



Received: 11 April 2021  
Accepted: 24 June 2022

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## MANAGEMENT | RESEARCH ARTICLE

# The effect of entrepreneurial orientation on innovation performance in the airport industry through learning orientation and strategic alignment

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**Abstract:** In a highly competitive market and global economy, innovation is often recognised as the pinnacle of success and one of the most critical components. Entrepreneurial orientation has been recognised as an effective development strategy to advance innovation performance. Nevertheless, innovation research in the airport industry through entrepreneurial orientation has not received adequate attention. In addition, the development of innovation requires a dynamic change in strategic alignment and learning capacity. Nonetheless, the literature still lacks studies explaining how entrepreneurial orientation influences innovation performance through strategic alignment and learning orientation in the airport industry. Therefore, the present study aimed to examine the relationship between entrepreneurial orientation and innovation performance through the mediating effect of strategic alignment and learning orientation in the Dubai airport. A questionnaire was distributed to 413 employees from three main departments. The research findings revealed a significant positive relationship between entrepreneurial orientation and innovation performance. The findings also exposed that strategic alignment and learning orientation mediate the above relationship. Theoretically, this study extends the dynamic capabilities theory by providing an empirical model explaining how to dynamically improve innovation performance in the airport through the entrepreneurial orientation mediated by strategic alignment and learning orientation. Practically, this study also introduces a model that assists the managers in developing employees' entrepreneurial capabilities and airport information technology (IT) alignment and learning that are important to improve airport innovation performance.

**Subjects:** Sustainable Development; Cities & the Developing World; Development Policy

**Keywords:** Entrepreneurial; orientation; learning; alignment; innovation; performance

## 1. Introduction

The growth of market competition coupled with technological and economic changes exerts pressure on the achievement of firms' competitive advantage, especially in developing nations. In order to consolidate firms' position in the global market competition, developing innovation capabilities has been regarded as an effective development strategy for firms' performance (Wang et al., 2021). Schumpeter (1934) argued that market strength derived from innovation might provide highly effective outcomes compared to pure price competition. He stated that technical

progress frequently results in temporary monopolies that generate excess profits. The development of innovation capabilities influences firms' performance, including profitability, market share, customer satisfaction, and firm sustainability (Rajapathirana & Hui, 2018; Shafi, 2020).

Recently, innovation capabilities have been acknowledged as playing an influential role in the performance of public organisations through improving their services, products and organisational process (Arundel et al., 2019; Joo et al., 2018). Lately, airport performance has been acknowledged as crucial in terms of decreasing transaction and administrative costs, enhancing workplace satisfaction (and hence worker productivity), gaining access to non-tradable assets (for instance, non-codified external knowledge), and decreasing supply prices (Rengarajan et al., 2021). According to (Pereira & Caetano, 2017), business model innovation in the airline sector and airport industry plays a substantial role in value creation, competitive edge, and profitability through new avenues of approach. Despite the importance of innovation capabilities in the airport industry, very few studies have empirically explored the factors that influence innovation capabilities in the airport industry. Thus, entrepreneurial orientation (EO) has been recognised as a crucial vehicle for driving innovation capabilities.

The Dynamic Capabilities View (DCV) has been introduced in the strategic management field primarily to comprehend the requirement for organisations to adapt to changes in the environment (Amit & Schoemaker, 1993; Teece & Pisano, 1997). The organisations' achievement is dependent on the capability to be flexible according to unforeseen industry circumstances and the markets in which they function. According to, organisations may have resources but must possess dynamic skills. The absence of dynamic skills would destroy shareholder value. As per dynamic capability theory, entrepreneurial orientation may be viewed as a distinct dynamic skill to recognise venture possibilities and utilise resources (Monteiro et al., 2019).

According to Monteiro et al. (2019), entrepreneurial orientation is a distinctive dynamic aptitude for identifying venture possibilities and deploying resources. The firm-level strategic entrepreneurial orientation encapsulates an organisation's entrepreneurial strategy-making procedures, management philosophies, and company behaviours. The strategy development of firms' innovativeness, proactiveness, and risk-taking facilitate market opportunity identification and exploitation (Hou et al., 2019). Strategic entrepreneurial orientation also enhances airport innovation capabilities by enabling the organisation to align its structure and resources with its strategy and entrepreneurship environment. Failure to match technology with commercial strategy is increasingly democratising airports' capacity to mitigate large-scale damage.

Furthermore, among the potentially vulnerable points in the airport industry are GPS-based navigation systems, flight control systems, fuel consumption systems and fuel gauges, and maintaining computers. Many other points may be present (Awasthi & Kunal, 2018). Nevertheless, there is a dearth in the literature on how entrepreneurial orientation influences innovation capabilities through strategic alignment in the airport industry, especially in the United Arab Emirates (UAE). In addition, entrepreneurial orientation influences learning orientation by motivating companies to "ditch" old methods of performing actions or by offering flexibility and assisting businesses in reshaping their competencies and skills (Wang, 2008) to improve innovation capabilities (Makhoulfi et al., 2021). Only a few studies explored the mediating effect of organisational learning on the relationship between entrepreneurial orientation and innovation performance in service (Gomes et al., 2022).

In order to bridge these gaps, this study aimed to propose a model that examines the effect of entrepreneurial orientation (EO) on the innovation performance (INP) through the mediating effect of strategic alignment (SA) and organisational learning (OL) in the UAE airport industry. The finding of this study has two main contributions. First, this study is one of the few studies that theoretically discussed innovation performance in the airport industry driven by products and processes perspectives and marketing and organisational innovation, especially from the perspective of the

developing countries. Driven by the dynamic capability theory, this study provides empirical evidence on how (EO) influences several aspects of airport (INP), (SA), and (LO). This study also provides empirical evidence concerning the mediating role of organisational alignment and leaning on the relationship between EO and IN. Practically, this study provides a new insight that guides airport managers to improve the competitive advantages of airports by improving innovation capabilities through enhancing strategic entrepreneurial orientation among employees, strategic alignment, and learning capacity.

