

Assessing the Current State of University-based Business Incubators (UBIs) in Canada and the UAE

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Abstract: There is a dearth of published research that explores UBIs from a comparative dimension across geographical and institutionalised contexts that assesses the current state and scope of UBI activities. This paper explores the current state of University-based Business Incubators (UBIs) both in the United Arab Emirates and Canada underpinned by a comparative case analysis approach. This study utilises both secondary and primary research data that was obtained through desk-based secondary research and qualitative methods of inquiry (semi-structured interviews) with UBI managers, academics, and support staff that were used to develop each case. This informed the development of 18 cases of UBIs in the United Arab Emirates and Canada (9 each, respectively). The data was collected through VoIP (Voice-Over-Internet-Protocol) and telephone during the COVID-19 pandemic from March 2021 to February 2022. The findings of the study illustrate that the Canadian context offers similar provisions of services for business incubators (BIs) but in comparison, the UAE-based university UBIs are much younger and are transitioning towards the development of various business and enterprise initiatives in Higher Education and are also focused on driving student recruitment using this provision. The value of this study is inherent in its comparative approach between two under-studied and represented empirical geographies (i.e., Canada and the UAE), the findings also indicate the divergence and specialisms adopted by institutions in the UAE based on the various provisions for the governmental vision 2030, and the empirical development of showcasing these initiatives to be novel for the efficacy of UBIs.

Keywords: university, business incubator, United Arab Emirates, Canada, comparative

1. Introduction

There has been an increasing interest among universities to harness the entrepreneurial and innovative talents of their staff and students to develop new products and services, spin-offs, and establish new forms of enterprise as their contribution to their societies and economies, respectively (Imtiaz, 2021; Kurt, 2021). In doing so, Universities are widely known to deliver higher education to continuous (no breaks in education) as well as wider participation (people returning to education) students (Bonilla-Silva and People, 2022). As a result, the creation and adoption of BIs have become a popular strategic initiative across universities to combat doubts over universities' role in ensuring and promoting graduate employability (See, Ahmed et al., 2020). Business incubators are identified by various authors as a platform where budding entrepreneurs share their business ideas, develop them, and are then aided in developing them into a reality (Ahmed et al., 2020; Hassan, 2020).

The first BI was established in 1959 by Joseph Mancuso in New York, United States of America (USA) (Hassan, 2020). Unlike the USA, BIs are a fairly novel concept in the United Arab Emirates where the Arabian Luxury Group (TALG) is known as the very first BI (established in 2015) in the UAE (Rehman et al., 2021). Currently, there are a total of 12 BIs in the UAE (Al Malik, 2022). In addition to industry, in recent years, the inclusion of BIs has become a primary objective in most universities as part of the industrial engagement and employability initiative which aligns with the UAE government's Sustainable Development Goals (SDG) (Yasin et al., 2021). Authors believe that University-Based Incubators (UBIs) may play an important role in increasing the supply of entrepreneurs in the UAE which in turn will have a positive impact on the national economy in terms of job creation (Yasin et al., 2021). The UAE government's policy (Sustainable Development Goals) is proactively driving entrepreneurs to support the Emirati population transitioning out of UAE government roles due to government downsizing (Rashid, 2019). Therefore, BIs or UBIs can play a role in engaging the Emirati population (citizens and residents) as well as other ethnic groups to consider entrepreneurship as a career path (Seretny et al., 2019).

The purpose of this paper is to explore the current state of UBIs in the United Arab Emirates (UAE) with a specific purpose of developing a coherent understanding of the nature and scope of such endeavours that are striving to contribute to the UAE vision 2030 with a comparative approach to Canada, that has comparatively a longer history of incubating enterprise in Higher Education Institutions (HEIs). Currently, there are 24 BIs in Canada (Get Golden Visa, 2022). This next section of this paper will focus on the historical and contemporary contexts for the UAE and Canada, followed by an analysis of the literature, methodology, findings, and discussion and will

conclude by stating the originality and limitations of this research as well as identifying future areas for research development.

