

# The Relationship of Innovation Capabilities towards Employees' Performance: Mediating Effect of Technological Diversity in UAE Manufacturing Companies

Md Fauzi Ahmad<sup>1</sup>, Hamdan Sohail Obaid Alhefeiti<sup>2</sup> Mohd Nasrun Mohd Nawawi<sup>3</sup>

Arman Shah Abdullah<sup>#4</sup>

<sup>#1,2</sup>Faculty of Technology Management, University Tun Hussein Onn Malaysia (UTHM), Malaysia,

<sup>#3</sup>School of Technology Management and Logistic, Universiti Utara Malaysia (UUM), Sintok, Kedah

<sup>#4</sup>Faculty of Technical and Vocational, Universiti Pendidikan Sultan Idris, Tanjong Malim, Perak, Malaysia

<sup>1</sup>mohdfauzi@uthm.edu.my

<sup>2</sup>C.8800@hotmail.com

<sup>3</sup>nasrun@uum.edu.my

<sup>#4</sup>armanshah@fptv.upsi.edu.my

Corresponding author: mohdfauzi@uthm.edu.my

**Abstract** – The purpose of this study is to growing innovation capability and significant area of academic research. This study adopted a efficient review of literature on innovation capability. This study proposes a conceptual framework for understanding strategic planning and leadership management aspects of innovation capability which would influence individual performance. The conceptual framework includes technological diversity as mediating variable in the effect of innovation capability which would influence individual performance. The study also validates the proposed conceptual framework using a second-order confirmatory factor analysis technique, namely, structural equations modeling, with the data collected from 607 followers from 6 MOI departments in the UAE. The findings suggest that strategic planning and leadership management, aspects of innovation capability has significant positive impact on individual performance. Moreover, technological diversity have partial mediation effect in the relationship between innovation capability and individual performance. This study contributes to the research that identifies individual performance influenced by innovation capability that can affect organizational performance, particularly in the context of UAE MOI departments.

**Keywords:** Innovation Capability, Technological Diversity, Individual Performance, Confirmatory Factor Analysis and Structural Equation Modelling.

## 1. Introduction

Recently in the corporate world, the changes can be seen quickly, and the ministries of countries are making progress by following the innovative approaches. The functionality in ministries can be

considered a great contributing to its development and sustainability [14]. The exercise of processing and consuming operational knowledge or innovative knowledge to get the most recent knowledge, facilities, and procedures is known as Innovation [33].

Innovative capabilities can be seen important aspects of organizational success and development [41]. Similarly, innovation can be expressed as a major advantage of the organization [53]. Specifically, these are organizational skills that generate innovative knowledge and apply appropriate knowledge and new concepts to capture market value effectively. In addition, [56] research mentions the skills used in the organization to help improve and change its conventional skills.

Innovation is a consolidated issue that is known as the medium of competitive advantage of organisation. It can be achieved, if the organisations begin to develop or possess their innovative capabilities based on technological and cultural diversities [12]. Innovative capability can be termed as technological development and operational capabilities that are further developed from technological learning process as well as transactional and managerial routines represented by transaction and management capabilities [3].

In recent time, individual employee's performance is related by an important determinants of the workplace, for long term survival and organizational success are investigated through these determinants [42]. Several organizations periodically remain in contact with employees to get advice and information. As a result of the contact of organization with employees and getting their ideas in terms of implementing pave ways for the unique development of the firms and organizations [38].

However, innovation and organization are complex urgency and multi-layered phenomena that deteriorate over the period and necessitate skilled governance to get the most out of the new way of working [18]. Over the course of 30 to 40 years, researchers have conducted extensive research on 4 different levels of investigation titled as organizational team, individual's work, and the multi-level approach based on various disciplines of management science [6]. Similar research focuses on the findings of previous studies, bridging the gaps found in incomplete findings, and providing new directions for future research. In recent years, people have done a lot of research on the relationship between innovative and organizational performance especially in terms of creativity and innovation in the workplace [39, 31].

The interior ministry of any country plays a vital role for managing the security matters of the state and policy making for public administration and immigration issues [13]. Whereas, for managing critical matters on daily basis associated with interior ministry such as emergency planning and national security in which the effective performance of the workforce is considered inevitable [27]. However, in this advanced era of industrial revolution, it is also considered one of the major challenging issues for the government organizations to stabilize and enhance the performance of each individual working for organization [23]. But some previous studies [9, 43] suggested that the lack of effective performance can be minimized through the implication of innovative capabilities because it facilitates the organizations to generate innovative strategies which can lead to effective performance of individuals.

Also, the innovative capability can create new opportunities and technological input as well as increase knowledge base through managing technological changes [30]. To identify the effect of innovative capabilities for enhancing the performance of workforce, it requires a set of studies to analyse systematically in the context of government owned organizations [32]. Hence, a number of previous studies confirmed that there are essential factors to create a right climate conducive to innovation; including material and moral support, giving opportunities, accepting risks, the importance of encouragement and continuous motivation [8, 21]. Besides, some previous studies [2, 24 & 55] also highlighted that for the improvement of overall innovative capabilities of any organization, the employers hiring policies also need to be modified. According to the study conducted by British Council specified that 57% of UAE organizations just look for the intercultural skills during recruitment process. Whereas as 30% only look for the technical skills and 12% only seeking for their communication skills which is not appropriate for developing the innovative capability of any organization and event

therefore, such policies can affect the task performance of workforce [55]. Correspondingly, there is an urgent need of standardized regulations and framework for measuring the workforce performance through innovative capabilities in organisations which can also facilitate the policy makers [24].