## 2. Literature review

### 2.1. Innovation performance

Operating businesses in the modern economy presents a challenging task, specifically due to the volatile competition between firms locally and globally. Firms should go beyond their competitors' management and business in attaining sustainability. The Schumpeterian view agrees that companies should be aware of the higher complexity and fast changes. In these contexts, firms inclined to innovation could react quicker, apply innovation in designing new services and products, and utilise opportunities efficiently compared to non-innovative firms (Wadho & Chaudhry, 2018). Innovation is described as implementing creative ideas and discovering new technologies or ways to improve the existing system and create value for companies (Al-kalouti et al., 2020).

Ideas and creativity are the main core of the innovation process, ensuring success, while the invention is the driving engine for generating more ideas creatively. Rajapathirana and Hui (2018) stated that creative individuals must be supported by firms' activities and societal changes resulting in producing knowledge, process, and product to leverage the innovation process. Scientific knowledge and technology development are essential knowledge inputs to understand market needs and societal changes in opportunity exploration. Innovation is defined as an improved product, method, advertising, marketing strategy, or managerial practice (OECD, 2005, p. 46). In line with OECD (2005, p. 17), this study classified innovation into four categories, namely, product, process, organisational, and marketing level innovations.

### 2.2. Entrepreneurial orientation

Due to its importance as "a driving force behind the organisational pursuit of entrepreneurial activities," entrepreneurial orientation is currently a hot topic in business research. The literature has concentrated on the impacts of entrepreneurial orientation and how they contribute to higher performance (Monteiro et al., 2019). Miller and Friesen (1982) stated that an organisation with an entrepreneurial orientation risks product and market innovation and acts proactively ahead of existing competition. (Lumpkin & Dess, 1996), stated that entrepreneurial orientation "refers to the processes, practices, and decision-making activities that lead to a new entry."

According to prior studies, entrepreneurial orientation is a multidimensional construct, as stated by Miller and Friesen (1982). As per Miller and Friesen (1982), entrepreneurial orientation has three main dimensions: proactiveness, risk-taking, and innovation. Lumpkin and Dess (1996) proposed two additional dimensions: competitive aggressiveness and autonomy. Therefore, the primary aspects that characterise an entrepreneurial attitude, as per these authors, are a predisposition to operate independently, a readiness to be innovative and take risks, and a tendency to be combative toward rivals and proactive in terms of market prospects. Entrepreneurial orientation is characterised by (Pearce et al., 2010) as a set of unique behaviours that include creative capability, competitive aggressiveness, proactivity, autonomy, and risk assumption. Nonetheless, the most frequently employed research aspects are proactiveness, risk-taking, and innovativeness (Yu et al., 2022).

Entrepreneurial orientation, developed by Miller and Friesen (1982), examines how inventive, proactive, and risk-taking company managers are during strategic decision-making. Innovativeness is characterised by a predisposition to promote novel ideas, innovation, experimentation, and creative processes that deviate from existing practices and technology (Nguyen et al., 2021). A proactive

organisational posture predicts and responds to future market needs and requirements (Lumpkin & Dess, 1996). The readiness to commit resources to initiatives with uncertain outcomes and possibly high failure costs is connected with risk-taking (Miller & Friesen, 1982).

### **2.3. Strategic alignment**

In today's intensely competitive corporate climate, aligning information technology (IT) strategies with business strategies is crucial and continues to be a key priority for business and IT executives (Ilmudeen et al., 2019). Despite the fact that alignments have been intensively examined, researchers have used a range of conceptualisations and interpretations of alignment (Beyene et al., 2016). Unfortunately, there is no commonly acknowledged definition or model (Ilmudeen et al., 2019). A "strategic alignment" is a condition in which "company product development and business strategies are focused on customers, users, and markets," resulting in financial success (Street et al., 2017). Several researchers define strategic alignment as inter-organisational connections centred on how to attain the desired objective. Strategic alignment may help organisations maximise organisational return on investment, establish a competitive edge, and provide flexibility and direction in dealing with problems and opportunities (Afandi, 2017; Van de Wetering et al., 2018).

Most organisations today are new business models because they utilise IT and information systems to operate, manage, perform duties, activities, and services, and connect with customers, suppliers, and staff, including when making administrative decisions (Héroux & Fortin, 2018; Sabherwal et al., 2019). The IT department is a part of the organisation that must have a strategic plan as a guideline for operating and serving other departments. Due to the relationships between IT strategy, business strategy, and organisational strategy, the IT strategy framework used in organisations is known as the Information Systems Strategy Triangle [Figure 1](#) (Pearlson & Sauimders, 2009).

### **2.4. Learning orientation**

Organisational learning reflects the extent to which a company gains and disseminates information regarding changes in the market, consumer needs and demands, competitive behaviour, and the emergence of new technologies to develop new services or products that outperform the capabilities of the competition (Ferreira et al., 2021). In the last few years, organisational learning has evolved into a significant component in establishing a competitive edge. The capacity to learn quicker than rivals is considered a driver of consistent competitive advantage. Everything that thrives in a dynamically evolving environment must adhere to the process of learning, behavioural improvements, and productivity gains (Alnuaimi et al., 2021).

