

Determinants of Innovation in UAE Project-based Firms

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Abstract: *This study's goal is to carry out a systematic literature evaluation of research that have determined the factors that influence innovation. The next step is to determine the key elements that project-based businesses in the UAE must have in order to successfully adapt innovation. The authors conducted an organized review of the peer-reviewed literature from the years 2005 to 2023. The researchers created a list of innovation determinants based on a total of 16 recognized main studies. In order to help businesses understand where to begin enhancing their capacity for innovation, the identified list of determinants was sent to a poll where it was used to rank the key list of determinants of innovation based on how important they are to project-based companies.*

Keywords: innovation, determinants, project-based organizations

1. Introduction

The concept of innovation forms the core of growth and progress in all fields, including firms, businesses, and society as a whole. Innovation involves doing away with the traditional ways and embracing new perspectives of meeting needs. Verganti et al. (2020) outline that innovation is making changes to an existing field, idea, or product. It differs from invention in that invention is the discovery process, while innovation is for something in existence. Sjödin et al. (2020) explain that innovation is developing new services, processes, and products due to the practical application of ideas. Innovation is important as it fosters economic and organizational growth, making a company or business remain competitive. Innovation is also significant in increasing employees' productivity, process models, and the whole organization as it increases efficiency and reduces risks. Over the past years, UAE has made remarkable progress in innovation and economic growth. Chaudhry et al. (2021) explain that UAE launched a national strategy in 2014 aimed at becoming the most innovative nation in a period of 7 years. The strategy has been in action, and the government encouraged all sectors to develop innovative products and adopt new technologies.

Project-based firms in the UAE undertake temporary projects that have well-defined objectives, deliverables, and scope. They include information technology, consulting, construction, and engineering industries. These firms have major recognition of innovation's role in delivering quality products and services. They incorporate innovation in product design, delivery processes, risk management, stakeholder engagement, and continuous improvement. Determinants of innovation in UAE project bases firms include research and development, leadership and management style, government regulations, and employee skills. Project-based

firms in UAE demonstrate a major commitment to innovation, but there are area needs to be more focus on practicing the required improvements.

The research question of this study is: what are the main determinants for the successful implementation of innovation in project-based firms within UAE?

The objectives of the study are to identify the key determinants of innovation in UAE project-based firms, analyze the impact of the determinants, explore opportunities for improving innovation, and provide information and recommendations that can be used in making decisions related to innovation. The study provides recommendations and actionable insights to enhance innovation capabilities in the firms.

2. Innovation Determinants

A literature review provides a critical analysis of scholarly work and research on a specific topic, providing more knowledge and identifying gaps. This literature review provides a comprehensive overview of sixteen peer-reviewed articles that explore the determinants of innovation in different settings. Key strategies and factors influencing the innovation process have also been identified.

Wang et al. (2020) conducted a study on determinants of innovation in advanced. The data set comprised macroeconomic data related to technology innovation for the G-7 countries from 1996 to 2017, and the methodology used was a literature review. The sample comprised all G7 countries: Canada, France, Germany, Italy, Japan, the United States, and the United Kingdom. The study aimed to examine G-7 countries' macroeconomic indicators and determinants related to technological innovation from 1996-2017. Dependent variables in the study were technological innovation, and explanatory variables were gross domestic product, financial development, research and development expenditures, and human capital index.

The determinants of innovation outlined in the study were income, research and development, financial development, human capital, and economic globalization. The article also found that due to increased international trade in the countries, there had been increased adoption of technology advancements. Economic globalization has also led to the diffusion of technology, experienced worldwide through the opportunity for technological knowledge transfer between the G-7 countries. The high research and development expenditures in the G-7 countries were another reason for the more efficient innovative performance, with Japan's slightly higher expenditures. The superiority of financial development level was another reason, and it was outlined that between 1996-2017 the G-7 countries' average per capita was 172% higher than other countries worldwide. This high-income level was significant in the seamless, fair, and quick adoption of advanced technology.

Another study conducted by Barman et al. (2022) identified key determinants of innovation, like technological development, competition, firm size, and regulations, as determinants with high influence. Determinants with moderate influence comprised macroeconomic conditions, profitability, demand for financial services, firm age, and risk. The dataset used was financial innovation and determinants data from 54 works of literature from 1983 to 2018. The authors used literature review as the methodology. The study's objective was to suggest a comprehensive list of determinants of financial innovation by moving around the origin of the financial innovation process and identifying the responsible factors for innovation likelihood.

From the findings, a review of existing literature was done using a descriptive design and identified a total of 23 determinants. It was then found that the 23 determinants were a mix of political, economic, institutional, and technological factors responsible for innovation. The determinants of firm size, profitability, age, and risk differed according to institutions, therefore, were institutional factors. The regulation determinant was a country-specific factor as it behaved differently in every country. Economic factors had determinants like competition, macroeconomic conditions, and demand for financial services as they were related to the economy and technological development determinant was a technological factor.