Moreover, [2] has also specified theoretically that the individual and human resources of an organization affect directly the ability or performance of the innovation. Therefore, the significant activities of innovation can be interpreted as an excellent corporate performance from the viewpoint of several stakeholders' groups [54]. However, an organization continuously practices innovative capability in order to build a good corporate performance and to show the impact on innovative capability which still needs attention [57]. It evidently shows that there is a need to concentrate on such theoretical issues like bounding the innovation process only for staff which is working for strategic areas and restricting the involvement of other staff in this process. In this way, the innovative culture up-brings at various stages of employees and territories as per their abilities [54, 51].

## 2. Conceptual Framework

In previous studies innovation capability and individual performance has studied without any mediator or moderator effect. Whereas, previous studies examined the aspects of innovation capability and their association with individual performance. However, few studies examined innovation capability aspects as a whole in relation to achieving better performance. These studies concentrate only on the factors that are related to innovation capability and their influence on innovation performance. However, the aim of this research is to investigate the impact of innovation capability for the improvement if individual performance with the mediating role of technological and cultural diversity. In this proposed study a conceptual research framework has been developed by modifying and integrating two frameworks proposed by [7, 45] as shown in Figure 5. In order to achieve the proposed research objectives based on the detailed literature review, the research framework has been developed based on five independent variables, one dependent variable and two mediators. Previously, [29] has used cultural and technological diversity as a mediator for investigating the effect and interrelations between organizational culture, innovation and employee performance which also supports the cognitive resource diversity theory. Whereas, the main aspects of proposed conceptual model for this study has also supported innovation capability model previously proposed by [7, 45] such as, strategic planning and

leadership management. While, the proposed framework will guide Interior Ministry to focus on the development of 2 aspects of innovation capability to attain the high level of performance with technological and cultural diversity. In other words, the stronger the companies' innovation capability aspects, the higher their individual performance.

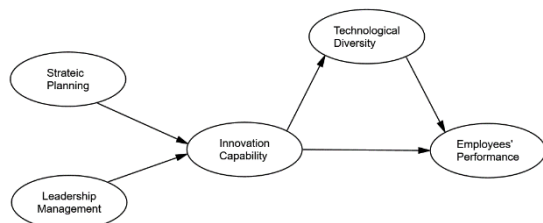


Figure 1: Conceptual Framework

## 2.1 Innovation Capability; Strategic Planning and Employees' Performance

Strategic planning plays an important role in developing new product strategies and innovation, it sets specific and long-term objectives and determines how MOI, UAE establishes and executes innovation [36]. Strategic planning also highlights the individual growth in relation to innovation, determines the means and ends of the individual, represents investment decisions, clarifies competitive opportunities, sets a scheme for exploiting such opportunities, and involves starting, developing, and implementing innovation, which in turn promotes firm performance [36]. Many researchers have found that, when an organization applies particular planning phases, it speeds up innovation processes, which can result in higher innovation levels and greater firm performance. Eventually, strategic planning improves the speed, progress, quality, and productivity of innovation.

According to [22], strategic planning is even more essential and influential for innovation and performance of employees in organizations. In this study, the positive and significant relationships reported between innovation capabilities like strategic planning, and employees' performance are consistent with the other studies. For example, the study of [37] illustrating from a sample of 387 employees of different companies allocated in Canada, found a positive and significant relationship between strategic planning and employees' performance. The study argued that employees tend to be innovative, and to rely heavily on a strategic planning to inspire and support them in Canadian context. In a study of [40], collected data from 420 employees from different organizations demonstrated that strategic planning was an important enabler of employees' innovative behaviour towards their performance. Therefore, the hypothesis can be formed as;

**Hypothesis 1:** Strategic planning is significantly and positively associated with the innovation capability towards individual performance in the interior ministry of UAE.

## 2.2 Innovation Capability; Leadership Management and Employees' Performance

MOI, UAE, has failed several times in strong leadership that lead this firm to strong capability among the employees, in this research focusing on how to bring new roles or motivation to lead this firm in a positive direction. Leadership management is important for innovation in so far as managers have the ability to direct and support innovation creation and sustainability. Thus, managers should increase individuals' opportunities to take part in innovation development and activities. Leadership management is linked to the organization's culture and plays a significant role in encouraging employees [48]. Employees must feel supported as a fundamental source to generate and develop new ideas and knowledge; thus management support is required to provide them with sufficient resources and materials at the right time to make ideas emerge [50]. Furthermore, leadership is one of the main driving forces in enhancing an organization's performance, and can lead to high levels of coherence, trust, commitment, stimulus, and performance [58]. The author found that innovation leadership is associated with three aspects of a firm's performance: process performance, economic performance and product performance.

In the similar way, the study of [5] collected data from 263 R&D employees. The study discovered a positive and significant relationship among leadership and employees' performance. Similarly, the study of [28] illustrated from a sample of 289 employees in a manufacturing organizations and found a positive and significant relationship among leadership and employees' performance. The study argued that leadership leads to high degrees of innovation capabilities of employees and enhances the quality of their performance. Moreover, in the similar way, the study of [11] drawing from a sample of 335 employees working in international hotels found that leadership leaves positive impacts on employees' innovative capabilities which lead them towards appreciable performance. The study argued that leadership can enhance and support the desire of innovative followers to provide better performance to organization. Therefore, the hypothesis can be formed as;

**Hypothesis 2:** Leadership management is significantly and positively associated with the innovation capabilities towards individual performance in the interior ministry of UAE.

## 2.3 Technological Diversity, Innovation Capabilities and Employees' Performance

For the performance of any individual improved through the innovation capability then the multiple technological tools provided by the organization played an important role. The technological diversity can also be indicated as all the available diverse resources, technical gadgets, tool, and databases in the organization. In this proposed study, the role of technological diversity will also assess for the innovation capacity for the improvement on the performance of individual at MOI, UAE.