Learning orientation is known as accepting a learning process in an organisation. Specifically, learning orientation is the tendency of an organisation to create and apply knowledge within the organisation. In addition, learning orientation represents a potential that allows the deepening and exchange of knowledge among individuals and increases training within the organisation and improves the ability to manage ideas, processes, or new products. Thus, learning orientation may be a development strategy that permits new strategic initiatives to be transformed into outstanding organisational performance. The willingness to learn, the common goal, and open-mindedness are the three primary components of learning orientation (Beyene et al., 2016).

The organisation's attachment to learning focuses on the value of learning and maintaining commitment. On the other hand, the opening of an organisation is an organisation's degree of openness to accept changes and new business practices. According to (Donate & Sánchez de Pablo, 2015) the opening of the organisation is also manifested in the desire to question old assumptions and convictions and unlearn them, if necessary. Creating a shared vision for the whole organisation leads to what the organisation learns and how to learn.

## 2.5. Hypotheses development

### 2.5.1. Entrepreneurial orientation and innovation performance

Entrepreneurial orientation is a disposition or stance towards the processes, procedures, and decision-making activities leading to the new market entrance, involving a firm's aspirations to seize new market possibilities in a dynamic system (Lumpkin & Dess, 1996). Miller (1986) proposed that an entrepreneurial firm is willing to participate in product and technical process innovation and deliver proactive innovations to get first-mover advantages and engage in risky projects. Entrepreneurial orientation has been shown to have a favourable impact on innovation performance in various countries and industries. For instance, (Arzubiaga et al., 2018), discovered that entrepreneurial orientation has a favourable effect on innovation performance based on data from 230 Spanish family small-medium enterprises (SMEs). A similar finding was reported by Iqbal et al. (2021) in a study involving Pakistani SMEs. All of this research support the traditional notion of entrepreneurship.

Nevertheless, contradicting findings were also documented. According to (Madison et al., 2014), no correlation exists between entrepreneurial orientation and business performance. Despite the fact that numerous publications on entrepreneurial orientation have been published in leading entrepreneurship and associated journals, there is a dearth of high-value-added entrepreneurial orientation research topics in the literature (Kiyabo & Isaga, 2020). Most studies paid attention to SMEs or large firms, frequently leading to replications with little consideration for identifying and assessing mechanisms of entrepreneurial orientation on innovation performance in other industries, such as an airport. Therefore, the following hypothesis was proposed:

**H1: Entrepreneurial orientation has a significant relationship with innovation performance.**

### 2.5.2. Entrepreneurial orientation and strategic alignment

The alignment of technology with business strategy is the pillar of success in the airport industry. For example, future thinking about utilising novel methods of aeroplane movement controls at the airfield, aviation equipment developments through new initiatives, the movement and operation of ground vehicles using innovative ways, materials, tools with sustainable technologies, and excellently organised airport infrastructure are essential. In the passenger security context, all of these components are required for efficient air operations and ground handling (Medvedev et al., 2017). Over the last decades, researchers in the strategic management field revealed significant concerns about achieving business-IT alignment in large scale projects and public organisations (AlGhazi et al., 2017). For its favourable effects on corporate innovation (Héroux & Fortin, 2018), strategic alignment has turned into a top management concern (Laban & Deya, 2019). Understanding how business strategy may be supported by other organisational strategies to boost innovative capabilities is critical.

Much emphasis has been invested into the definition, measurement, causes, and repercussions of the alignment between business and IT strategies, namely the strategic IT alignment, to understand if strategic alignment leads to greater organisational performance (Kim et al., 2020). In an unforgiving industry climate, airlines have continually beaten their competition throughout their existence. It is critical to assess how airlines have achieved excellent results and retained their competitive advantage by properly adopting a double strategy: differentiation via service excellence and innovation and cost leadership in their peer group. According to the findings of prior studies, strategic alignment directly impacts innovation performance. Therefore, this research proposed the following hypothesis:

**H2: There is a significant relationship between strategic alignment and innovation performance.**

Due to the dynamic environment of business and IT, presumably, any efforts to align technology with business in large-scale projects, such as airports or the aviation industry, have become tremendously challenging. The entrepreneurial initiatives of the company are considered a source of positive strategic advantages. Entrepreneurial possibilities are connected to the entrepreneurial initiative, which enables businesses to maintain a state of adoption of innovative strategies and align the strategies through a strategic adaptation mechanism (Niemand et al., 2021). Audretsch and Belitski (2022) stated that the organisational ability to adapt to entrepreneurship is directly related to improving strategic alignment.

In the dynamic business environment, IT strategy alignment in new venture goals is an essential competitive advantage influenced by the entrepreneurial action associated with business opportunity identification and exploitation (Street et al., 2018). Although entrepreneurial activities facilitate the development of strategic alignment, the role of entrepreneurial orientation on IT strategic alignment has not been well documented, especially in the airport industry. Therefore, this study hypothesised that:

***H3: There is a positive significant relationship between entrepreneurial orientation and strategic alignment.***

Despite few studies emphasising the importance of entrepreneurial orientation on strategic alignment and innovation performance, limited studies examined the indirect effect between entrepreneurial orientation and innovation performance through strategic alignment. According to a study by Tseng, (2019) the integration of IT and business strategies with entrepreneurship strategy has been a top priority for firms and scholars for many years. Similarly, Street et al. (2018), suggested that strategic alignment has a crucial role in mediating the relationship between entrepreneurship and innovation. This argument is centred on a number of empirical results in the literature suggesting that strategic alignment aspects have been postulated to impact both innovation and entrepreneurship. They recommended future studies to assess this relationship and confirm the important mediation function of strategic alignment in innovation initiatives (Street et al., 2018). As a result, the following hypothesis is proposed:

***H4: The relationship between entrepreneurial orientation and innovation performance is mediated by Strategic alignment***

#### *2.5.3. Learning orientation and innovation performance*

Organisational learning is a method that occurs as a result of the organisation's interaction with its internal and external environments (Crossan et al., 1995; Shafi, 2020). Furthermore, the learning process assists companies in improving their behaviours through knowledge while also creating a better awareness of the external environment (Tsou and Cheng, 2018). Learning orientation, taken from organisational learning theory, denotes an organisation's willingness to produce and utilise knowledge (Teece & Pisano, 1997; Ricciardi et al., 2019). It significantly improves organisational knowledge capabilities while also assisting companies in looking for information and assimilating, developing, and producing new knowledge (Gomes et al., 2022). Hence, growing the organisation's link with its external and internal environment play an essential role in extending organisational knowledge.