Le & Lei (2019) conducted a study on innovation capability determinants in an article named "Determinants of innovation capability: The roles of transformational leadership, knowledge sharing, and perceived organizational support," published in the Journal of knowledge management. The data set comprised survey responses on knowledge-sharing activities and transformational leadership behavior from team leaders and administration, accounting, marketing, and sales departmental leaders. The methodology used was Structural equation modeling. The study had a sample of 394 participants from 88 Chinese firms. The main objective was to explore product and process innovation influence by assessing the role of transformation leadership, knowledge sharing, and perceived organizational support.

The determinants of innovation identified in the article were Transformation leadership and knowledge sharing. The study revealed that a firm's innovation capabilities were enhanced by the positive influence that transformational leadership has on knowledge sharing. It is explained that transformational leadership provides an appropriate climate to stimulate employee knowledge sharing, positively fostering product and process innovation. Knowledge-sharing impacted employees' responses to new information and the external environment by making them rapid, enabling them to solve existing problems and efficiently fulfill tasks. The rapid response from employees led to enhanced innovative capacity. It was also found that the extent of employees' perceived organizational support positively influenced innovation capability by actively participating in knowledge and expertise sharing. Transformational leadership was highlighted as the solution to innovation as it stimulated activities related to knowledge sharing, like discussing and trying out innovative structures, processes, procedures, and ideas. The overall finding was that employees are key drivers of innovation, and managers should find a way of improving motivation that stimulates employees to participate in the innovation process.

In the article "Determinants of innovation decisions among Emirati female-owned small and medium enterprises" published in the International Journal of Gender and Entrepreneurship, Jabeen et al. (2019) examine determinants of innovation like government policies, research, development, skill development, and innovation strategy. An empirical methodology was used, and the dataset consisted of survey responses on incremental and radical innovation factors considered during the business in women-owned SMEs. The study was performed in the UAE, and the sample was 50 Emirati Female Entrepreneurs. The article's purpose was to find out factors that influence decisions related to innovation among small and medium-sized enterprises owned by Emirati women.

From the findings, there were two stages. The first stage was to identify the innovation characteristics in entrepreneurs, and it was found that 20% focused on radical innovation and 80% focused on incremental innovation. The second stage prioritized the influences of innovation in different business phases: nascent, startup, and established. For the nascent phase, the top priority was government policies, then skill development, motivation, finance,

recognition of opportunity, and culture. In the startup phase, the priority influences were government policies, research and development, skills development, technology, recognition of opportunity, and finance. The rank for the established business stage was government policies, research and development, and innovation strategies. The nascent stage was considered the initial stage of business idea implementation; the startup phase was those in business for 2 – 3 years, and established businesses existed for over three years. The main criteria or determinants influencing innovation were government policies, research and development, innovation strategy, and skill development. Recommendations for helping Emirati women entrepreneurs get more successful and innovative highlighted included allocating more funds for research and development, embracing the innovative culture and strong social networks, and more access to external finance.

Saunila (2020) reviews the SME's innovation capability in the article "Innovation capability in SMEs: A systematic review of the literature," published in the *Journal of Innovation & Knowledge*. The methodology used was Literature Review using keywords like innovation, innovation capability, and performance, and the dataset was innovation capability data from 39 articles. The sample size was 39 articles, and the study's objective was to enhance the understanding of innovation in small businesses and identify the determinants of innovation.

The article described innovation capability as the potential to create innovation outputs using determinants such as top management leadership, knowledge development, entrepreneurial orientation, and external networks. Top management leadership in small and medium enterprises was significant in driving innovation as the leaders inspired employees to embrace innovation, set a clear direction for innovation, and provided the necessary resources. Knowledge management was another driver of innovation that contained activities such as conducting research, gathering knowledge from partnerships, and internal knowledge sharing. Entrepreneurial orientation determinant involved the willingness of SMEs to technological changes, risk-taking, and pursuit of new opportunities. External networks such as institutions, customers, industries, and suppliers provided key innovation opportunities. These included the exchange of ideas, access to new technologies, and transfer of innovative technologies.

Another article by Mendoza-Silva, (2021) found determinants of innovation such as Management style and leadership, corporate strategy, external relations, work climate, and individual activity. The article "Innovation capability: A systematic literature review" was published in the *European Journal of Innovation Management*. The dataset included Data on innovation capability from 137 peer-reviewed papers, and the methodology used was literature review using keywords like determinants, innovation capability, and innovativeness. The study aimed to deepen the understanding of innovation capability by exploring its dimensions, determinants, and consequences.

The article explained that innovation capability maturity models should balance the applicability of practical and theory. The determinants of innovation were divided into three broad categories. The managerial determinants included corporate strategy and management style and leadership. These highlighted the importance of encouraging employees to achieve innovation objectives through managers' positive attitudes toward change. The intra-organizational determinants category included work climate, individual activities, and resource management. These determinants comprised the interaction of resources owned by a firm, both tangible and intangible. Inter-organizational determinants were the final category which included external relations. These are external agents who ensure access to innovative

resources. The linkage between intra-organizational and inter-organizational determinants was also explained as significant in research and development activities.