In a study of [20] from 36 group leaders and 367 employees in manufacturing companies found that at the technological diversity has a partial mediating influence on the relationship among leadership and employees performance. The study explored that a technological diversity is important in encouraging individuals' better performance and employees who work in such environment show high degrees of innovative performance. This study also presented that leadership are more able to enhance performance of employees when they establish technological enhancement in which they value experimentation and stand on irregular flaws.

Moreover, the study of [34] collected data from a sample of 284 R&D employees in 43 software development firms and found that the mediating effect of a technological diversity between innovation process to develop employees' capability and performance of employees was supported. In line with the findings of this study, in a study of [10] found from 320 employees of consumer goods companies that the perception of a technological diversity partially mediates the relationship between knowledge management and employees' performance. The study further argued that technological diversity usually involves making capabilities of employees' risky choice, and not considered encouraging if it does not deliver suitable guidance and structure.

In this study the results argue that innovation capabilities influence employees' performance through strategic planning, leadership, capability development, innovation process, and knowledge management. Hence, another important outcome of this study is related to the mediating relationship of technological diversity on the relationships between innovation capabilities and employees' performance. This study indicates that the developed construct of innovation capabilities such as strategic planning, leadership, capability development, innovation process, and knowledge management could have influences on employees' performance behaviour. Technological diversity plays a mediating role in encouraging employees' performance through innovation capabilities.

Nevertheless, the significance of this factor, the results of this study disclose that technological diversity partially mediates the relationships among innovation capabilities, and employees' performance in MOI, Abu Dhabi. Employees' performance can be helped by improvement of the technological environment of a workplace, like delivering sufficient resources and time for performance. Leaders of MOI in Abu Dhabi should improve the perceptions of individuals by giving value to their work. The findings of this study validate these constructs. More specifically, the results indicate that technological diversity environment in which managers and non-managers are optimistic, create a great influence of innovation capability on employees' performance.

**Hypothesis 3:** Innovation capability is significantly and positively associated with the technological diversity in the interior ministry of UAE.

**Hypothesis 4:** Technological diversity is significantly and positively associated with the individual performance in the interior ministry of UAE.

**Hypothesis 5:** There is a significant mediating role of technological diversity between the innovation capabilities and individual performance at interior ministry of UAE.

## 3 Method

### 3.1 Sample

As was discussed, the aim of this study was to evaluate the proposed model determining employee's perspectives. According to [47], sample techniques derive in two wide-ranging groups. One is probability and non-probability sampling. Usually, probability sampling is chosen once total generalizability is precarious for the study. Though, for probability sampling, a requirement is register all the essentials in the sample frame which is difficult if the research is employees oriented and country based. Based on [26]; the effective sampling should be 384 employees. However, considering the previous study feedback rate is 25%, the final sampling is 2032 (stratified sampling).

### 3.2 Measures

The selection of items discussed in this section were used to measure the variables in this study. These are listed as: Innovation capabilities with strategic planning, leadership management, employees' performance and mediating impact of technological diversity. To select the accurate scale items to measure these variables, the following understandings were created. Initially, it was vital to involve scale items that stand for an innovation-to-employees performance context rather than firm performance. For this purpose, the scale items selected for this study were chosen from the

literature that are most expressive of employees perception. Another reason of this study was to include such scale items that can measure and determine definitions and dimensions extent to which they represented the content of each variables used in this research. In the same way the recommendation of [16] that “The scholar maybe would like to include scale items with diverse effect of meaning because the original list will be polished to create the final measure”. Finally, all items selection have been adapted from past studies with reliable and valid measures of variables.

Using 7-point Likert scales to operationalised constructs, vary between 1= strongly disagree to 7 = strongly agree. According to few researchers The Likert-scales were selected because they take less time, and were easy to answer [1]. [44] presented, an important disadvantage of the Likert scale is its shortage of reproducibility. Similarly [17] argued it is much needed in numerically ordering respondents. More precisely, the 7-point Likert scale is used extensively in research. Seven-point Likert scale is more accomplished than others as it permits greater judgement and satisfactory differences between people [17]. The scales items to measure the considering variables used in this study have been established from an assessment of the related literature. A total of 27 scale items were used to measure the variables in the model. A summary of the number and sources of the items as showed in Table 1, used to test variables.

**Table 1:** Measurement of Variables

Constructs	Number of Items	Sources
Innovation Capabilities		
Strategic Planning	6	Song et al., 2011; Grabara et al., 2011); Arend, Zhao, Song and Im (2017)
Leadership Management	6	Saunila, 2014; Zhu et al., 2005Atmojo (2015)
Technological Diversity	5	Stone, Deadrick, Lukaszewski and Johnson (2015): Adeyeyetolulope Charles, 2014
Individual Performance	10	(Bukhamsin, 2015; Sampson, 2017; Lönnqvist, 2011; Neely et al.,2010)

### 3.3 Normality Statistics

On the base of assumption that SEM and factor analysis both need constructs to be normality for distribution, it was essential to check the analysis about distribution of variables [25]. In this study, skeweness and kurtosis have been used for ascertaining the normality of the data. The skewness and kurtosis in this study have been worked out for each construct, which were presented and summarized results in Table 4.9. The generated results show that the skewness and kurtosis were inside the acceptable range of the  $\pm 3$ , as suggested by [49].

**Table 2:** Normality Statistics

Constructs	Range	Mean	Std. Dev.	Skewness	Kurtosis
Strategic planning	1-7	6.10	0.47	0.194	-0.581
Leadership management	1-7	5.91	0.51	-0.129	-0.475
Technological Diversity	1-7	5.92	0.59	-0.044	-0.121
Individual Performance	1-7	6.07	0.49	0.055	-0.057

### 3.4 Respondent Demographics

The profile of respondents presents under this section with concern to gender, age, marital status, position, employment status, tenure and education level, information that they provided in the first section of the questionnaire.

