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## Case studies in Mexico

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This chapter analyses initiatives conducted by Tecnológico de Monterrey and University Anahuac to support entrepreneurship education, and knowledge transfer. It also studies the connections that the universities have generated with external stakeholders through these activities in the ecosystem of Mexico City and beyond.

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## Tecnológico de Monterrey, Mexico

Tecnológico de Monterrey is a private non-profit university with 26 campuses throughout the country. Entrepreneurship education and support are a core part of the university's curriculum, and several programmes are in place to support venture creation (66% of students every year attend an entrepreneurship programme). Through its 21 business incubators and 11 technology parks, the institute is a central actor in the ecosystem attracting local entrepreneurs, small- and medium-sized enterprises (SMEs), public and private investors.

### ***Entrepreneurship education***

Tecnológico de Monterrey has comprehensive curricular coverage of entrepreneurship education activities. For undergraduate students, it offers:

- Courses designed to teach entrepreneurial skills (managing uncertainty, fostering resilience) which are open to students on a voluntary basis.
- Mandatory courses on entrepreneurship during the third year of a bachelor's degree for all students through an experimental-based approach with lean start-up methodology<sup>1</sup> (creating a minimum viable product for the market). Many students who take this course are invited to the business incubator.

For graduate/master's students, the university offers:

- A very successful Master of Business Administration (MBA) in Entrepreneurship and Innovation, with many international students.
- For Doctor of Philosophy (PhD) students, there is a programme to link research to the market through courses/workshops.

The university also organises over 300 extracurricular activities such as hackathons that involve alumni, boot camp for the arts, some programmes targeted to a specific region. The university also organises national events such as the IncMonterrey entrepreneurial festival.

### ***Connection with the ecosystem driven by entrepreneurship education***

The university is highly connected to the ecosystem. It helps train entrepreneurs and interacts with non-profit organisations, the investor community and the government at both the federal and state levels.

The Eugenio Garza Lagüera Entrepreneurship Institute (*Instituto de Emprendimiento Eugenio Garza Lagüera*) runs the IncMonterrey as a multifaceted initiative, which aims to connect entrepreneurs, leaders, investors, SMEs, students and academics (Tecnológico de Monterrey, 2021<sup>[1]</sup>). It offers an accelerator programme for start-ups, a prototype-development programme for researchers and entrepreneurs, and launches different challenges for “enthusiasts”. The INCmty festival is an event that gathers investors, entrepreneurs, researchers and students who want to network and generate or promote an entrepreneurial project or help their business grow. INCmty also supports over 250 entrepreneurship initiatives per year and receives support from private investors such as Santander Bank.

Tecnológico de Monterrey is also working with the Massachusetts Institute of Technology (MIT) Regional Entrepreneurship Acceleration Program (REAP) in the state of Monterrey. The MIT REAP helps to develop the venture capital industry and increase efforts to support local entrepreneurship. The initiative brings together Tecnológico de Monterrey, the state government and venture capital firms. There are similar incubation programmes present on all campuses, where incubators are brought together, and entrepreneurs benefit from a strong network of mentors throughout the country. One acceleration programme located in Chihuahua is open to start-ups from anywhere in the world.

The university also has entrepreneurship and innovation parks (technology parks). Since 2002, more than 4 000 start-ups have graduated and intake into the parks is made up of companies from incubators and companies from the wider ecosystem. The most successful park is located in Chihuahua. Technology parks attract governments and companies looking to invest in start-ups. From an organisational perspective, the parks are funded by private investors and managed by the university.

### ***Impact of the COVID-19 pandemic on entrepreneurship education***

Shifting to virtual delivery was not a problem for the university as it was already conducting a number of activities online. Some of this knowledge could be transferred through the development of a virtual programme to help entrepreneurs, called “SOS programmes”, which aimed to help SMEs digitalise their processes. Over the course of six weeks, the university’s programme helped SMEs to develop business models to transition online through Zoom courses delivered by expert instructors and faculty, digital marketing consulting and networking sessions between SMEs and with sponsoring companies. This programme was free of charge as students and professors volunteered to help these SMEs, delivering eight-session programmes per cycle. The programme started in Monterrey and has now been expanded across the country helping more than 800 start-ups.