Cerdá Suárez et al., (2023) identified female managers, family businesses, and university education as predictors of innovation in SMEs in La Rioja during the COVID-19 epidemic. The data for this study were gathered utilizing a questionnaire and telephonic interviews with 329 SME managers in La Rioja, Spain. The study's dependent variable was the company's degree of innovation (INNOVATIVE), the independent variables were Female manager, Family firm, and Manager's university education, and the control variables were firm size (SIZE), firm age (AGE), and effectiveness (EFFECTIVENESS). Finally, the study findings demonstrated that female managers and managers' university studies have a beneficial influence on the creativity of SMEs.

In order to investigate the effects of institutional quality on innovation results, Sharma et al. (2022) used data from the World Bank, the Heritage Foundation, and a new patent enforcement index encompassing the years from 1998 to 2017. Patent enforcement, openness, property rights, high technology exports, and R&D were additional variables used in this study. In conclusion, the analysis revealed important new perceptions, such as the significantly detrimental effects of patent enforcement and human resources in R&D on less innovative nations, as well as the varied effects across quantiles for important variables like high-technology exports.

Dulaimi, in (2022) examined the framework of the climate of innovation in UAE business organizations and showed how the dynamics of such a climate is different in construction organizations compared to other sectors. Dulaimi in his study did a quantitative study (survey approach) and the sample of this study was 101 from UAE business organizations. The independent variables were Leadership for Innovation, Team Climate for Innovation & Organizational Culture for Innovation and the dependent variable was the innovation outcomes. The outcomes of this study was that leadership has positively influenced the climate for innovation and as a result delivered an improved business performance.

Another study done by Leogrande et al., (2020), where modelling approach was applied for the data from European Innovation Scoreboard for 36 countries in the period 2010-2019. The objective was to analyze those data and come up with the best determinants of innovation in European countries. Finally, the results shown that the ability to innovate is positively associated to Attractive Research Systems, Demography, Employment Impacts, Finance and Support, Firm Investments, Governance and Policy Framework, Human Resources, Innovation-friendly Environment, Innovators', Intellectual Assets, Linkages and Sales Impact. On the other hand, the ability to innovate was negatively associated with Business & Entrepreneurship and Performance & Structure of the Economy.

Abdu & Jibir conducted in 2018 research on Nigerian enterprises' innovation drivers. For the 130,000 businesses surveyed in Nigeria between 2014 and 2015 by the World Bank (WBES, 2015), they used probit and tobit regression models. R&D, formal training, a firm's size, kind, and industry were study variables. And the final findings were that investing in research and development (R&D), formal training, a firm's size, exporting status, competitors, location, type and sector, or activity of firms all positively drive the propensity of a firm to innovate.

A systematic literature review and qualitative exploratory research were conducted by de Jesus Pacheco et al. (2018) to examine the studies about eco-innovation in SMEs that were listed on Web of Science, Scopus, and Ebsco between 1995 and 2015. A subsequent open questionnaire

was used. This study's goal was to pinpoint the variables that Brazilian SMEs must consider in order to successfully adopt eco-innovation. The findings lead to a list of sixteen key determinants that have many similarities, contrasts, and crossings.

Tian et al. (2018) did another thorough analysis of the studies on the relationship between culture and innovation for peer-reviewed articles published over the previous 37 years. This essay's goal was to examine how culture affects innovation. Organizational culture (including innovation-ordinated culture, learning culture, development culture, hierarchical culture, clan culture, and market/rational culture) was one of the identified variables. The results also show how culture and innovation have unique and complicated relationships.

Again, Barata & Fontainha (2016) did a research about the determinants of innovation in European construction firms. The study's modeling methodology made use of microdata from the e-Business Survey 2006 for 27 European nations. The study's goal was to pinpoint the factors that influence process and product innovation in a conventional, low-tech industry supported by micro, small, and medium-sized businesses (SMEs), specifically the European Construction Sector. Suppliers, clients, market orientation, turnover growth, and size are the explanatory variables taken into account. Additionally, the impact of national background variables like GDP per capita and the contribution of R&D to GDP is evaluated. The findings demonstrate that the construction industry innovates, with suppliers and business expansion playing the largest roles in this innovation. Additionally, it is determined that organizations that are driven by global markets innovate more than those that concentrate on local and regional markets, and firm size is more important for process innovation than for product innovation.

Gomes et al. (2015) conducted research on the factors influencing innovation culture in the Santa Catarina textile industry. For this study, a quantitative approach was used, and the study sample consisted of 441 respondents from 16 Brazilian textile industry enterprises in the state of Santa Catarina. The goal of the study was to examine the factors that determine organizational culture, including strategy, structure, mechanisms for supporting innovation, and communication, in textile enterprises throughout the state. Where the variables are employed Structure (Flexibility, freedom, and group cooperation and interaction), Strategy (vision and mission, determination and methods to achieve objectives), Support systems (rewards and recognition, resource availability, and loyalty), Communication (communication across departments, open communication, and information exchange), Stimulus to innovation (handling of errors, management of ideas, and proclivity to take risks). Finally, the result was that organizational structure was the most influential in developing the culture of innovation. Flexibility and the availability of multifunctional teams are evidence that firms are attempting to establish an innovative culture.