In contrast, innovation performance is a crucial aspect in ensuring the firm's long-term growth and survival. Previous research has shown that organisational knowledge is firmly embedded in innovation performance (Al-kalouti et al., 2020; Joo et al., 2018). Hence, knowledge generation and development factors play an important role in boosting innovation performance. As previously stated, learning orientation has a close relationship with the development and

application of the information in businesses, thus potentially playing a significant role in increasing airport innovation performance. As a result, the study hypothesised that:

***H5: There is a significant positive relationship between learning orientation and innovation performance.***

#### *2.5.4. Entrepreneurial orientation and learning orientation*

Entrepreneurship is a learning process in which each facet of organisational learning is tied to business management, either directly or indirectly (Song et al., 2019). According to (Wang, 2008), a business that is highly entrepreneurial will be highly learning-oriented and prone to instil principles that foster dedication to learning, open-mindedness, and a common vision. Entrepreneurial enterprises undertake proactive market actions and also hostile gestures towards competitors. Thus, entrepreneurial enterprises conduct proactive and broad environmental scanning (Wang, 2008) and are continually confronted with new, external information.

Numerous research in various areas has empirically demonstrated that entrepreneurial orientation has a favourable influence on learning orientation based on this premise (Gomes et al., 2022; Mantok et al., 2019). Furthermore, past research has indicated that adopting an entrepreneurial orientation positively impacts the overall productivity of the firm, fostering high-level generative learning and increasing business opportunities (Soares & Perin, 2020). As a result, entrepreneurial orientation potentially influences learning orientation. Hence, the study hypothesised that:

***H6: There is a significant positive relationship between entrepreneurial orientation and learning orientation.***

Entrepreneurship and learning are associated with increasing people's opportunities to learn the process of being an entrepreneur and setting up a business through entrepreneurship orientation, education, and instruction, and also greater access to entrepreneurship development and small business counselling (Oktavio et al., 2019). Hypothesised that learning responsibilities and learning culture, together with entrepreneurship functions and tools, would assist organisations in gathering information from beyond the organisation and identifying new business prospects. Hiekkänen et al. (2013) stated that project managers and entrepreneurs might build a learning orientation training culture to boost profitability. As a result, these entrepreneurial and learning orientations are critical factors in maintaining innovation development to improve organisational performance. While some studies concluded that learning orientation is required to optimise the impact of entrepreneurial orientation on innovation performance, learning orientation and entrepreneurial orientation are crucial dimensions to foster innovation performance, while others are not (song et al., 2019).

Some researchers discovered a significant correlation between learning orientation and performance, but with an entrepreneurial orientation interaction effect (Ebrahimi et al., 2018). According to a survey involving 159 architecture and urbanism firms in Santa Catarina, Brazil (Gomes et al., 2022), the relationship between entrepreneurial orientation and innovation performance is mediated by organisational learning. Despite the abundance of studies explaining the relationship between entrepreneurial orientation and innovation performance through learning orientation, the majority of the studies focused on SMEs and large organisations while overlooking other sectors, such as the airport industry. The following hypothesis was suggested to bridge this gap:

***H7: The relationship between entrepreneurial orientation and innovation performance is mediated by learning orientation.***

### 3. Research methodology

#### 3.1. Population and sample

The study's population was the employees of the Dubai Airport. According to the Dubai International Airport (2022), the total number of employees in the airport is approximately 90,000 employees. The unit of analysis is employees. The respondents were those working in four departments, namely public relations, human resources, customer service, and IT department.

#### 3.2. Data collection

From August to October 2020, the researchers and assigned representatives administered questionnaire forms to the participants across most of the airport's departments, particularly public relations, human resources, customer service, and IT. The managers were approached, the objective of the study was explained to them, and their confidentiality was ensured. In order to avoid bias, managers and representatives were instructed to distribute survey the questionnaires randomly. Extra measures were implemented to reduce self-reporting bias. For instance, the questionnaire was distributed online and randomly, and the variables were not named. Respondents were guaranteed anonymity. No personally identifiable information was required, and their participation was entirely optional.

The online questionnaire was randomly distributed to 615 employees from four departments: public relations, human resources, customer service, and IT department. Due to the impact of COVID-19 on employees' mobility and communication, responses were gathered from participants within four to six weeks, at a time appropriate to them. A total of 425 completed questionnaires were collected, where 12 responses were eliminated after screening owing to unengaged responses with a standard deviation value of zero, leaving 413 viable cases for in-depth study.

As shown in Table 1, more than 65% of the respondents were male compared to female (approximately 35%). Besides, most respondents were aged between 31 to 40 years old (31%), followed by 41 and 50 years old (27%), below 30 years old (24%) and employees above 50 years old (18%). In terms of academic qualification, more than 54% have a master's degree, followed by those with a PhD with approximately 46%. In terms of work experience, 32% have 16 to 20 years of work experience, followed by 21% with 11 to 15 years of experience, while 20% have less than five years of experience. Additionally, 15% have between six to ten years of experience, and finally, 11% have above 20 years of experience. Regarding employees' work departments, 27% of respondents were from customer service, 25% from the IT department, 24% from human resources, and 23% from the public relations department. In terms of respondents' positions', 63.2% were supervisors, 21% were executives, 14.8% were senior executives, and the remaining 1% were managers.

