcare at a lower cost while advancing inclusivity and higher quality (Ruff et al. 2011). In many emerging economies, one of the principal objectives of any organization is heightened effectiveness and efficiency which can be attained by constantly innovating, and cultivating higher levels of *EO* (Anwar, Clauss, and Issah 2021; Urban and Nkhumishe 2019).

Conclusion

This article brings original understandings into the relationship between organizational antecedents and *EO*, while clarifying the mediating effects of *ESE* on this relationship. The findings have provided an important empirical contribution to explaining organizational antecedents and *EO* and *ESE*, and highlighted their relevance to the public hospital sector in South Africa.

In South Africa, where this study takes place, the constitution specifies the 'right to health care services for all persons living within the Republic' (Republic of South Africa 2015). However, entrenched inequalities and problems of service delivery, coupled with poor management in South Africa's national health system frustrate innovativeness at public hospitals (National Department of Health 2017; Ruff et al. 2011). As a result, and despite its potential, entrepreneurial behaviour remains understudied and is not implemented in many firms in emerging economies, often hindering future economic growth (Urban and Nkhumishe 2019).

Based on the study findings it is recommended that hospital managers not only undertake innovations but also find new ways to do more with fewer resources, in other words to be proactive by the nurturing of EO. Due to recent conditions of increased fiscal pressure as a direct result of the Covid-19 pandemic it is necessary for managers not only to be more resourceful and amplify efficiency in the providing of services, but also become entrepreneurial in terms of fostering EO (Urban 2021).

Additionally, research-based educational training is required in the public sector healthcare system to foster and develop ESE to improve innovation performance among all employees. Training of managers and employees should focus on developing higher levels of ESE through direct interventions as well as through vicarious learning in terms of the SCT, while at the same time consider the prevailing organizational structure and reward systems in the workplace. Research on SCT confirms that self-efficacy can be developed through training and role displaying (Bandura 1989). This means that entrepreneurial behaviour in the form of EO is essential to overcoming public sector bureaucracies and rigid structures, and managers are advised to devise and implement structures and performance rewards that encourage entrepreneurial efforts by all staff members, who must be supported by a sense of ESE (Urban 2021).

Furthermore, not only is the Covid-19 pandemic centre stage as a global issue threatening the global economy, but digitization is changing the business model of many organizations across all sectors and industries (Niemand et al. 2020). Consequently, understanding the role of EO and ESE is fundamental, as both of these phenomena require flexibility in organizational behaviour in terms of enhancing resources, proficiencies and systems, predominantly in emerging economies where firms are often attentive to developing 'low cost type innovations' (Al-Omoush, Simón-Moya, and Sendra-García 2020).

While the article contains some limitations, these offer possible future

research opportunities. The study being cross-sectional in design prevents drawing conclusions regarding the causal relationship between the study variables. Moreover, the study collected data on perceptions which may have been prejudiced by perceptual and motivational biases of the individual respondents. In addition, the study surveyed public hospitals in only the Gauteng province in South Africa, and hence the generalizability of findings is somewhat limited. Caution is required in generalising the findings to other contexts, as the study findings may not be appropriate for other economies with different environmental and institutional conditions (Urban and Nkhumishe 2019). Notwithstanding these limitations, the study results offer a valuable interpretation of how EO is affected by different organizational factors and ESE in the hospital public sector. In general, researchers would be well advised to conduct investigations to develop a greater appreciation of the complexities of fostering EO in public sector organizations in emerging economies by investigating specific country contingency variables such as institutional voids and scarce infrastructure and resources.

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