Research by Blindenbach-Driessen & Van Den Ende (2006) looked at the context dependence of success determinants in project-based enterprises. The case study that served as the study's foundation involved an in-depth analysis of six initiatives from four distinct Dutch businesses. Project-based context, conformity with success factors, and level of achievement were the primary components in this study. Some of the literature-described success determinants for functionally organized organizations seem to be more crucial in project-based firms, while others seem redundant. The results of this study revealed that these disparities could be explained by the distinctive structure and capabilities of project-based businesses. Table 1 lists the 26 determinants of innovation drivers that were discovered during the literature study.

Table 1: Synthesis of literature review of determinants of innovation

Sr No.	Determinants of Innovation	Author(s)/Year
1	Available resources (skilled people, time and money)	Gomes et al., (2015); Sharma et al., (2022); Barman et al., (2022); Wang et al., (2020); Leogrande et al., (2020); de Jesus Pacheco et al., (2018)
2	Organizational structure and systems with less bureaucracy and more flexibility	Gomes et al., (2015); de Jesus Pacheco et al., (2018)
3	Long terms strategy orientation	Gomes et al., (2015); Mendoza-Silva, (2021); Jabeen et al., (2019); de Jesus Pacheco et al., (2018)
4	Perception of the strategy relevance of customers (Customer Value Added)	Gomes et al., (2015); Saunila, (2020); Blindenbach-Driessen & Van Den Ende, (2006); de Jesus Pacheco et al., (2018)
5	External pressure (e.g. Regulation, suppliers pressure, rise of energy prices , fees on polluting emissions)	Sharma et al., (2022); Jabeen et al., (2019); de Jesus Pacheco et al., (2018)
6	Leadership style, capability, involvement, and motivation	Cerdá Suárez et al., (2023)' Mendoza-Silva, (2021); Dulaimi, (2022); Saunila, (2020); Le & Lei, (2019); Blindenbach-Driessen & Van Den Ende, (2006); de Jesus Pacheco et al., (2018)
7	Incentive and public financial support	Barman et al., (2022); Leogrande et al., (2020); de Jesus Pacheco et al., (2018)
8	Governance and neutrality of regulatory policies	Barata & Fontainha (2016); Barman et al., (2022); Leogrande et al., (2020); Jabeen et al., (2019); de Jesus Pacheco et al., (2018)
9	Action of technological assistance	Sharma et al., (2022); Barman et al., (2022); de Jesus Pacheco et al., (2018)
10	Public Relations and cooperation with external stakeholders as source of innovative ideas	Barata & Fontainha (2016); Mendoza-Silva, (2021); Saunila, (2020); Blindenbach-Driessen & Van Den Ende, (2006); de Jesus Pacheco et al., (2018)
11	Desire for continual improvements	Jabeen et al., (2019); de Jesus Pacheco et al., (2018)
12	Cost control and risk management	Gomes et al., (2015); Barman et al., (2022)
13	Improving company performance (Firm's Profitability & Growth, Social Expectations Satisfaction)	Barman et al., (2022); Wang et al., (2020); Leogrande et al., (2020); de Jesus Pacheco et al., (2018)
14	More attractive to employees (Rewards & recognition)	Gomes et al., (2015); de Jesus Pacheco et al., (2018)
15	Reputation and brand image	de Jesus Pacheco et al., (2018)
16	Creating New Products and Services	de Jesus Pacheco et al., (2018)
17	R&D (Research and Development)	Abdu & Jibir, (2018); Barata & Fontainha (2016)' Sharma et al., (2022); Wang et al., (2020); Leogrande et al., (2020); Jabeen et al., (2019); de Jesus Pacheco et al., (2018)
18	Structural variable of the business (Access to New Markets, New Business Models, economic globalization & competition)	Gomes et al., (2015); Barman et al., (2022); Wang et al., (2020); Leogrande et al., (2020); de Jesus Pacheco et al., (2018)
19	Participation in networks and governmental projects	Gomes et al., (2015); Blindenbach-Driessen & Van Den Ende, (2006); de Jesus Pacheco et al., (2018)
20	Recycling practices and reverse logistics	de Jesus Pacheco et al., (2018)
21	Formal training/learning on environmental issues	Abdu & Jibir, (2018); Jabeen et al., (2019); de Jesus Pacheco et al., (2018)
22	Capability and competence of organizational learning on innovation issues	Jabeen et al., (2019); de Jesus Pacheco et al., (2018)

23	Use innovation methods and tools (Creativity & Idea Management)	Gomes et al., (2015); Leogrande et al., (2020) [*] Jabeen et al., (2019); de Jesus Pacheco et al., (2018)
24	Organizational culture promoting for Innovation	Tian et al., (2018); Dulaimi, (2022);
25	Firm's Size/age/type	Cerdá Suárez et al., (2023); Abdu & Jibir, (2018); Barata & Fontainha (2016); Barman et al., (2022); Leogrande et al., (2020)
26	Innovation-friendly Environment (team work, knowledge sharing, openness, activities undertaken)	Tian et al., (2018); Gomes et al., (2015); Saunila, (2020) Mendoza-Silva, (2021); Dulaimi, (2022); Leogrande et al., (2020); Le & Lei, (2019); Blindenbach-Driessen & Van Den Ende, (2006)

3. Research Methodology

This study is based on qualitative exploratory research of an informational type, with the goal of improving the researcher's understanding of the subject of study (e.g., determinants of innovation).