#### 3.3. Measurements

Table 2 summarises the features of constructs adapted from prior research. Employees assessed their airport entrepreneurial orientation strategy, alignment strategy, learning commitment, and innovation performance. A five-point Likert scale (ranging from "1 = strongly disagree" and "5 = strongly agree") was utilised to design the questionnaire. The English language was adopted in designing the questionnaire since all employees at the airport are proficient in English, one of the necessary conditions to be employed in the airport.

##### 3.3.1. Common method variance (CMV)

In order to establish common method variance (CMV), exploratory factor analysis was undertaken, as recommended by Podsakoff et al. (2012). The largest variation explained by a single component (among the four factors with a total variance of 64.87 %) is 28.54 %. Thus, single-source data do not introduce bias into subsequent analyses.

##### 3.3.2. Construct reliability and validity

The composite load factor was utilised for reliability validation. The dissimilarity attained was used to assess the convergent competencies (Fornell & Larcker, 1981). The analysis produced factor



**Table 1. Demographic profile of the participants**

		No. of Participants	Percentage (%)
<b>Gender</b>	Male	269	65.1
	Female	144	34.9
<b>Age</b>	Below 30	98	23.7
	31-40	129	31.2
	41-50	110	26.6
	Above 50	76	18.4
<b>Academic Qualification</b>	PhD	188	45.5
	Master	225	54.5
<b>Work Experience</b>	Less than 5	83	20.1
	6 to 10	63	15.3
	11 to 15	87	21.1
	16 to 20	133	32.2
	Above 20	47	11.4
<b>Position</b>	Supervisor	261	63.2
	Executive	87	21
	Senior executive	61	14.8
	Manager	4	1
<b>Department</b>	Public relations	95	23.2
	Human resource	101	25
	Customer service	112	26
	IT department	105	25

loadings greater than 0.50 for all measurements. Table 2 illustrates compound reliability as the amount of the underlying structure's construction predictors varies between 0.713 and 0.911, surpassing the intended criterion of 0.7. The aggregate total of parameter variation evaluated by passive construction had an average variance extracted (AVE) ranging from 0.571 to 0.903, above the suggested limit of 0.5 (Hair et al., 2010).

Moreover, the rate amplitude was examined for theoretical measurements that were adjusted by correlating the effective correlation between the square root value and the resulting inequality constructs. As in Table 3, the investigative data indicate lesser correlations per construct against the AVE square root using parameters assessing the constructs, exhibiting appropriate discriminating power. When determining the extent of a construct's relationship to other constructs, three rules should be followed: MSV is smaller than AVE, ASV is smaller than AVE, and the square root of AVE is bigger than the inter-construct correlation. In this study, all identified values suggested a lack of discriminant validity concerns.

#### 4. Findings and analysis

##### 4.1. Structural model analysis and results

Hair et al. (2010) highlighted that completing the measurement model analysis allowed for structural equation modelling (SEM) evaluation. As the outcomes are ultimately determined by the rejection or acceptance of the suggested model, structural modelling is deemed as the root of analysis. It is primarily illustrated by a visual diagram that depicts a set of one or more dependent relationships associating the hypothesised model's constructs. Furthermore, compared to traditional tests, the causal or structural approach is rigorous and practical, as analytical performance will quantify the indirect and direct impacts of endogenous and exogenous (IV) constructs (DVs).

**Table 2. Measurements detail**

Variable	Sub- constructs	No. of items	Authors	Sample item	Reason
Entrepreneurial orientation	Innovativeness	Six	Covin and Slevin (1991); Anwer Arshi (2016)	Our airport stakeholders are involved in the generation of new ideas.	This scale is widely and well-validated in many contexts.
	Risk-taking	Six		Our airport usually initiates changes upon which competitors act.	
	Proactiveness	Six		If there is a new product or service beneficial to the airport, we will not hesitate to spend beyond our means.	
Strategic alignment	IT alignment strategy	Eight	Okyere (2011); Al-Surmi et al. (2020)	The airport information system structure is flexible, and it can be upgraded to handle the needs at a much larger scale.	
	IT-business strategic	Eight		Our airport regularly seeks to identify new business opportunities.	
Learning orientation	Shared vision	Six	Calantone et al. (2002); Nybakk (2012)	There is a total agreement regarding our airport vision across all levels, functions, and divisions.	This scale is widely and well-validated in many contexts.
	Commitment to learning	Six		Learning in our airport is perceived as a key commodity necessary to guarantee airport survival.	
	Open-mindedness	Six		In our airport, employees are allowed to express new ideas related to their work.	
Innovation Performance	Product Innovation		OECD (2005); Puspita et al. (2020)	Successful new products developed by our airport are very different from the existing products.	
	Process Innovation			Our airport has new supporting methods for delivery services/products.	
	Organisational Innovation			Management in our airport actively seeks innovative ideas.	
	Market Innovation			There is a good fit between what the market needs and what our airport can provide.	