As declared in Chapter 3, the sample for this study involved employees from different departments of Interior Ministry Of United Arab Emirates. As shows in Table 4.1, a descriptive statistics of respondents based on gender. Thus the findings determined that 81.88% (497 out of 607) of respondents were male, and 18.12% (110 out of 607) were female. Total of 2032 surveys, 607 were return equivalent to a 29.87% response rate. Age of respondents were majority 31 to 35 years old with the percentage of 22.57. Another 21.91% of respondents were 36 to 40 years old. While on the other hand only 1.81% respondents were above 51 years old. The designation of the respondents were 15.49% (94 out of 607) of respondents were manager, 46.79% (284 out of 607) of respondents were supervisor and 37.73 (229 out of 607) were designated as staff. The income of respondents were 13.51% (82 out of 607) of respondents indicated

having less than 10,000 AED, 44.15% (268 out of 607) respondents' earning 10,000 to 20,000 AED, 29.82% (181 out of 607) respondents' income 21,000 to 30,000 AED and only 12.52% (76 out of 607) respondents indicated their income were above 30,000 AED. The respondents' kind of work, while the highest median of respondents were at administrative work with percentage of 39.7% (241 out of 607), while the lowest median attained by training with percentage of 5.27 (32 out of 607). Sector of employment were 35.75% (217 out of 607) of respondents indicated the highest median that they had full-time employment in Police GHQ, while 11.70% (71 out of 607) of respondents indicated the lowest median that they had full-time employment in Civil Defense GHQ. Respondents with the highest median experience were those with above 10 years (55.68%). Those who had held experience for 5 to 10 years (28.83%) and less than 5 years (15.49%) had the lowest medians. Qualification of the respondents were 36.08% (219 out of 607) of respondents held bachelor's degrees, 25.21% (153 out of 607) had high school or less, 17.79% (108 out of 607) of respondents hold master's degree, 17.13% (104 out of 607) of respondents hold diploma and 3.79% (23 out of 607) of respondents had Ph.D's degree.

**Table 3:** Respondents Characteristics

Gender	Number	Percentage
Male	497	81.88%
Female	110	18.12%
<b>Total</b>	<b>607</b>	<b>100%</b>
Age	Number	Percentage
Less than 20	35	5.77%
20-25	55	9.06%
26-30	77	12.69%
31-35	137	22.57%
36-40	133	21.91%
41-45	108	17.79%
46-50	51	8.40%
Above 51	11	1.81%
<b>Total</b>	<b>607</b>	<b>100%</b>
Designation	Number	Percentage
Manager	94	15.49%
Supervisor	284	46.79%
Staff	229	37.73%
<b>Total</b>	<b>607</b>	<b>100%</b>
Income	Number	Percentage
Less than 10,000 AED	82	13.51%
10.000 – 20.000 AED	268	44.15%
21.000 – 30.000 AED	181	29.82%

Above 30.000 AED	76	12.52%
<b>Total</b>	<b>Total</b>	<b>100%</b>
Kind of Work	Number	Percentage
Administrative	241	39.7%
Security	143	23.56%
Technical	41	6.75%
Social	45	7.41%
Traffic	57	9.39%
Civil defence	48	7.91%
Training	32	5.27%
<b>Total</b>	<b>607</b>	<b>100%</b>
Type of Sector	Number	Percentage
Police GHQ	217	35.75%
Civil Defense GHQ	71	11.70%
General Secretariat of the Minister's Office	99	16.31%
Undersecretary Office	75	12.36%
Assistant Undersecretary for Security Affairs	72	11.86%
Assistant Undersecretary for Resources & Support Services	73	12.03%
<b>Total</b>	<b>607</b>	<b>100%</b>
Working Experience	Number	Percentage
Less than 5 years	94	15.49%
From 5 to 10 years	175	28.83%
Greater than 10 years	338	55.68%
<b>Total</b>	<b>607</b>	<b>100%</b>
Qualification	Number	Percentage
High school or less	153	25.21%
Diploma	104	17.13%
Bachelor	219	36.08%
Masters	108	17.79%
PHD	23	3.79%
<b>Total</b>	<b>607</b>	<b>100%</b>

### 3.5 Internal Consistency

According to [52], "internal consistency signifies to the stage to which respondents are reliable across the items mentioned in questionnaire as measurement scale. Cronbach's alpha coefficient is used to measured. Cronbach's alpha of 0.70 is considered as a good internal consistency [35]. [25] proposed a guideline for the acceptance of an alpha coefficient: Table 4.11 showed that the reliabilities of Strategic Planning ( $\alpha = 0.954$ ), Leadership Management ( $\alpha = 0.935$ ), Technological Diversity ( $\alpha = 0.872$ ) and Individual Performance ( $\alpha = 0.927$ ) with at least 0.70

and above. The constructs have essential reliability as they all are very good and excellent, as recommended by [25].

**Table 4:** Cronbach’s Alphas of the Construct

Construct	Number of Items	Cronbach’s Alpha	Acceptance
Strategic Planning	6	0.954	Excellent
Leadership Management	6	0.935	Excellent
Technological Diversity	5	0.872	Very Good

### 4 Summarized CFA Results

Five constructs represented innovation capability: strategic planning and leadership management,. Items retained after CFA, 5 items represent strategic planning and 5 items represent leadership management. Responses to 10 items were selected to confirmatory factor analysis, and the first model exposed a suitable fit based on the standards for model fit. The single factor loadings expressed that all indicators were meaningful and loaded more than the least standard value of 0.7 [19]. The technological diversity, after CFA 6 items was representing technological diversity. Ten items represented individual performance before CFA, 2 items were removed during confirmatory factor analysis. Thus, 8 items were representing individual performance. The precised confirmatory factor analysis results of all constructs were presented in Table 4.33 which showed that the fit index for each of the construct is within/close to the agreed limit. Moreover, factor loading for each observed variable is at least 0.40 [15].