The data gathering methodology used in the study was created and implemented in stages. First, a systematic analysis of the studies on the determinants of innovation available on Google Scholar, Scopus, and Ebsco was undertaken with the goal of identifying a combination of the proved innovation factors. Second, an online survey questionnaire was distributed to specialists in UAE project-based enterprises with the goal of identifying the primary determinants of innovation in UAE project-based firms. Finally, a list of innovation determinants for the actuality of a UAE project-based organization was discovered. . See Figure 1 for the sequence of the research methodology.

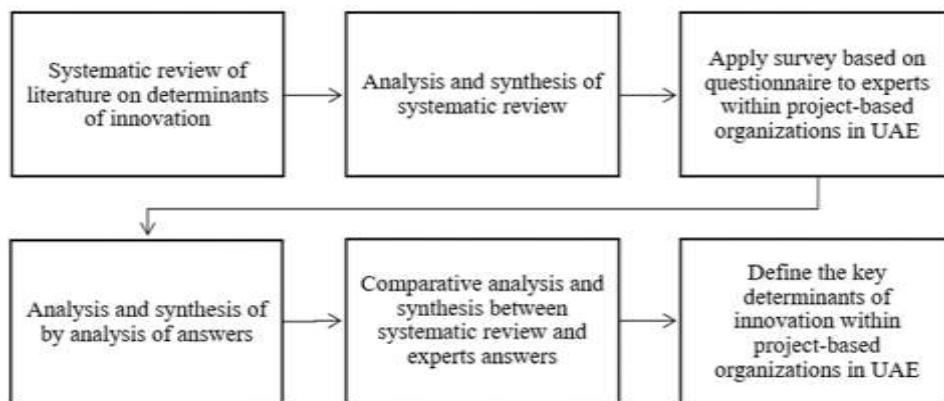


Figure 1: The research methodology

The study strategy included the following inputs: keywords, databases, period, eligibility/coding and inclusion/exclusion criteria.

While employing the necessary fields of scientific databases—the abstract, title, and keywords—all feasible keywords were searched. For that, we compiled a list of English keywords related to innovation, factors influencing innovation, and factors influencing innovation in project-based businesses. The period considered for this study was between 2005 to 2022, covering more than 26 peer-reviewed articles.

In systematic review studies, the inclusion/exclusion criteria are critical. Only studies that matched one or more of the following inclusion criteria were chosen:

- i. Peer-review papers that were published in English;
- ii. Studies about systematic review in determinants of innovation and determinants of innovation in project-based firms;
- iii. Studies that capture both quantitative and qualitative findings

On the other hand, the exclusion criteria included the following:

- i. Studies not proposing clear innovation determinants

The results of the research process adopted methodology are detailed (See Figure 2 for reference).

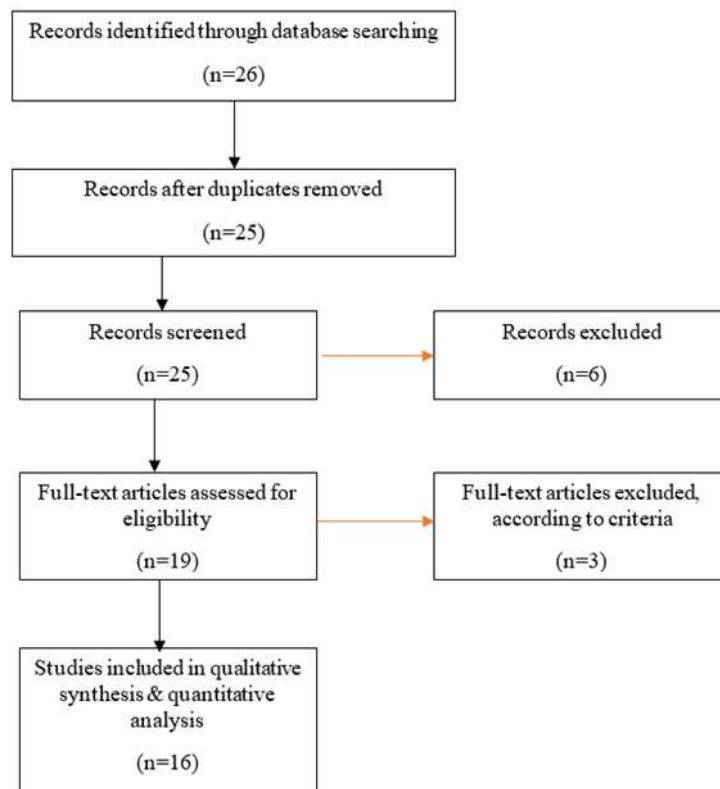


Figure 2: Synthesis of the research process

The first search cycle examined around (26) titles and abstracts in terms of eligibility and coding, and (25) papers were pre-selected for more thorough analysis. After a thorough content analysis, 19 studies were chosen and their eligibility was assessed. In order to assess the references of studies that were included in this study's objective, a second search cycle was conducted. After the study was finished, sixteen papers were chosen for this investigation (see Table 2 for a reference).