### ***Remaining challenges related to entrepreneurship education***

The university is looking to improve further its entrepreneurship education activities by undertaking more of such activities with the community, ensuring the use of open innovation methodologies for increased impact. Internally, in order to address the challenge of mainstreaming entrepreneurship across all faculties, the university will focus efforts on opening internal conversations around the model of entrepreneurship. Finally, there will be a renewed focus on the part of the university to attract more seed funding to support entrepreneurs.

### ***Knowledge transfer strategy***

During the interviews, stakeholders reported that the governance of the university is highly pragmatic and entrepreneurial. Knowledge transfer is mentioned in several strategic documents of the university including the most recent strategic plan for 2025 and the vision for 2030. Knowledge transfer includes three components:

- **Technology transfer and licensing, start-up creation:** The classic knowledge transfer strategy.
- **Entrepreneurship promotion:** Promoting entrepreneurial skills and offering incubation services to young graduates.
- **Continuous education and consulting:** Several professors and experts working at the university are teaching dedicated courses on improving the productivity of companies, providing consulting services or advising companies on research or new market opportunities. The university has created the figure of the “extension professor” who interacts on a frequent basis with companies for education and research activities. The university also provides consulting services to other universities in the Latin-American region on how to develop continuous education.

The institute was founded in 1946, by a group of companies led by MIT alumni, who understood the influence of MIT on the productive apparatus of the country. After 15 years, it has gained success in the region of Monterrey and has seen its campuses multiply since then, with several campuses located throughout the country. The co-ordination of these activities takes place at the central level and is subsequently adapted for every region. At times, the university’s management board has taken the initiative to open a campus to take advantage of a local cluster (such as in Mexico City) and in others, the university responds to the demand of local entrepreneurs who offer financial support to open a new campus (Puebla, Querétaro).

The programmes and strategic knowledge transfer priorities are defined centrally within the vice-rectory for continuous education, the vice-rectory for research and knowledge transfer, and then each campus adapts the strategy to the local conditions, to the request of the city or the local companies. Every incubator is tailored to respond to the needs of local companies. For example, the campus located in Mexico City has a technology transfer strategy oriented to the needs of the technological companies. The north of Mexico is very industrial whereas the south is rich in natural resources and the local campuses adapt to the local needs.

### ***Connection with the ecosystem driven by knowledge transfer activities***

The university plays a significant role within its surrounding ecosystem. For example, the DistritoTec initiative in Monterrey, led by the Tecnológico de Monterrey– Campus Monterrey, involves the transformation of the 20-kilometre urban radius surrounding the campus as a comprehensive “innovation district”, introducing an economic model supported by high technology firms and innovation-based activities, together with infrastructure designed for a high quality of life. The ambition is for this campus to become a source of urban regeneration. The university has also helped the government with the creation of 14 technological parks over the past 14 years. Additionally, the university has undertaken a number of other regional initiatives:

- The campus of Querétaro works closely with the Aerospace Cluster in the state.
- The Mexico City campus works with the health and bio-technology sectors.
- Chihuahua campus’ technology park (Orion) is a core element of the state’s innovation strategy.

### ***Incentives for staff to engage in knowledge transfer activities***

The university has introduced technology transfer indicators, which have greatly contributed to the creation of a culture of transfer. At the end of the 1990s, the intellectual production system was poor but a system to monitor patent development was progressively put in place, culminating with the university having the most patents in Mexico by 2004.