**Table 5:** Items Retained after CFA

Construct	Original Items	Items Retained after CFA	Deleted Items
Strategic Planning	6	5	1
Leadership Management	6	5	1
Technological Diversity	8	6	2
Individual Performance	10	8	2

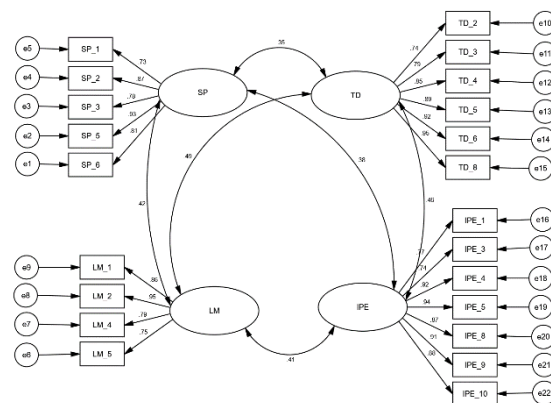
**Table 6:** Summarized CFA Results

Constructs	Chi-square	df	CM	GFI	AG	CFI	RM	AVE	CR
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	Square	N/df	FI	ES	A			
Strategic Planning	24.684	5	2.0959	0.9998	0.071	0.0624	0.892	
Leadership Management	26.753	5	2.6967	0.9995	0.074	0.0631	0.895	
Technological Diversity	28.328	6	2.1964	0.9992	0.068	0.0688	0.929	
Individual Performance	26.975	8	2.369	0.9992	0.0771	0.0710	0.945	

### 5 Overall Measurement Model

Inspection of standardized residuals specified that all residual values were inside the threshold suggested by [46]. However, modification indices indicated that the indicator IPE\_7 (individual performance) had unacceptably high value. After iteratively removing these redundant item, the overall model fitness came up in good shape. The overall measurement model is depicted in Figure 2.



**Figure 2:** Overall Measurement Model

Chi-square = 917.243, df = 606, GFI = .937, AGFI = .915, CFI = .939, TLI = .931, RMSEA = .034, and Chi-square / df = 1.871

The results showed that the overall measurement model was well fitted. In sum, the confirmatory factor analysis results specified that the overall measurement model is good.

### 6 Structural Model

In the measurement model (stage one), once all constructs were validated and acceptable fit attained [25, 46], a structural model can then be tested and obtainable as a second and key stage of the analysis [15]. The structural model has been defined as “the portion of the model that specifies how the latent variables are related to each other” [15]. The purposes of structural model to identify which latent constructs directly or indirectly affect the values of other latent constructs in the model [25]. The overall model is depicted below in Figure 4.26.

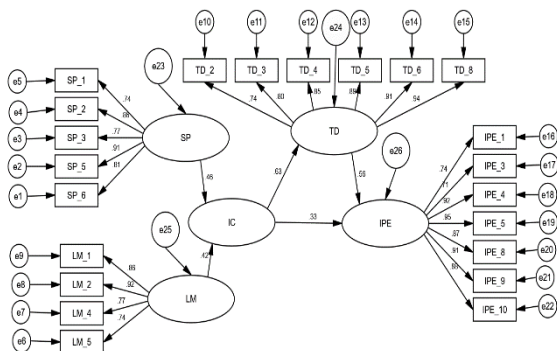


Figure 3: Structural Model Innovation

Chi-square = 884.909, df = 606, GFI = .944, AGFI = .913, CFI = .947, TLI = .941, RMSEA = .032, SRMR = .0221 and Chi-square / df = 1.847

The goodness of fit indices was examined to evaluate the structural model that hypothesized structural models fit with data. If it does not fit with the data, then we have to re specify the model unless one was achieved that exhibited the acceptable goodness of fit and is meaningful theoretically for the observed data [25]. After the underlying assumptions of SEM were met, the coefficient parameter was estimated with goodness of fit indices of overall model for testing the hypothesis H1 to H10. The evaluation of the structural model of this study is showed in Table 8.

Table 7: Testing Hypotheses

Hypothesized Path	Standardized Estimate	T-Value	P-value	Result
H1: SP-->IC	.46	5.641	***	Significant
H2: LM-->IC	.42	5.021	***	Significant

H6: IC -->IPE	.33	4.289	***	Significant
H7: IC-->TD	.63	6.976	***	Significant
H8: TD-->IPE	.56	6.171	***	Significant

### 7 Mediating Effect of Technological Diversity

Hypothesis 11 tested the mediating relationship of technological diversity with innovation capability and individual performance. The procedure for testing mediator as outlined by [4] as followed.

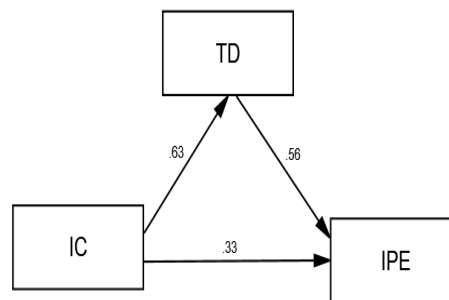


Figure 4: Mediating Effect of Technological Diversity

The model showed the mediating effects of technological diversity with innovation capability and individual performance. The procedure to find the mediation effect by [4]. The indirect effect in the model is .35 (.63 x .56 = .35), while the direct effect is .33. Meanwhile the indirect effect is greater than the direct effect, the mediation occurs. The type of mediation is partial mediation since the direct effect was also significant.