Table 2: Selected studies

Sr No.	Author(s)/Year	Title of article	Journal
1	Cerdá Suárez et al., (2023)	Family Ownership and Directors' Attributes as Determinants of Innovation in SMES During the Covid-19 Pandemic	Journal of Technology Management & Innovation
2	Sharma et al., (2022)	Determinants of innovation outcomes: The role of institutional quality	Technovation
3	Barman et al., (2022)	A critical review of determinants of financial innovation in global perspective	Materials Today: Proceedings
4	Mendoza-Silva, (2021)	Innovation capability: A systematic literature review	European Journal of Innovation Management
5	Dulaimi, (2022)	The climate of innovation in the UAE and its construction industry	Engineering, Construction and Architectural Management
6	Wang et al., (2020)	What nurtures fourth industrial revolution? An investigation of economic and social determinants of technological innovation in advanced economies.	Technological Forecasting and Social Change
7	Saunila, (2020)	Innovation capability in SMEs: A systematic review of the literature.	Journal of Innovation & Knowledge
8	Leogrande et al., (2020)	The Determinants of Innovation in European Countries in the period 2010-2019	American Journal of Humanities and Social Sciences Research (AJHSSR)
9	Le & Lei, (2019)	Determinants of innovation capability: The roles of transformational leadership, knowledge sharing and perceived organizational support.	Journal of knowledge management.
10	Jabeen et al., (2019)	Determinants of innovation decisions among Emirati female-owned small and medium enterprises.	International Journal of Gender and Entrepreneurship.
11	Abdu & Jibir, (2018)	Determinants of firms innovation in Nigeria	Kasetsart Journal of Social Sciences
12	de Jesus Pacheco et al., (2018)	Eco-innovation determinants in manufacturing SMEs from emerging markets: Systematic literature review and challenges	Journal of Engineering and Technology Management
13	Tian et al., (2018)	How does culture influence innovation? A systematic literature review	Management Decision
14	Barata & Fontainha (2017)	Determinants of innovation in European construction firms	Technological and Economic Development of Economy
15	Gomes et al., (2015)	Determinants of Innovation Culture: a Study of Textile Industry in Santa Catarina	Brazilian Business Review
16	Blindenbach-Driessen & Van Den Ende, (2006)	Innovation in project-based firms: The context dependency of success factors	Research Policy

4. Results and Discussion

For the study, a systematic approach was used to select sixteen peer-reviewed articles from various sources. This approach ensured a comprehensive representation of determinants and fulfilled the achievement of the study objectives. The primary inclusion criteria were extracted from articles that investigated innovation factors within organizations. Articles encompassing diverse settings and firms were considered to enhance applicability and provide a holistic understanding of the context of UAE project -bases firms.

Publication dates were also taken into account and only recent research articles were incorporated. Major factors included the type of firms or the study setting, which allowed for identifying potential differences in innovation. Segmentation of industries was also considered, encompassing different domains such as technology, SMEs, and construction. The types of undertaken projects were also analyzed including infrastructure projects, product development and utility providers.

Table 2: Demographic variables

Demographic Variables	Org. Type	Gender	Experience	Position	Qualification
Public	27 (52.94%)				
Private	15 (29.41%)				
Semi – Government	8 (15.69%)				
Others	1 (1.96%)				
Male		29 (56.86%)			
Female		22 (43.14%)			
1 - 5			10 (19.61%)		
6 - 10			16 (31.37%)		
11 - 20			18 (35.29%)		
Above 21			7 (13.73%)		
Strategic Employment	Level			7 (13.73%)	
Portfolio Employment	Level			2 (3.92%)	
Program Employment	Level			7 (13.73%)	
Project Level Employment				27 (52.94%)	
Project Employment	Support			6 (11.76%)	
Other				2 (3.92%)	
Higher-School degree					0 (0%)
Bachelor degree					23 (48.94%)
Master degree					18 (38.30%)
PhD degree					5 (10.64%)
Other					1 (2.13%)

Various outcomes were observed in the literature review for identifying the determinants of innovation in UAE project-based firms, which utilized for survey questionnaires.

This section provides an overview of the selected sample from a demographic perspective. The survey was designed in the format of an online solution, the link has been generated and sent via mail and smart phones to 500 estimated randomly selected audiences from world-class project-based organizations within UAE. Around 51 employees have accepted to participate in this survey and the same number were validated for further analysis.

Based on the literature review, the selected demographic categories were gender, type of organization, job position levels, years of experience, and qualifications.

The study population sample demographics' summary results are represented in table 2. Figure 3 below presents the average rating of each determinant of innovation based on the survey.