The university has also put in place incentives for professors to carry out knowledge transfer activities through the creation of the “extension professor or consultant” status for professors who conduct activities in knowledge transfer spaces. This role has been designed to be very lucrative. Other professional categories include:

- The entrepreneurial professor, whose workload is to be partially entrepreneurial. This position is more difficult to fill as professors are expected to demonstrate results and successful ventures.
- The research professor focused on carrying out research activities that are financed by the university or by external partners.
- The teaching professor leads mainly on teaching activities with potentially some research alongside these.

Professors at the university are asked to choose one of these career paths and are evaluated according to the metrics attributed to their chosen career path.

### ***Remaining challenges related to knowledge transfer activities***

The university reports that government funding for research has fluctuated over recent periods. The previous national government provided strong financial support for research activities carried out by universities. Local states are looking to fill some of this gap by putting in place strategies to increase interaction and co-operation. There are also regulatory procedures in place, which are not favourable to research activities and technology development.

## Anahuac University, Mexico

The university is spread across two campuses in the state of Mexico and is made up of five faculties. Entrepreneurship and leadership priorities are set out in strategic documents and the university aims to become a leader in activities in the field of entrepreneurship activities are largely focused within the Faculty of Economics, however other faculties are also engaged in these activities. The Faculty of Economics, through the entrepreneurship centre Centro de Emprendimiento Anahuac has developed two approaches to supporting entrepreneurship:

- Entrepreneurship programmes and extracurricular activities.
- Services to external parties (entrepreneurs, SMEs) through its accelerators and incubator.

### ***Entrepreneurship education***

The university places significant emphasis on practice-based learning; as such, courses are heavily focused on learning by doing, encouraging skills such as managing uncertainty and listening to end users. The belief is that these skills and practices will be of use to all students, regardless of whether they pursue careers in entrepreneurship or not.

- All undergraduate students across all faculties are required to take an entrepreneurship innovation course. This practical course encourages students to interact with real customers. In 2022, 2 new core courses for second-year students will be added:
  - Entrepreneurship mind-set development (soft skills, teamwork).
  - Solution-finding (through the lean start-up methodology).
- Graduate engineering schools also offer entrepreneurship courses and training on intellectual property development is being set-up for students pursuing PhDs. They have been working with Mexico's National Autonomous University (UNAM), a large public university, to run a training programme for researchers, which aims to raise awareness of the importance of market validation. The training was developed by US professors and I-Corps trainers, and the joint venture has received funding from the government's science agency.

The university also offers entrepreneurship programmes for secondary and primary school students, including a programme for 6–12-year-olds, focused on age-appropriate problem solving, in alliance with the platform [micochinito.com](https://micochinito.com).

In the realm of extracurricular activities, Anahuac University organises competitions in partnership with universities in Canada and encourages students to take part in national competitions such as Premio Santander. Prior to the COVID-19 pandemic, the university's architecture school hosted the FabLabs boot camp, which conducted a competition bringing together students and external partners.

### ***Connection with the ecosystem driven by entrepreneurship education***

The university has incubation services that support students with mentors and then provide students with a methodology and business model to implement. This is open to all students. Both the incubator and the accelerator are in the Faculty of Economics and co-ordinate their activities together. The incubator services aim to generate start-ups, but the focus is also on educating students, alumni and professors. Some of the students create start-ups and some do not. Students, alumni and professors who participate in the incubator are offered a scholarship.

The accelerator has an acceleration programme (using the lean start-up methodology) to scale up the process for anyone who may need their services (students, alumni and entrepreneurs). This programme to scale the business proposal is free; however, the training and consulting services for start-ups do incur

a cost. In addition, they organise many webinars/workshops for entrepreneurs. The webinars cover cybersecurity for cloud services and investment studied through a gender lens. Public funding and some other sources finance the accelerator, and they have three big projects with the Inter-American Development Bank (IDB) and an alliance with the Mexican Association of Private Equity and Venture Capital Funds companies that fund the accelerator for specific projects. However, it is not funded by venture capital funds as these usually look for more advanced companies with an effective business model. The accelerator has an alliance with Santander Bank to train 300 SMEs free during the pandemic and through different webinars, and mentorship programmes for entrepreneurship. It also has an alliance with the agency that works with entrepreneurs in the government (bilateral relationship with the government) and local and federal government.