**Table 3. Reliability analysis**

<b>Factors</b>	<b>Items</b>	<b>Standardised loading</b>	<b>Average variance extracted (AVE)</b>	<b>Construct reliability (CR)</b>	<b>Cronbach's alpha (CA)</b>
Strategic Alignment	System_Strategy_3	0.804	0.742	0.861	0.877
	System_Strategy_2	0.789			
	System_Strategy_7	0.741			
	System_Strategy_5	0.806			
	System_Strategy_1	0.835			
	System_Strategy_6	0.819			
	Business_Strategy_8	0.798			
	Business_Strategy_3	0.783			
	Business_Strategy_5	0.872			
	Business_Strategy_1	0.857			
Business_Strategy_2	0.845				
Innovation Performance	Market_Innov_2	0.828	0.741	0.903	0.908
	Market_Innov_3	0.815			
	Market_Innov_4	0.864			
	Market_Innov_5	0.798			
	Market_Innov_1	0.823			
	Product_Innov_2	0.862			
	Product_Innov_3	0.82			
	Product_Innov_5	0.803			
	Product_Innov_4	0.686			
	Organisation_Innov_3	0.815			
	Organisation_Innov_2	0.733			
	Organisation_Innov_1	0.683			
	Organisation_Innov_5	0.595			
	Process_Innov_2	0.72			
	Process_Innov_4	0.62			
	Process_Innov_3	0.599			
Process_Innov_6	0.571				

(Continued)

**Table3. (Continued)**

<b>Factors</b>	<b>Items</b>	<b>Standardised loading</b>	<b>Average variance extracted (AVE)</b>	<b>Construct reliability (CR)</b>	<b>Cronbach's alpha (CA)</b>
Learning Orientation	Shared_Visions_4	0.835	0.668	0.88	0.917
	Shared_Visions_6	0.83			
	Shared_Visions_3	0.821			
	Shared_Visions_2	0.82			
	Shared_Visions_1	0.903			
	Commitment_2	0.764			
	Commitment_5	0.746			
	Commitment_3	0.733			
	Commitment_1	0.728			
	Commitment_4	0.722			
	Open_mindedness_1	0.772			
	Open_mindedness_6	0.771			
	Open_mindedness_3	0.751			
	Open_mindedness_4	0.734			
	Open_mindedness_5	0.656			
Entrepreneurial Orientation	Proactiveness_1	0.838	0.73	0.906	0.910
	Proactiveness_6	0.819			
	Proactiveness_5	0.811			
	Proactiveness_3	0.689			
	Proactiveness_4	0.671			
	Risk_2	0.801			
	Risk_5	0.816			
	Risk_4	0.767			
	Risk_1	0.741			
	Innovativeness_2	0.702			
	Innovativeness_1	0.682			
	Innovativeness_3	0.675			
	Innovativeness_5	0.61			
	Innovativeness_4	0.581			
	Proactiveness_2	0.803			

Nevertheless, a goodness-of-fit (GOF) test should be undertaken before drawing the final assumption for best fit structural model selection.

The major purpose of the present study was to gain knowledge of strategic factors to help SD's firm succeed. The study attempted to identify strategic factors embedded within firms, allowing micro-level sustainability as the findings are advantageous for benchmarking purposes through the use of a development model strategy. In order to predict innovation performance, this study used five exogenous variables (such as entrepreneurial orientation). Strategic alignment and learning orientation are critical to enabling innovation performance. Using the criteria stated earlier, the standardised parameter calculated in the structural model was for the innovation performance antecedents. As shown in [Figure 2](#), entrepreneurial orientation is the antecedent for innovation performance, meanwhile strategic alignment and learning organization are the mediators. As shown in [Figure 3](#), almost all fit-index values are acceptable and consistent with SEM cut-off points. For instance, PCLOSE = 1.00 (perfect non-significant) indicates a high level of model fit [CMIN/DF = 1.560 (2.00), and CFI = 0.903 (0.90)], while for a high degree of model fit, the RMSEA = 0.037 (0.05).

#### **4.2. Hypotheses testing results**

Embracing or dismissing the offered theories necessitated two boundary implementations: parameter estimate (b) and critical value for regression weight (CR). The b-value was utilised to quantify the evaluated model's population covariance matrix (Tabachnick & Fidell, 2001). A cursory examination found that measuring the CR value boosted the statistical power to assess hypotheses testing and prevent error type II owing to effect size. According to Hair (2010), the crucial value selection is based on the theoretical argumentation for the positioned correlations [table 4 and 5](#).

When a negative or positive association is hypothesised, a one-tailed test of significance can be utilised, with differences denoting the key t-values used to determine significance. The significant level of non-standardised relationships between entrepreneurial orientation, learning commitment, strategic alignment, and innovation performance is shown in [Table 4](#). Furthermore, the critical ratio (C.R) is utilised to evaluate the importance of these correlations. The C.R range from -1.96 to 1.96 implies two-sided significance at the standard 5% level (Hair et al., 2010). All of the direct correlations are statistically significant (Sig. 0.05), with the lowest C.R = 2.431 and the greatest C.R = 5.199. The C.R values fall within the cut-off marks. In order to confirm statistical correlations between these variables, all regressions (estimates) between learning commitment, entrepreneurial orientation, innovation performance, and strategic alignment are evaluated and supported.