2. The United Arab Emirates and Canada

The United Arab Emirates and Canada are what can be described as ‘polar opposite’ geographical contexts that are embedded under differing economic, social, historical, and political contexts (Statistics Canada, 2022; UAE Government, 2022). The UAE is a country located in the Middle East and comprised of seven emirates, which are Dubai, Abu Dhabi, Fujairah, Ajman, Sharjah, Ras Al Khaimah, and Umm Al Quwain (UAE Government, 2022). However, Canada is located in North America with the main regions of Alberta, British Columbia, Manitoba, New Brunswick, Newfoundland and Labrador, Nova Scotia, Ontario, Prince Edward Island, Quebec, and Saskatchewan (Statistics Canada, 2022). The UAE is situated in the Arabian Peninsula, and shares land borders with the Kingdom of Saudi Arabia and the Sultanate of Oman, whereas Canada shares a border with the United States of America (USA) (Crystal, 2022; Hall, 2022). The city of Abu Dhabi is the capital of the UAE (UAE Government, 2022); however, Ottawa is the capital of Canada (Hall, 2022). The UAE is a relatively young country established in 1971 and is an Islamic country, comparatively, Canada is an older country founded in 1867 where Christianity is the main practised religion (Crystal, 2022; Hall, 2022). The Emirati ethnic group are natives of the UAE where Emirati is derived from the Arabic word Emirates which has the meaning of “Arabs originating from the UAE” (Crystal, 2022), whereas, in Canada, the First Nations are the native ethnic group (Hall, 2022; Statistics Canada, 2022).

3. Literature review

The BIs concept was initially implemented in the United States (U.S.) during the 1960s and then followed by the United Kingdom (UK) and other Western European countries establishing varying BIs in varying forms such as science parks, innovation centres, and technopole parks. According to Sanyal and Hisam (2018), the purpose of BIs was to inform as well as address policy needs for economic and socio-economic development, which includes activities like assessing a business’ risk profile, employment, researching institutions and business community, wealth creation, technology transfer, promotion of innovation, improving networks and links between universities and government, and industry cluster development. Sanyal and Hisam (2018) explain that BIs in most cases are government-supported, private sponsors, and universities. The main objective for BIs supported by the government is to create employment, expand the tax base, and economic diversification (Yasin and Khansari, 2021). Additionally, incubators may vary based on the body/institution that they are associated with, eg academic institutions/organisations that provide alumni, faculty members, and related groups with research and business opportunities (Yasin et al., 2021; Yasin and Khansari, 2021). In most cases, BIs are identified as ‘hybrids’ as they combine resources from private as well as government sector bodies (Sanyal and Hisam, 2018). Isenberg (2010) identifies entrepreneurship contexts across different countries (eg Haiti, Iceland, Italy, Liberia, New Zealand, Poland, the Czech Republic, and the West Bank Gaza), where he concludes that the entrepreneurship ecosystem is a combination of capital-market, culture, leadership, and open-minded consumers. The BIs act as enablers for developing innovative products as well as services, which in turn may contribute to the economic growth in a region. Hence, promoting BIs continues to gain global popularity for its efficaciousness in the growth and development of a conducive environment for the creation of new small to medium-size enterprises (SMEs). Jones et al. (2020) identify an effective enterprising environment (entrepreneurial ecosystem) as an environment that supports the effective commercialisation of innovative/creative ideas, promotes the development of skills, and provides resources. The positive impact of BIs has been identified in areas like job creation, innovation and development of a strong entrepreneurial ecosystem, and also an improved growth in financial dividends (Dvoultey, 2018). According to Mouallem (2019), the main aim of BIs is to facilitate/support an entrepreneur in transforming/evolving an innovative idea into the reality of a successful start-up enterprise by connecting factors like conveying knowledge and facilitating access to capital, talent, and technology. To further develop/support/strengthen economic growth as well as sustainability through BIs, international institutions like the National Business Incubation Association (NBIA) play an important and pivotal role in supporting incubators (Al-Mubarak and Busler, 2017). For example, the NBIA operates as a non-profit institution to promote new business development/growth and educate/inform communities mainly comprised of businesses and investors. The NBIA consists of BI developers as well as managers, corporate joint venture partners, economic development professionals, and venture capital investors. According to the NBIA, the most popular types of incubators provide tangible services like physical infrastructure, (eg internet connection, office space, logistics, and transportation), financial and legal services, managerial and technical support, and access to financial and social capital. Al-Mubarak and Busler (2017) while

considering the NBIA definition, explain these incubators as technology incubators and add that incubators can be classified/differentiated based on their organisation/business structure, the type of facilities/products/services they provide, and the type of tenants they accommodate/serve.