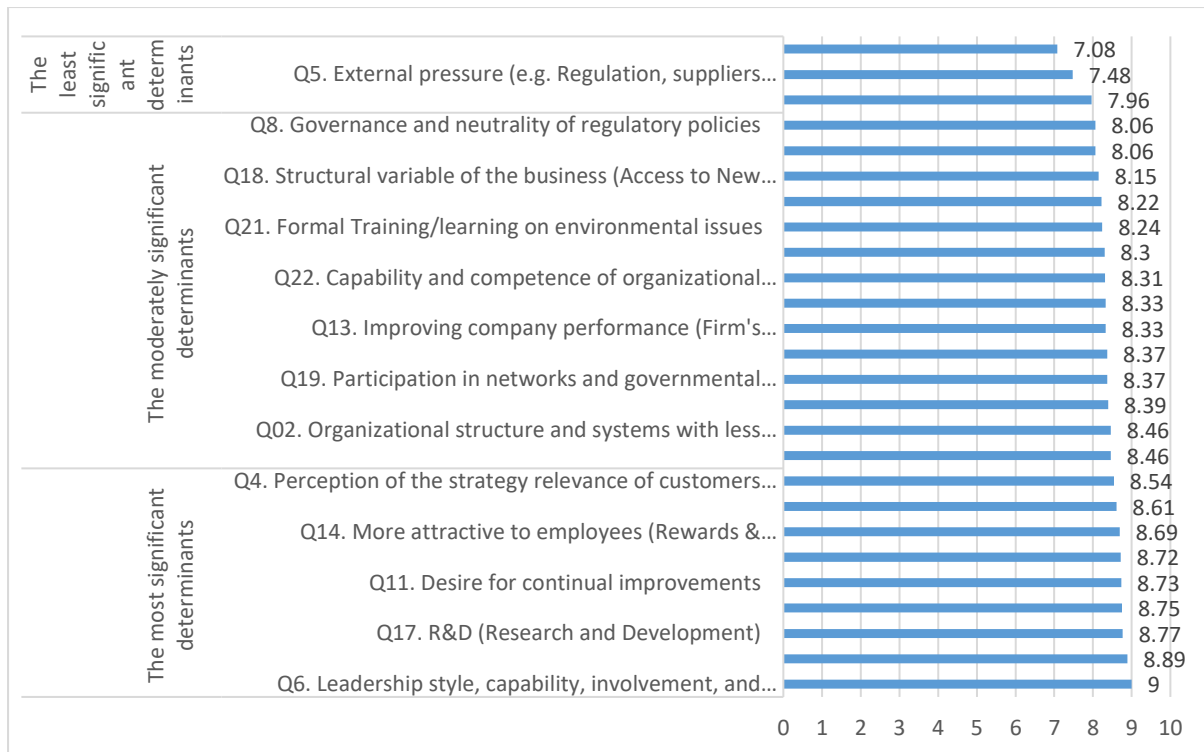


Figure 3: Average Ratings of Determinants of Innovation

The determinants of innovation in UAE project-based firms were ranked, on average, from the most significant to those with the least impact. Where the most significant determinants found as following:

The leadership style, capability, involvement and motivation were identified as key determinates and had an average score of 9. Leadership style refers to the approach leaders employ to guide and influence their teams in managing activities and achieving organizational objectives. (Mendoza-Silva, 2021). Al-Shami et al. (2023) emphasize that leaders who promote innovation encourage teamwork, initiate new endeavors, delegate tasks, and mentor emerging leaders through specialized programs. The workforce's capacity within project-based structures to conceive, execute, and assess innovative ideas is also crucial. This is due to workers' skills and expertise in technical concepts, which smoothly transition innovative ideas into tangible concepts (Mendoza-Silva, 2021). The involvement of employees in innovation activities is also a significant contribution. This is promoted by encouraging employees to take responsibility for innovative initiatives, share their ideas, and collaborate with team members (Le & Lei, 2019). Motivation also increases the willingness to explore innovative ideas and address current challenges among project-based workers. Jabeen et al. (2019) explain that motivation can be internal, with individuals having a genuine passion for innovation, and external, involving offering rewards for innovative achievements.

Then, the availability of resources was the second determinant, with an average of 8.89. In the context of project-based firms in the UAE, this determinant was based on three fundamental components: skilled people, time, and money. A skilled workforce is interested in innovation and possesses technical abilities gained from successful innovative initiatives. Skilled employees have a deep understanding of industry trends and the ability to creatively solve problems throughout the innovation process (Dulaimi, 2022). Time is another fundamental resource in the ability of project-based firms to innovate. Adequate time allows for idea generation, research, and experimentation, enabling teams to explore various innovative solutions (Saunila, 2020). Money is a financial resource that determines the availability of

necessary infrastructure for innovative projects to thrive. Innovation requires investment in implementation, experimentation, and prototyping, which in turn requires financial backing. Research and development was another significant determinant in the UAE that fosters a culture of continuous exploration and learning. It had an average value of 8.77 and was ranked third position. A proactive mechanism for generating new innovative solutions is developed through research on emerging technologies, industry trends, and customer needs (Abdu & Jibir, 2018). Project-based firms need to be adaptable and agile, aligning with the role of research and development. The determinant focuses on both short- and long-term value creation by ensuring the sustained growth and competitive advantage of firms. Organizational culture is a significant determinant that empowers employees to take ownership of innovation initiatives (Tian et al., 2018). This was fourth in rank and had an average value of 8.75. A workforce with a sense of ownership of innovative projects and ideas is more committed and dedicated to developing transformative outcomes (Qureshi et al., 2023). An organizational culture that promotes innovation also enables open channels of communication, which facilitates the convergence of diverse and enriched concepts.