#### **4.3. Mediation effect**

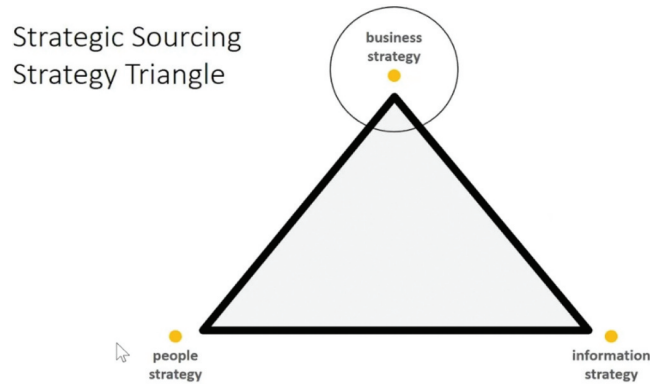
In order to evaluate a mediation model, the present study performed a mediation analysis according to Baron and Kenny's (1986) theory. This theory is an excellent way of examining a mediation relationship with three variables. The mediation test concludes with the computation of the multiple regression of the first mediation model that constructs learning orientation and entrepreneurial orientation towards innovation performance. On the other hand, the second mediation model constructs strategic alignment and entrepreneurial orientation towards innovation performance. The coefficient of learning orientation was 0.456 (p-value = 0.0001), indicating that learning orientation mediates the relationship between innovation performance and entrepreneurial orientation to some extent. Strategic alignment's mediation role (B01 = 0.497) indicates that strategic alignment mediates the relation between innovation performance and entrepreneurial orientation.

### **5. Conclusion**

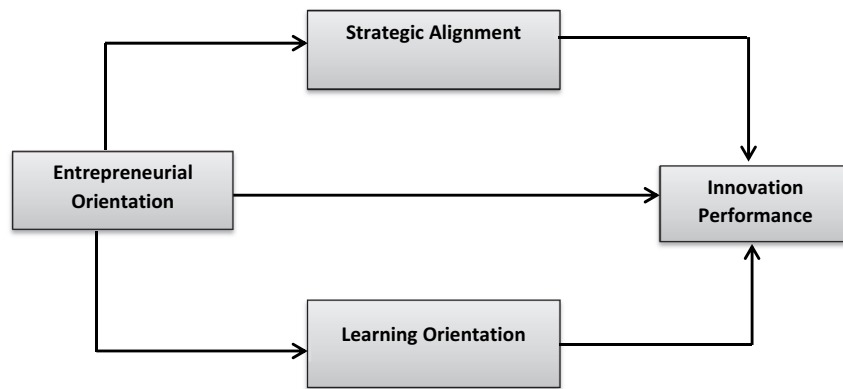
#### **5.1. Theoretical contribution**

The previous innovation research has been widely discussed in the service and manufacturing sectors of the private industries (Alshanty & Emeagwali, 2019; Genc et al., 2019), leaving a large

**Figure 1.** The Information Systems Strategy Triangle (Source: Pearlson & Saumders, 2009).



**Figure 2.** Framework.



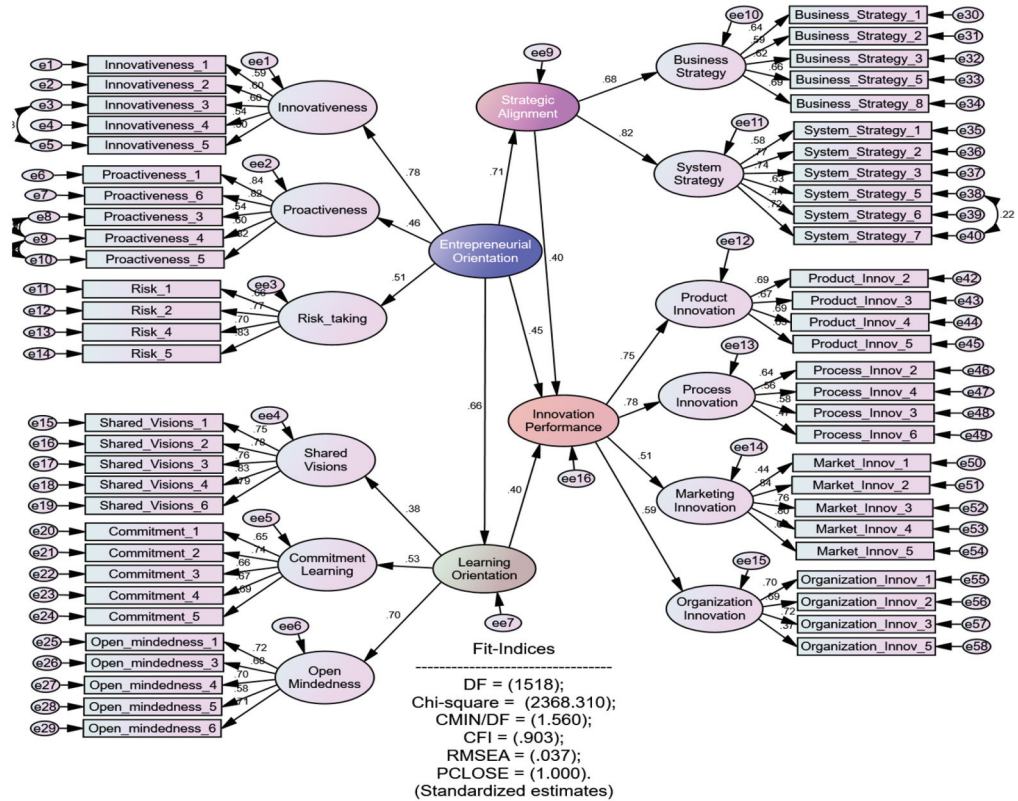
body of knowledge. Nevertheless, the present study contributes to a better understanding of the phenomena of innovation in the public sector, which still forms a research gap, especially in the airport industry of developing countries. This research bridges the gap by investigating how to improve innovation capabilities in the airport industry. In line with the importance of innovation in achieving competitive advantage for companies, improving entrepreneurial orientation at the firm level has been recognised as an effective development strategy to attain innovation performance.

Nonetheless, most past studies concentrated on the direct relationship between entrepreneurial orientation and firm performance, mainly in marketing (Luiz Dos Santos & Vieira Marinho, 2018). The limitation leaves a gap in understanding how to improve this relationship, especially in innovation performance, driven by dynamic capability theory. The finding of this research bridges this gap by exploring the role of entrepreneurial orientation on innovation performance at a wider level, including product, process, marketing, and organisational performance (Abdulrab et al., 2021).