### ***Impact of the COVID-19 pandemic on entrepreneurship education***

During the pandemic, the university has trained lecturers on how to use Zoom, to support the smooth transition to remote education. The accelerator has suffered due to less but much more targeted funding, as companies came to them with specific problems.

The pandemic has also been a positive force to think outside the box. For the majority of SMEs, it was a disaster, but some SMEs grew at such a pace that they did not know what to do with their growth. The university reported that it has been very interesting to work with these SMEs because of the completely different challenges they were facing. Courses for SMEs on emotional intelligence and stress management have now been developed by the university because of the effects of the pandemic.

### ***Remaining challenges related to entrepreneurship education***

As seen in other Latin American HEIs, intellectual property management continues to be a challenging area as professors are employees and, ultimately, it is down to the university to define who the owner of their invention is. In the area of teaching, professors are required to have PhDs in order to be accredited, with only a certain percentage of external practitioners allowed to teach outside of this process, leaving little room for non-PhD private-sector employees or entrepreneurs to teach.

The university is developing a number of next steps in order to improve its evaluation practices and measurement of entrepreneurship education approaches. First, participating clients and students will evaluate the accelerator. In addition to this, metrics are in development, which will include key performance indicators to assess how many projects come to the accelerator and their outcomes.

- Each semester, around 1 500 students across both campuses attend entrepreneurship courses according to a report evaluating the implementation of entrepreneurship activities.
- An entrepreneurship committee has recently been established. The Faculty of Business and Economics runs it with representation from other faculties including engineering and architecture. The committee produces a report on entrepreneurship in the university, leveraging a number of performance indicators.

### ***Knowledge transfer strategy***

The institutional strategic plan states that the university's ambition is to strengthen the research team and the research model through social impact, with one means of achieving it the implementation of a strategy to promote knowledge transfer. It also highlights ambitions to strengthen strategic alliances and work towards becoming a productive, public and social environment organisation (Anahuac University, 2021<sup>[2]</sup>). The university is looking to consolidate its position in the metropolitan area of Mexico City by providing an education offer to undergraduates and graduates, as well as developing continuous education and collaborating with local businesses.

In terms of organisational structure, the university has a research department, which is awarded a budget against which it plans its knowledge transfer and research activities. This department sets guidelines and incentives for researchers. The business accelerator and the Anahuac Business Development Institute (IDEA) also carry out transfer activities.

### ***Connection with the ecosystem driven by knowledge transfer activities***

The Business and Economics School Accelerator, AcelerA, has participated in applied research projects with private institutions. Through these projects, AcelerA and IDEA have contributed to the spread of corporate social responsibility practices, specifically in SMEs, strengthening the crowdfunding ecosystem in Mexico and teaching the lean start-up methodology to trainers and entrepreneurs nationwide, among others.

IDEA also funds projects supporting knowledge transfer activities, such as a special book collection “*Negocios para la paz*” published in collaboration with a local publisher (Edicion Limusa) (Anahuac University, 2020<sup>[3]</sup>).

### ***Incentives for staff to engage in knowledge transfer activities***

Performance evaluation of the university’s academics is carried out by the research department and considers patent generation as an indicator. Academics receive financial incentives when engaging in patent-generating and related activities and collaborations.

### ***Remaining challenges related to knowledge transfer activities***

University stakeholders reported several challenges related to knowledge transfer activities. In order to develop a research development project with enough financial support for knowledge transfer to occur, most of the time, the university is required to complete collaboration agreements with universities or members of NGOs. These instruments are bureaucratic and time-consuming. In the area of financed projects, there are a number of barriers related to current tax requirements: these impede knowledge transfers into governmental and public environments.