The desire for continual improvement, ranked fifth with an average value of 8.73, involves enhancing and refining services, projects, and products associated with innovation in UAE project-based firms. Teams are encouraged to have a growth mindset that views challenges as learning opportunities and embraces them. Dulaimi (2022) explains that willingness also involves the development of adaptable problem-solving skills that provide optimized and innovative solutions to current outputs and processes. UAE project-based firms with a long-term strategic orientation were also better positioned for investment in innovation initiatives. The determinant with an 8.72 value and ranked sixth ensures that innovative initiatives are aligned with firms' strategic goals, commitment to resource allocation, attentive monitoring of industry trends, and effective risk management (Gomes et al., 2015). With a long-term strategic orientation that embraces innovation, project-based firms are shielded against being outdated, remain adaptable to market shifts, and enhance stakeholders' confidence.

The determinant with an average score of 8.69 and ranked seventh was employee motivation through recognition and rewards. Jabeen et al. (2019) explains that rewarding and recognizing employees drives engagement, commitment, and ownership of innovation initiatives. An innovation-friendly environment was the eighth determinant, with an average of 8.61. Leogrande et al. (2020) highlight that an innovation-friendly environment encourages employees to think outside the box, engage in open dialogue, take calculated risks, and collaborate while exploring innovative possibilities.

The perception of the strategy relevance of customers had an average value of 8.54 and was ranked tenth. By recognizing the strategic relevance of customers, their needs and preferences are considered during innovation efforts (Sharma et al., 2022).

And the moderately significant determinants captured as following: The determinant for improving company performance had an average score of 8.33, which included satisfaction with social expectations, profitability of firms, and growth (Barata & Fontainha, 2016). It explains that these determinant influences innovation by recognizing performance gaps and developing cost-reduction initiatives.

The capability and competence of organizational learning on innovation issues had an average of 8.31. The capacity of a firm to learn, respond, and adapt to challenges related to innovation is crucial in navigating the dynamic initiative (Blindenbach-Driessen & Van Den Ende, 2006).

The structural variable of the business determinant involved access to new markets and business models and had an average of 8.15. de Jesus Pacheco et al. (2018) explain that these variables impact innovation by encouraging decentralized decision-making, flexible mechanisms of resource allocation, and open communication channels. Structural variables shape project-based firms' innovation culture, outcomes, and efficiency.

Finally, the determinants with the least averages signal reduced relevance in the context of UAE project-based firms. These determinants may serve as potential innovation drivers in broader scenarios. Implementing recycling practices and reverse logistics strategies had an average value of 7.96 and were limited to project-based operations. External pressures with a value of 7.48 impact innovation through their influence on decision-making (Cerdá Suárez et al., 2023). These pressures include regulations, supplier pressures, rising energy prices, and fees for polluting emissions, which also exert a subdued influence. This is because project-based firms in the UAE have greater independence from external influences. The size, age, and type of firms, with a value of 7.08, shape innovation capabilities, strategies, resources, and culture (Barman et al., 2022). These determinants consist of demographic factors that play a diminished role in driving innovation within project-based firms but remain significant in other settings.

5. Conclusion

In the exploration of determinants of innovation in UAE project-based firms, factors with the highest average were considered to have a greater potential influence, while those with a lower average were considered to have a lesser potential influence, while those with a lower average had less relevance. The leading determinant was leadership style, capability, involvement and motivation. The other five most significant determinants included the availability of resources, research and development, organizational culture, a desire for continual improvement and a long-term strategy orientation. The identified determinants with less impact were recycling practice and reverse logistics, firm size, age and type.

The study makes a major contribution to the knowledge on driving innovation. These contributions encompass a focus on the unique context of project-based firms in the UAE, addressing a gap in the literature regarding the UAE's business environment, and offering tailored insights into innovation. Furthermore, the study refines existing knowledge to empower project-based firms to remain competitive and develop strategies within their specific business context.

The study findings have also yielded valuable insights for guiding policy decisions. These insights include the importance of establishing a supportive regulatory environment that fosters innovation through acknowledging investments in research and development, promoting collaboration and knowledge sharing among employees and creating training programs to enhance workforce capabilities. The identified determinants also serve as a guide for firms form firms aiming to bolster their innovation efforts.

Project-based firms should consider investing in leadership development programs and structures research, nurturing an innovative culture and aligning their innovative goals with long-term strategic objectives.

In sum, this study has successfully achieved its objectives, which was to address the innovation determinants within project-based organization in UAE. As well as, deepened the comprehension of innovation and offered valuable insights to participants.

Future plans are suggested as follows: To Include a qualitative method (interview approaches) for future studies. To investigate about the determinants of innovation with different type of firms not only project-based organizations. To investigate the innovation management and to check the influence of the project-based context on success factors for development projects.

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