The results of any mediation test should be reconfirmed by using the bootstrapping procedure [4]. This study has conducted through the Maximum Likelihood Bootstrapping procedure with bootstrap sample of 1000 and a bias correction confidence interval of 95%. The results obtained as shown in Table 4.35.

Table 8: The Results of Bootstrapping Procedure (Technological Diversity)

	Indirect Effect	Direct Effect
Bootstrapping Results	.36	.33
Bootstrapping P-Value	.000	.001
Result	Significant. The mediation occurs	Significant

Thus, the result of mediation test has been confirmed by the bootstrapping procedure. Partial mediation occurred since direct effect of innovation capability



and individual performance was also significant. Hence, the hypothesis 11: mediation effect of technological diversity is accepted.

## 8 Conclusion

In this study, the developed research model merges innovation capabilities, employees' performance, and technological and cultural diversity. The model recommends that innovation capabilities such as strategic planning, leadership management, capability development, innovation process and knowledge management, and technological and cultural diversity used as mediator variables, are important predictors of employees' performance in ministry of interior in Abu Dhabi.

Grounded upon the research model as shown in Figure 5.1, three analyses were executed to test the 12 hypotheses. The first analysis was an empirical examination of the influence of strategic planning, leadership management, capability development, innovation process and knowledge management on innovation capabilities and the influence of innovation capabilities on employees' performance in ministry of interior in Abu Dhabi [59] [60] [61] [62]. The second analysis assessed the extent of the effects of technological diversity as a mediator in the relationships between innovation capabilities and employees' performance in ministry of interior in Abu Dhabi. Finally, the third investigation assessed the mediating influence of cultural diversity on the relationships between innovation capabilities and employees' performance in ministry of interior in Abu Dhabi [63] [64]. The summarised results from these three examines are in the next section.

## 9 Implications of the Research

It is predictable that the results of this study will help in understanding the innovation capability of employees in Abu Dhabi and their performance, especially within the context of MOI. This study concludes that employees in positions in MOI in Abu Dhabi, by displaying behaviours like strategic planning and leadership management will foster and enhance employees' performance. These two dimensions, under the construct of employees' innovation capability, were empirically investigated and found to have positive and significant influence on employees' performance in MOI in Abu Dhabi. Hence, employees' innovation capability in Abu Dhabi are encouraged to develop their strategic planning and leadership management, regarding the innovative capabilities identified here, which will assist them to nurture and strengthen employees' performance. The qualities associated with the construct of innovative capabilities raise employees' motivation and support them to show and share their performance. Employees' innovative capabilities, particularly in Abu Dhabi, who embody these

qualities will be able to compete against better organized, and work environment their own departments survival and sustainability in today's fast-paced organisational environment.

## 10 Directions for Future Research

Even though this study has established a model that delivered an actual association between different capabilities of employees towards employees' performance, also technological playing as mediators between them, useful areas for future research stay remain. For instance, assumed that the consequences of this study were limited to few major departments of MOI in Abu Dhabi viewpoints, results could be diverse when other departments were measured. This proposed a necessity for more longitudinal-cultural research to classify whether capabilities of employees perform in the same way, or there is to some degree of exclusive about departments of Abu Dhabi.

## References

- [1] Abascal, E., & Rada, V. D. D. (2014). Analysis of 0 to 10-point response scales using factorial methods: a new perspective. *International Journal of Social Research Methodology*, 17(5), 569-584.
- [2] AL JABERI, M. E. (2017). *A study of the Impact of cultural diversity on the Technological Innovation process in the Nuclear Energy Corporations* (Doctoral dissertation, The British University in Dubai (BUiD)).
- [3] Albers-Garrigos, J., Igartua, J. I., & Peiro, A. (2018). Innovation management techniques and tools: Its impact on firm innovation performance. *International Journal of Innovation Management*, 22(06), 1850051.
- [4] Awang, Z. Afthanorhan, A., & Asri, M. A. M. (2015). Parametric and Non Parametric Approach in Structural Equation Modeling (SEM): *The Application of Bootstrapping*. *Modern Applied Science*, 9(9), 58-67.
- [5] Bouckennooghe, D., Zafar, A., & Raja, U. (2015). How ethical leadership shapes employees' job performance: The mediating roles of goal congruence and psychological capital. *Journal of Business Ethics*, 129(2), 251-264.
- [6] Braun, T., & Sydow, J. (2019). Selecting Organizational Partners for Interorganizational Projects: The Dual but Limited Role of Digital Capabilities in the Construction Industry. *Project Management Journal*, 8756972819857477.
- [7] Bukhamsin, M. (2015). Investigating the Relationship between Organizational