Yamockul et al. (2019) in their Thailand-based research highlight that UBIs are identified by universities as being crucial to their operations as they allow them to remain competitive with rival universities, forge connections with industry and allow students to develop entrepreneurial characteristics which may not be developed in the classroom. Guerrero et al. (2020) in their Mexico-based study, also identify that currently, students want more than just a university degree to ensure their employability in an industry that is where the approach of UBIs bridges the gap between classroom and employment for students. The key finding in Hassan's (2020) research was identifying how a favourable environment created within a university may enable students to develop/grow from the mindset of an employee to the mindset of an employer which may aid students in developing relevant knowledge and skills to eventually job creation in a region. The findings from a USA-based study carried out by Pellegrini and Johnson-Sheehan (2020), align with the findings in Hassan's (2020) study regarding the importance of a university environment in creating entrepreneurs from the student population. El_sawalhy et al. (2021) explain that UBIs can aid students and university staff in improving their networking and marketing skills and reach. El_sawalhy et al. (2021) add that UBIs are being adopted by universities to ensure that they remain competitive against rival universities and they attract students and employees. A review of literature related to the role of BIs in an industry as well as university setting has identified key findings like the importance of UBIs in transforming students into managers and entrepreneurs, UBIs presenting opportunities for universities to survive, grow and forge industry partnerships, and UBIs bridging the gap between the classroom and employability for students. Despite such in-depth insight provided by the reviewed studies, there has been limited/no research identified for UBIs in a Middle East context, especially, in a UAE context. Therefore, there is a paucity of UBI-related research in a UAE context and the focus of this paper will address this area.

4. Methodology

To achieve the objective of this study which was to identify the challenges encountered by BIs based in Dubai and Canada, a comparative case study approach was adopted. The case study method is defined by Creswell (2013, p.97) as "explor[ing] a real-life, contemporary bounded system or multiple bounded systems over time, through detailed, in-depth data collection involving multiple sources of information....and report[ing] a case description and case themes". The aim of this study is not to generalise findings but to explore barriers/challenges experienced by the unit of analysis (eg the BI as an institutional entity) (Baskarada, 2014). A background manual information search was conducted by inputting terms like 'BIs in Dubai', 'enterprise incubators in UAE', and 'technology-based incubators in Dubai' in online search engines to identify the number of incubators. One of the limitations associated with secondary research was the lack of reliable information that was publicly available, this was further challenged by the freshness of the concept of an entrepreneurial ecosystem within the UAE, therefore, limited research was available on BIs. Dubai is currently adopting a smart governance system, where there is a dedicated wing in the Prime Minister's office which is solely responsible for supporting as well as promoting entrepreneurial-related activities, therefore, demonstrating the importance of the development of an entrepreneurial ecosystem at a national level. Following desk-based research involving the identification of potential research participants among registered BIs based in Dubai, led to the identification of six accredited BIs but only three of these were identified/acknowledged by the local government. Hub71, Area 2071, and Fazaa were identified as the three BIs. However, it should be noted that upon detailed searching about the ownership structures related to BIs based in Dubai, several additional incubators were identified that offer different programs to aid in contributing positively towards growing/developing the entrepreneur-related environment and contributing to the private sector, eg BIs like AstroLabs. Non-disclosure agreements were signed to protect participants' identities; therefore, pseudonyms were associated with each participant and case study included in this paper. It is acknowledged by various authors (Aerts et al., 2007; Bollingtoft and Ulhøi, 2005), that there were methodological challenges for such BI-related studies which may stem from the diversity among institutional and ownership structures related to BIs as each business and initiative appears to differ/vary in their purpose as well as managerial, institutional and ownership structures – whether they are publicly/privately owned – and types of features related to management and service portfolio.

These organisational-related challenges and cultural factors highlight that issues related to the business are not normally discussed with 'outsiders' due to a lack of trust in confidentiality related to research. A snowball sampling approach was adopted after the cases were selected, the sampling approach involved the initial step of the authors using personal contact networks that effectively maintained and facilitated access to research for