Stakeholders also reported limited government support for research activities in private institutions. The regulatory landscape presents a number of barriers in the form of laws and normative regulations, which affect knowledge activities in the social, business and public sectors. These regulations make it difficult for universities to collaborate, for instance, acceleration and incubation centres within a university face legal and fiscal obstacles due to current outsourcing regulation, which inhibits, in some way, professors’ consultancy activities within an enterprise.

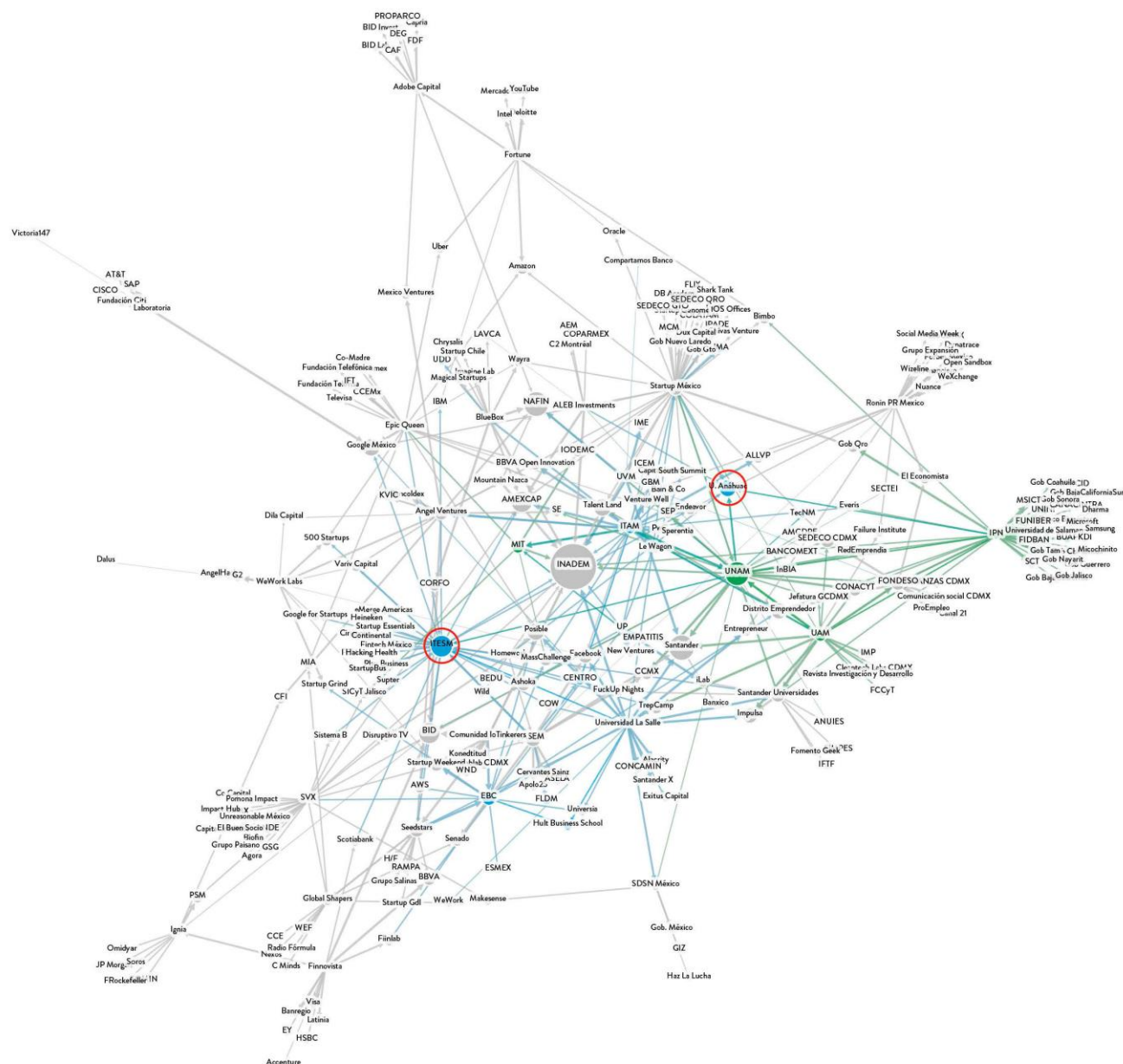
## **Ecosystem analysis of Mexico City and the role of Tecnológico de Monterrey and Anahuac University**