- Innovation Capability and Firm Performance with Irish SMEs.
- [8] Bustinza, O. F., Gomes, E., Vendrell-Herrero, F., & Baines, T. (2019). Product–service innovation and performance: the role of collaborative partnerships and R&D intensity. *R&D Management*, 49(1), 33-45.
- [9] Bustinza, O. F., Vendrell-Herrero, F., Perez-Arostegui, M., & Parry, G. (2019). Technological capabilities, resilience capabilities and organizational effectiveness. *The International Journal of Human Resource Management*, 30(8), 1370-1392.
- [10] Chen, C. J., & Huang, J. W. (2009). Strategic human resource practices and innovation performance—The mediating role of knowledge management capacity. *Journal of business research*, 62(1), 104-114.
- [11] Chiniara, M., & Bentein, K. (2016). Linking servant leadership to individual performance: Differentiating the mediating role of autonomy, competence and relatedness need satisfaction. *The Leadership Quarterly*, 27(1), 124-141.
- [12] Coccia, M. (2017). Sources of technological innovation: Radical and incremental innovation problem-driven to support competitive advantage of firms. *Technology Analysis & Strategic Management*, 29(9), 1048-1061.
- [13] Cropley, D., & Cropley, A. (2017). Innovation capacity, organisational culture and gender. *European Journal of Innovation Management*, 20(3), 493-510.
- [14] Ferrante, A., Constantinescu, N., & Jackson, J. A. (2014). Lines of convergence: R&D for transmission and distribution: Coordination and the regulatory challenge. *IEEE Power and Energy Magazine*, 13(1), 52-59.
- [15] Field, A. (2013). *Discovering statistics using IBM SPSS statistics*. sage.
- [16] Gilbert A. Churchill, Jr. (1979). A Paradigm for Developing Better Measures of Marketing Constructs. *Journal of Marketing Research*, 16(1), 64-73
- [17] Gliem, J. A., & Gliem, R. R. (2003). Calculating, interpreting, and reporting Cronbach's alpha reliability coefficient for Likert-type scales. Midwest Research-to-Practice Conference in Adult, Continuing, and Community Education.
- [18] Gutierrez-Gutierrez, L. J., Barrales-Molina, V., & Kaynak, H. (2018). The role of human resource-related quality management practices in new product development: A dynamic capability perspective. *International Journal of Operations & Production Management*, 38(1), 43-66.
- [19] Hair, J. F., Ringle, C. M., & Sarstedt, M. (2011). PLS-SEM: Indeed a silver bullet. *Journal of Marketing theory and Practice*, 19(2), 139-152.
- [20] Hekman, D. R., Johnson, S. K., Foo, M. D., & Yang, W. (2017). Does diversity-valuing behavior result in diminished performance ratings for non-white and female leaders?. *Academy of Management Journal*, 60(2), 771-797.
- [21] Hülsheger, U. R., Anderson, N., & Salgado, J. F. (2009). Team-level predictors of innovation at work: a comprehensive meta-analysis spanning three decades of research. *Journal of Applied psychology*, 94(5), 1128.
- [22] Indrawati, H. (2017). The Impacts of the Strategic Planning Implementation on the Cooperative Members' Participation. *Mediterranean Journal of Social Sciences*, 8(3), 99-107.
- [23] Inglehart, R. (2018). *Culture shift in advanced industrial society*. Princeton University Press.
- [24] Klassen, R. D., & Vereecke, A. (2012). Social issues in supply chains: Capabilities link responsibility, risk (opportunity), and performance. *International Journal of Production Economics*, 140(1), 103-
- [25] Kline, R. B. (2015). *Principles and practice of structural equation modeling*. Guilford publications.
- [26] Krejcie, R. V., & Morgan, D. W. (1970). Determining sample size for research activities. *Educational and psychological measurement*, 30(3), 607-610.
- [27] Liu, C. H. (2017). Creating competitive advantage: Linking perspectives of organization learning, innovation behavior and intellectual capital. *International Journal of Hospitality Management*, 66, 13-23.
- [28] Masa'deh, R. E., Obeidat, B. Y., & Tarhini, A. (2016). A Jordanian empirical study of the associations among transformational leadership, transactional leadership, knowledge sharing, job performance, and firm performance: A structural equation modelling approach. *Journal of Management Development*, 35(5), 681-705.
- [29] Masood, M.F. and Asiry, A.A. 2012. Ecological studies on diversity of Herpetofauna in Asir region, Kingdom of Saudi Arabia. *Egypt Acad J Biol Sci.*, 4(1): 143-163.
- [30] Mittal, S., & Dhar, R. L. (2015). Transformational leadership and employee creativity: mediating role of creative self-efficacy and moderating role of knowledge sharing. *Management Decision*, 53(5), 894-910.
- [31] Naranjo-Valencia, J. C., Calderón-Hernández, G., Jiménez-Jiménez, D., & Sanz-Valle, R.