the participants and their institutions. The semi-structured interviews were held remotely via Microsoft Team and Zoom with UBI managers in the UAE and Canada (9 participants from each country) during the period of 1st May 2021-31st August 2021. The retrieved data were analysed through a thematic analysis procedure of qualitative template analysis which informed the researcher in developing an interview guide. King and Horrocks (2012) explain Template Analysis involves thematically analysing qualitative data, (eg interview transcripts) by developing a coded template, which summarises themes that were identified by the researcher and organising these under a hierarchy. The NVivo analysis tool was adopted to index and analyse the consistent and inconsistent themes to investigate the data. The selection of barrier themes emerging from interviews and the selection of frequencies were based on the guidelines provided by King and Horrocks (2012) for thematic analysis. The relationships between themes were examined for in-depth template analysis. The key learning gained from the comparison of the difficulties encountered by the BIs against other studies was not entirely based on similarities or disagreements. The BIs based in Dubai are a fairly new addition to the entrepreneurial-related ecosystem, hence, there are limited studies investigating their performance and the complications related to their experience during their practices. Mostly BIs based in Dubai are funded by the government or they are privately owned and are types of classical/technology-based incubators. The general admission process for a potential tenant in an incubator involves the achievement of criteria and an application to a BI.

Demonstrating that there is a feasible and viable business idea with a strong business plan is one of the most common criteria that tenants are required to meet (National Agency for Development to Small and Medium Enterprises in Slovakia, 2009). In most cases, start-up businesses have to move into their facilities and successfully achieve the exit criteria of the program after a specified period.

5. Findings and discussion

The findings from the semi-structured interviews for Cases A to I from the UAE and Cases 1 to 9 from Canada are presented in the table below in terms of City, Type of University (Government/Public), Origin of university, Activities, and Key Findings.

Table 3: Findings from Case A-I in the UAE and Case 1-9 in Canada

Case	City	Type of University	Origin of University	Key Findings
Case A	Dubai	Government	UAE	- Activities - Initiatives - Curriculum - Extra-Curricular
Case B	Dubai	Government	UAE	- Acceleration - Integrated Academic program - Family Business - Digital Communication - Social Media - Product development - Business models
Case C	Dubai	Private	UAE	- Research and Consultancy Platform - Physical space - Networking - Workshops - Keynote Speakers - Industry Visits - Internship - Global Conferences - Competitions - Sustainable innovations
Case D	Dubai	Private	USA	- 3 weeks - A summer incubator program - External invitations and participants

Case	City	Type of University	Origin of University	Key Findings
Case E	Abu Dhabi	Government	UAE	- Technology-based innovations - Mobile applications - Machine Learning - Tech Talks - Schools initiatives
Case F	Dubai	Private	USA	- 3D Printing - Design - Animation course - Maxon 4D Training Course - Open to external students
Case G	Abu Dhabi	Government	UAE	- Research-based ventures - Specialised IP commercialization program - Virtual Incubator
Case H	Dubai	Private	UAE	- Events/Competition - Virtual Reality focus - Robotics competition - High school engagement
Case I	Dubai	Private	UK	- School-level competition
Case 1	Toronto	Private	Canada	- Activities - Initiatives - Curriculum - Extra-Curricular Activities - Accelerator program - Social media
Case 2	Toronto	Government	Canada	- Accelerator program - Integrated Academic program - Digital Communication - Social Media - Industrial engagement - Strategies/Processes
Case 3	Montreal	Government	Canada	- Research-led learning - Alumni support - Industrial engagement - Networking - Workshops - Business models - Innovation - Funding
Case 4	Edmonton	Private	Canada	- Accelerator program - Global partnerships - Joint venture - Industrial engagement - Innovation - Research-led learning
Case 5	Toronto	Government	Canada	- Knowledge sharing - Industrial engagement - Networking - Strategies/Processes

Case	City	Type of University	Origin of University	Key Findings
Case 6	Waterloo	Government	Canada	- Funding - Industrial engagement - Curriculum
Case 7	Kingston	Private	Canada	- Funding - Accelerator program - Industrial engagement - Innovation - Research and Development
Case 8	Montreal	Private	Canada	- Mentoring - Accelerator program - Innovation - Networking - Industrial engagement
Case 9	Victoria	Government	Canada	- Funding - Networking - Industrial engagement - Research-led learning - Strategies/Processes

Source: Authors

As shown in Table 3, UBIs in all cases encouraged *innovation* amongst students and academic staff (eg Cases E to H encouraged technology-based innovations as part of the UBIs) along with collaborations between universities and *industry*, eg industry visits, keynote speakers from industry, networking and internships in Cases C and D. The UBIs played a role in the development of *curriculum* as well as *extra-curricular* activities in some instances, eg Cases A and B. The UBIs also encouraged students to develop their *communication skills* in person and through innovations (social media-based marketing) while developing a product to enter a market, eg Case B. The inclusion of UBIs also allowed the development and growth of *strategic thinking* as entrepreneurs/managers amongst students which may aid their employability, eg Case B. In some cases, the UBIs are identified to aid the development of *research skills* amongst students through students being put in a position as leaders where they had the responsibility to research areas like competition and consumer behaviour in a target market they were aiming to enter, eg Cases C and G. The UBIs were also identified in some cases as an opportunity to *attract new students* through engagement with high schools via incentive-based competitions related to the UBI programs, eg Cases H and I. The links between the cases and key findings are illustrated in Figure 1.