As evidenced by the analysis carried out by Global Ecosystem Dynamics, in collaboration with MIT D-Lab and supported by Santander Universidades on the innovation-driven entrepreneurial economic ecosystems of Mexico City, Anahuac University and Tecnológico de Monterrey are important actors within the Mexico City ecosystem (see Figure 4.1).

UNAM and Tecnológico de Monterrey are the universities that show the highest weight in degree and connectivity to other actors. This weight and influence position them as *gravitational centres* greatly contributing to the development of the structure of the economic ecosystem.<sup>2</sup> While not a gravitational centre, Anahuac University was the third most mentioned university in the ecosystem.



**Figure 4.1. Ecosystem analysis of Mexico City and the role of the Tecnológico de Monterrey and Anahuac University**



Note: This figure provides a visualisation of the collaborations between actors of the economic ecosystem of Mexico City with a node size dependent on the number of mentions by other participants and the strength of said mentions (weighted in degree), highlighting in blue the universities categorised as Enablers, those focusing primarily on education and capacity building, and in green the universities categorised as Knowledge Generators, those focusing primarily on research and the development of new technologies. These visualisations, along with the interpretation of each node's centrality metrics, allow for the analysis of the positioning of universities mentioned within their innovation-driven entrepreneurial economic ecosystem.

There could be a dissonance between what the university sees as its presence in the ecosystem and what this independent mapping exercise finds. Data collection for each ecosystem was conducted by first identifying as many actors as possible through desk research, which were in turn invited to attend a workshop on strengthening innovation-driven entrepreneurial economic ecosystems and fill an online survey regarding their social dynamics with other actors.

Source: Tedesco, M. (2022<sup>[4]</sup>), "How and why to study collaboration at the level of economic ecosystems", *D-Lab Working Papers: NDIR*, MIT D-Lab.



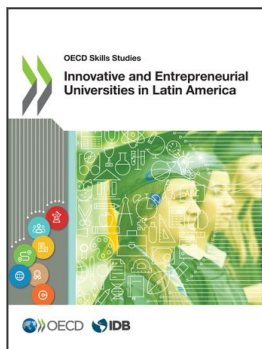
## References

- Anahuac University (2021), *Strategic Lines*, Anahuac University of Mexico, [2]  
<https://www.anahuac.mx/mexico/en/strategic-lines>.
- Anahuac University (2020), “La Anáhuac y Editorial Limusa presentan en FIL Minería Negocios para la Paz”, Anahuac University of Mexico, [3]  
<https://www.anahuac.mx/mexico/porlapaz/noticias/la-anahuac-y-editorial-limusa-presentan-en-fil-mineria-negocios-para-la-paz>.
- Tecnológico de Monterrey (2021), *INCmty*, <https://www.incmty.com/>. [1]
- Tedesco, M. (2022), “How and why to study collaboration at the level of economic ecosystems”, [4]  
*D-Lab Working Papers: NDIR*, MIT D-Lab.

## Notes

<sup>1</sup> It is a methodology to launching a venture creation that draws on rounds of experimentation or user feedback to create a business plan or to develop a new product or service

<sup>2</sup> Gravitational centres refer to the nodes (actors) that, due to their centrality and influence in the ecosystem (quantity and quality of their collaborations), attract a large number of other nodes through their relationships, strengthening the dynamics of collaboration within the same ecosystem.



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