- (2018). Entrepreneurship and innovation: Evidence in colombian SMEs. In *Handbook of Research on Intrapreneurship and Organizational Sustainability in SMEs* (pp. 294-316). IGI Global.
- [32] O'Donohue, W. (2016). Progress in innovation and knowledge management research: From incremental to transformative innovation. *Journal of Business Research*, 69(5), 1610-1614.
- [33] Obeidat, B. Y., Al-Suradi, M. M., Masa'deh, R. E., & Tarhini, A. (2016). The impact of knowledge management on innovation: An empirical study on Jordanian consultancy firms. *Management Research Review*, 39(10), 1214-1238.
- [34] Oldham, G. R., & Da Silva, N. (2015). The impact of digital technology on the generation and implementation of creative ideas in the workplace. *Computers in Human Behavior*, 42, 5-11.
- [35] Pallant, J. (2013). *SPSS survival manual*. McGraw-Hill Education (UK).
- [36] Park, Y. K., Song, J. H., Yoon, S. W., & Kim, J. (2014). Learning organization and innovative behavior: The mediating effect of work engagement. *European Journal of Training and Development*, 38(1/2), 75-94.
- [37] Pollanen, R., Abdel-Maksoud, A., Elbanna, S., & Mahama, H. (2017). Relationships between strategic performance measures, strategic decision-making, and organizational performance: empirical evidence from Canadian public organizations. *Public Management Review*, 19(5), 725-746.
- [38] Potočnik, K., & Anderson, N. (2016). A constructively critical review of change and innovation-related concepts: towards conceptual and operational clarity. *European Journal of Work and Organizational Psychology*, 25(4), 481-494.
- [39] Rajapathirana, R. J., & Hui, Y. (2018). Relationship between innovation capability, innovation type, and firm performance. *Journal of Innovation & Knowledge*, 3(1), 44-55.
- [40] Rashid, I. M. A., Samah, I. H. A., Razali, R., Sham, M. F., Karim, N. A., Basri, H. H., ... & Zahari, M. K. (2016). The importance of perceived leadership elements in strategic planning at public university. *Procedia Economics and Finance*, 39, 422-426.
- [41] Rauter, R., Perl-Vorbach, E., & Baumgartner, R. J. (2017). Is open innovation supporting sustainable innovation? Findings based on a systematic, explorative analysis of existing literature. *International Journal of Innovation and Sustainable Development*, 11(2-3), 249-270.
- [42] Rich, S. (2016). A brief examination of the effects of occupational stress on creativity and innovation. *The Psychologist-Manager Journal*, 19(2), 107.
- [43] Rosenbusch, N., Brinckmann, J., & Bausch, A. (2011). Is innovation always beneficial? A meta-analysis of the relationship between innovation and performance in SMEs. *Journal of business Venturing*, 26(4), 441-457.
- [44] Rowley, J. (2014). Designing and using research questionnaires. *Management Research Review*, 37(3), 308-330.
- [45] Sampson, R. C. (2017). R&D alliances and firm performance: The impact of technological diversity and alliance organisation on innovation. *Academy of management journal*, 50(2), 364-386.
- [46] Sass, T. R., Semykina, A., & Harris, D. N. (2014). Value-added models and the measurement of teacher productivity. *Economics of Education Review*, 38, 9-23.
- [47] Saunders, M. N. (2011). *Research methods for business students*, 5/e. Pearson Education India.
- [48] Saunila, M. (2014). Performance measurement approach for innovation capability in SMEs. *International Journal of Productivity and Performance Management*, 65(2), 162-176.
- [49] Savickas, M. L., & Porfeli, E. J. (2012). Career Adapt-Abilities Scale: Construction, reliability, and measurement equivalence across 13 countries. *Journal of vocational behavior*, 80(3), 661-673.
- [50] Smith, R., Vogelgesang, G. R., & Avey, J. B. (2009). Authentic leadership and positive psychological capital: The mediating role of trust at the group level of analysis. *Journal of Leadership & Organizational Studies*, 15(3), 227-240.
- [51] Šontaitė-Petkevičienė, M. (2015). Corporate reputation management of higher education institutions: disparities of stakeholders' approaches. *Organizacijų vadyba: sisteminiai tyrimai*, (74), 139-151.
- [52] Tarhini, A., Teo, T., & Tarhini, T. (2016). A cross-cultural validity of the E-learning Acceptance Measure (ElAM) in Lebanon and England: A confirmatory factor analysis. *Education and Information Technologies*, 21(5), 1269-1282.
- [53] Tseng, S. M. (2014). The impact of knowledge management capabilities and supplier relationship management on corporate performance. *International Journal of Production Economics*, 154, 39-47.
- [54] Tyl, B., Vallet, F., Bocken, N. M., & Real, M. (2015). The integration of a stakeholder perspective into the front end of eco-

- innovation: a practical approach. *Journal of Cleaner Production*, 108, 543-557.
- [55] Van der Kolk, B. (2016). Commentary: the devastating effects of ignoring child maltreatment in psychiatry—a commentary on Teicher and Samson 2016. *Journal of child psychology and psychiatry*, 57(3), 267-270.
- [56] Wonglimpiyarat, J. (2017). FinTech banking industry: a systemic approach. *foresight*, 19(6), 590-603.
- [57] Yang, J. (2012). Innovation capability and corporate growth: An empirical investigation in China. *Journal of Engineering and Technology Management*, 29(1), 34-46.
- [58] Zhu, W., Chew, I. K., & Spangler, W. D. (2005). CEO transformational leadership and organizational outcomes: The mediating role of human–capital-enhancing human resource management. *The leadership quarterly*, 16(1), 39-52.
- [59] M. F. Ahmad, R. Z. R. Rasi, N. Zakuan, M. . Haji-Pakir, and J. Takala, “The Impact of ASEAN Free Trade Agreement as Moderator on TQM Performance Model in Malaysia: Survey Result,” *Soc. Sci.*, vol. 11, no. 12, pp. 2932–2937, 2016.
- [60] M. F. Ahmad, N. Zakuan, R. Z. R. M. Rasi, M. N. N. Hisyamudin, and J. Takala, “Mediator effect of total productive maintenance between total quality management and business performance: Survey result in Malaysia automotive industry,” *Adv. Sci. Lett.*, vol. 21, no. 12, pp. 3723–3725, 2015.
- [61] M. F. Ahmad, M. S. M. Ariff, N. Zakuan, J. Takala, and A. Jusoh, “Relationship amongst TQM , Business Performance , Tools and Techniques : Qualitative Study Result,” in *In Business Engineering and Industrial Applications Colloquium (BEIAC),2013 IEEE*, 2013, pp. 22–27.
- [62] Shahbaz, M.S., Rasi, R.Z.R.M., Ahmad, M.F.B., Rehman, F., “What is supply chain risk management? A review,” *Adv. Sci. Lett.*, vol. 23, no. 9, pp. 9233-9238, 2017.
- [63] M. F. Ahmad, N. Zakuan, A. Jusoh, and J. Takala, “Review of relationship between TQM and business performance,” *Appl. Mech. ....*, vol. 315, no. 2013, pp. 166–170, Apr. 2013.
- [64] M. F. Ahmad, M. S. M. Ariff, N. Zakuan, J. Takala, and A. Jusoh, “Relationship amongst TQM , Business Performance , Tools and Techniques : Qualitative Study Result,” in *In Business Engineering and Industrial Applications Colloquium (BEIAC),2013 IEEE*, 2013, pp. 22–27.