As shown in Figure 1, the most common themes emerging from Cases A-I regarding the role of UBIs were highlighted as the drivers of Innovation and Attracting new customers. However, there was limited Industry engagement and Extra-curricular activity identified in Cases A-I, therefore, there is scope for the researched institutions to improve these areas to improve employability for students. It should be noted that government-based institutions appeared to be more active in the UBI programs through an identified higher level of activity, eg a greater inclusion of the UBIs in courses, more industry engagement events, and securing more internship programs. The authors believe that this may be attributed to a greater level of flexibility encouraged by government funding in comparison to possibly limited funding available to private institutions. Another observation from the data in Table 3 is that the implementation of UBIs in an institution was not affected by whether the university's origin was UAE based or international. This finding demonstrates that culture does not influence the implementation of UBIs in the UAE. The final finding identified from the analysis of the data in Table 3 was whether the region of the university within the UAE affected the implementation of UBIs. It is widely acknowledged that there is a variation in terms of liquidity, culture, and infrastructure between Abu Dhabi and Dubai [eg Abu Dhabi is more politically driven whereas Dubai is more glamorous and authentic which attracts tourists (Martens and Reiser, 2017)] where it is assumed that Abu Dhabi may have greater backing from the UAE government due to its status as the capital (Martens and Reiser, 2017). However, the identified variation between the cities did not affect or influence the implementation of UBIs in institutions. Therefore, in the case

of this study, regional variability did not play a role in UBIs but this may be different if institutions from other emirates outside of Dubai and Abu Dhabi are included in future research.