Although entrepreneurial orientation enhances firms’ innovativeness, proactiveness, and risk-taking influence innovation performance, several factors influence innovation performance at the firms’ level, especially in the dynamic technological environment. This notion was ignored by most past studies since the majority focused on the direct relationship rather than exploring other factors that consolidate this relationship, such as IT strategic alignment through IT and business strategy (Abdulrab et al., 2021) and learning orientation through shared vision, opened mind-ness, and learning commitment (Gomes et al., 2022).

Driven by dynamic capabilities, this study provides an empirical evidence model explaining the relationship between entrepreneurial orientation and innovation performance through mediating

Figure 3. Structural model.



effect on strategic alignment and learning orientation. This study supports the view of Monteiro et al. (2019), in which entrepreneurial orientation can be viewed as a specific dynamic capability to determine venture opportunities and deploy resources. The study’s finding confirms that entrepreneurial orientation through motivating companies to “ditch” old methods of performing things or by facilitating and enabling flexibility companies to reshape their talents and skills (Wang, 2008) improves innovation performance (Makhloufi et al., 2021).

Theoretically, this study draws a relationship between innovation performance and IT strategy alignment and innovation performance. As a result, the present study has paved the way for future studies concerning how IT might drive innovation. This study broadens the viewpoint of strategic IT alignment to include not only organisational performance (Al-Surmi et al., 2020; Sabherwal et al., 2019) but also numerous dimensions of innovation performance, such as process, product, organisational, and marketing innovation.

**5.2. Practical contribution**

The conclusion of the study reveals key management elements that are likely to influence innovation performance in airport departments. First and foremost, airport departments must have a dynamic entrepreneurial orientation, such as improving employees’ innovativeness, the skills to manage and take risks and how to be more proactiveness rather than reactiveness. The managers in the airport departments should improve the airport’s strategic alignment by consistently seeking and aligning the airport for new business opportunities. The managers must also emphasise highly on the development of their IT strategy by upgrading their information system and employees’ skills to cope with the dynamic changes and business needs.

Second, to successfully leverage their skills, airport managers must assess the degree of environmental uncertainty and dynamic changes they confront. Managers should assess if their airport has the necessary skills to foster an entrepreneurial orientation in a fast-paced environment. Thus,

**Table 4. Validity analysis**

Constructs	CR	AVE	MSV	ASV	1	2	3	4
Innovation Performance (1)	0.903	0.69	0.152	0.103	0.813			
Strategic Alignment (2)	0.876	0.592	0.143	0.093	0.361	0.771		
Learning Orientation (3)	0.901	0.699	0.161	0.096	0.327	0.381	0.836	
Entrepreneurial Orientation (4)	0.909	0.718	0.16	0.106	0.397	0.329	0.402	0.847

\*Note: Composite Reliability (CR) -/Average Variance Extracted (AVE) -/Maximum Shared Variance (MSV) -/Average Squared Shared Variance (ASV)



**Table 5. Hypotheses testing**

Predictor Variable	Criterion Variable	Hypothesis	Estimate <i>b</i>	S.E.	C.R.	P	Results
Entrepreneurial Orientation	Innovation Performance	H1	0.45	0.165	2.431	0.015	Supported
Strategic Alignment	Innovation Performance	H2	0.40	0.061	2.89	0.004	Supported
Learning Orientation	Innovation Performance	H3	0.40	0.061	2.944	0.003	Supported
Entrepreneurial Orientation	Strategic Alignment	H4	0.71	0.277	5.199	0.000	Supported
Entrepreneurial Orientation	Learning Orientation	H5	0.66	0.273	4.836	0.000	Supported

\*Note: Standard error (S.E). -/Critical Ratio (C.R)

managers may make decisions regarding the possible benefits of creating and implementing innovations by analysing their surroundings and their own capabilities. Third, airport innovation is mostly the responsibility of employees. The employees must be adequately taught and given the freedom to innovate to attain this goal. Although creativity drives the early years of the airport company, subsequent generations of employees frequently become steady rather than innovators.

### 5.3. Limitations and future research

The present study has significant drawbacks, although it offers contributions. First, the study's unit of analysis is confined to employees of four airport departments at Dubai International Airport, which are public relations, human resources, customer service, and IT department. The study did not evaluate the differences in studied linkages between airports. Thus, the findings may be biased. Future studies might include a comparison of other airports. Furthermore, future studies should make further attempts to confirm these findings through qualitative interviews, which can provide a better knowledge of the elements and measures that are not extensively documented in the literature.

Second, the present study demonstrates that entrepreneurial orientation is an antecedent to creativity through the mediating role of strategic alignment and learning orientation. Future studies should explore the impact of additional antecedents, such as management factors including capability, support, and organisational culture. In reality, future studies should incorporate a larger range of characteristics critical for promoting airport innovation success. Third, as this study is based on cross-sectional data, it may not give a complete justification for the postulated model. A longitudinal approach and in-depth case studies may provide further insight into how the airport innovation process progresses over time. Nevertheless, longitudinal studies are time-consuming, difficult to undertake, and need large resources.

#### Funding

The authors received no direct funding for this research.

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#### Disclosure statement

No potential conflict of interest was reported by the author(s).

#### Citation information

Cite this article as: The effect of entrepreneurial orientation on innovation performance in the airport industry through learning orientation and strategic alignment, Samer Ali Al-Shami, Ali Khalifa Mohamed Salim Alsuwaidi & Suriati Akmal, *Cogent Business & Management* (2022), 9: 2095887.

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