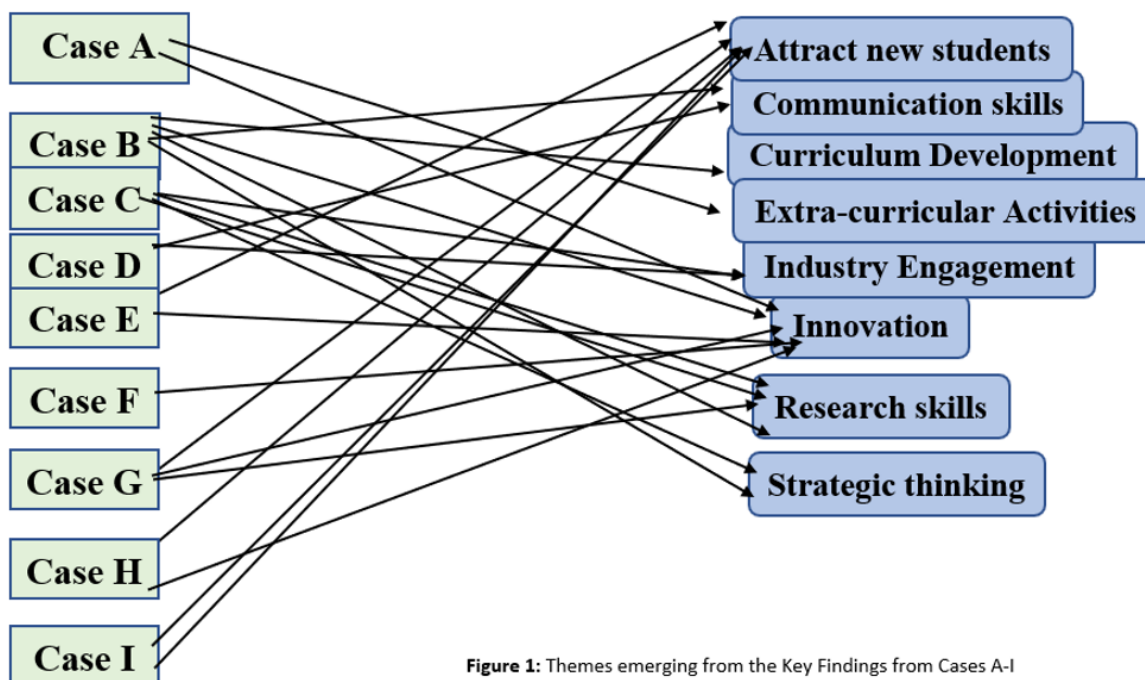
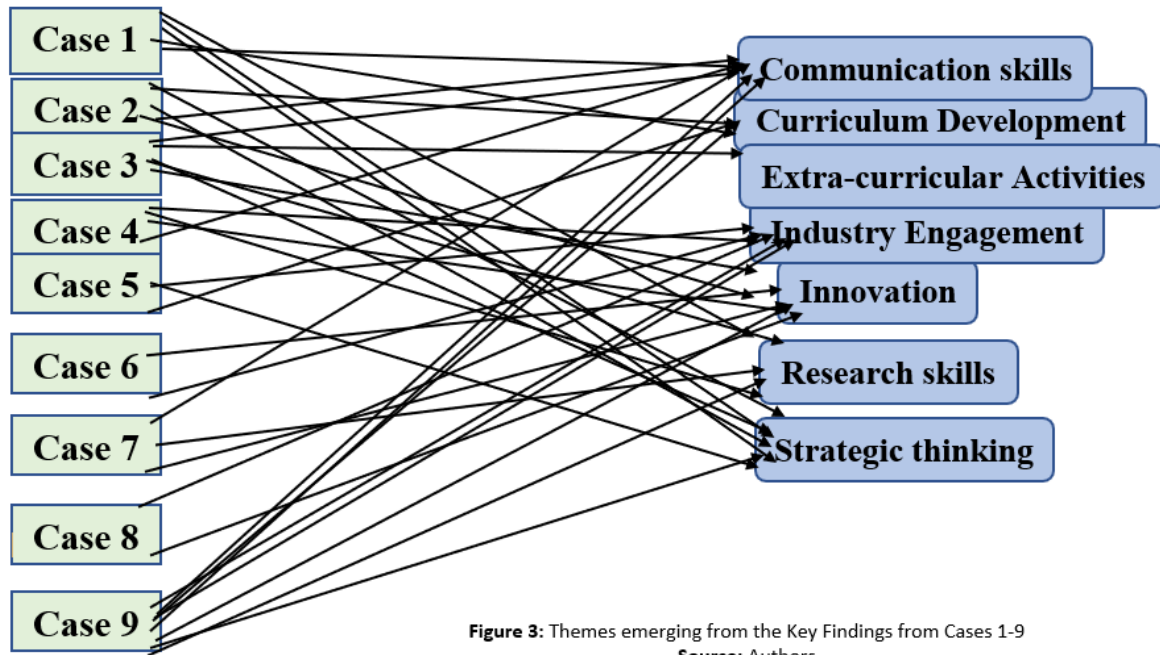


Figure 1: Themes emerging from the Key Findings from Cases A-I
Source: Authors

Source: Authors

Figure 1: Themes emerging from the Key Findings from Cases A-I

Similar to UBIs in the UAE, UBIs in Canada encouraged *innovation* amongst students and academic staff (identified for Cases 2 to 9) along with collaborations between industry and universities, eg *industry engagement* and *industry collaborations* in Cases 1-9. Like UBIs in the UAE, the UBIs played a role in the development of *curriculum* via research-led teaching, eg Cases 1, 4, and 9. Similar to the UBIs in the UAE, UBIs in Canada also encouraged students to develop their *communication skills* in person and through innovations (networking and social media-based marketing) while developing a product to enter a market, eg Cases 1, 2, 8, and 9. The promotion of developing *research skills* was identified by UAE-based UBIs as a crucial factor for students' development in the UAE (eg research areas like competition and consumer behaviour in a target market that aspiring entrepreneurs are aiming to enter) which has also been highlighted by Canadian based UBIs, eg Cases 3, 4, 5, 7 and 9. However, the UAE-based cases identified UBIs as an opportunity to *attract new students* through engagement with high schools via incentive-based competitions related to the UBI programs, however, this has not been highlighted as a common factor for Canadian-based UBIs. The links between the Canada-based cases and key findings are illustrated in Figure 2 below.



Source: Authors

Figure 2: Themes emerging from the Key Findings from Cases 1-9

In Figure 2, the most common themes emerging from Cases 1-9 regarding the role of UBIs in Canada were highlighted as the drivers of Communication skills, Innovation, Research skills, and Industrial engagement.

However, unlike UBIs in UAE, there was limited Extra-curricular activity and drive for Attracting new customers identified in Cases 1-9, therefore, there is scope for the researched institutions to improve these areas to improve the learning environment for students and further ensure the stability/survival of the concerned university. Unlike the cases in the UAE, there was no clear differentiation highlighted between public or private universities in terms of their activity regarding UBIs. The authors believe that this may be attributed to the higher education market being far more established in Canada in comparison to the UAE. Another observation from the data in Table 3 is that like the cases in the UAE, the implementation of UBIs in an institution was not affected by whether the university's origin was Canadian-based or international. This finding demonstrates that culture does not influence the implementation of UBIs in Canada which is also the case in the UAE. The final finding identified from the analysis of the data in Table 3 was whether the region of the university within Canada affected the implementation of UBIs. Unlike the UAE there is not a wide variation in terms of liquidity and infrastructure between the main cities in Canada (Statistics Canada, 2022). Therefore, in the case of UBIs in Canada, regional variability did not play a role in UBIs.

6. Conclusions

This exploratory and comparative study aimed to assess the current state of UBIs across two geographical contexts (the United Arab Emirates and Canada) to develop a coherent understanding of the nature and scope of such endeavours. Based on the analysis of the data, it is evident that there is a diverse range of UBIs that are operational both in Canada and the United Arab Emirates with varied ownership structures and purposes (Yasin et al., 2021) that address specific socio-economic, and policy needs for each nation (Sanyal and Hisam, 2018).

The findings also revealed that UBIs in both of these countries provided their academic institutions and their key stakeholders with a physical space that supports the development of novel products and services and therefore, concurs with the works of Yasin et al., (2021) and Yasin and Khansari (2021). However, most of these incubators offered were not typical of BIs in general as they combined resources from both private and governmental bodies (Sanyal and Hisam, 2018). The analysis also demonstrates that innovation among students and staff played a key role across all cases and that collaboration with the industry was integral to the mission, vision, and operations of the BIs across both contexts. This also extended to the development of curricula and extra-curricular activities as well as a mechanism to promote student recruitment.

Numerous contributions derive from this qualitative study. Firstly, our findings provide a contemporary understanding of the current state of UBI activities across both the United Arab Emirates and Canada. Secondly, the comparative approach illustrates how UBIs are embedded across diverse geographical and institutional contexts as well as illustrating how these UBIs play a key role in developing communication skills, curriculum development, extra-curricular activity, industry engagement, innovation, research skills, and strategic thinking. These findings transcend beyond the general purpose of BIs and UBIs to simply be "spaces or activities" relating to new product and service development towards recognising the broader range of activities, purposes, and functions of UBIs across both countries' contexts. Thirdly, the novelty of the comparative approach between two country contexts addresses the dearth and scarcity of comparative research in enterprise education, BIs, and more specifically UBIs across national contexts. Considering the variance of themes, the only key exception was the presence of UBIs in the UAE to be a mechanism to increase student recruitment, whereas this theme was absent in the Canadian sample. The limitation of this study is that we have focussed specifically on BIs that were housed within universities and do not address those that are partnered with Universities as an "outsourced function" therefore, this study remains focused on UBIs exclusively. Furthermore, another limitation of this study is the lack of generalisation of these cases and the availability of equivalent publicly available data across geographical and linguistic contexts. As such information was translated through forward and backward translation (particularly in Arabic) to English and therefore, is subjective. Although we have identified all UBIs based on web searches, other incubators may exist within organisations that have not been listed. Based on the wide-ranging and diverse implications for academics, policymakers, entrepreneurs, and students of higher education, further research should focus on strategic collaborations between the public and private sectors with universities in the development of UBIs, assess the efficacy of incubator cohorts from the perspective of the tenants enrolled on the programs and for this to be compared across geographical contexts, and also assess the challenges for UBIs across both of these contexts. As this research was conducted for the development of a physical UBI in the emirate of Dubai, the country selection was informed by the geographical contexts and therefore, the findings from this study will have practical implications for the development of a BI. Considering that both the UAE and Canada are 'embedded' in varying geographical, historical, institutional, and political contexts, they are equally committed to enhancing the efficacy of the core University-based activities and are aligned with the development of new products and services as well as improving human, social and financial capital of its tenants by offering a diverse range of programs/services.

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