

## Innovation Outputs from Higher Education Institutions: A Case Study of the University of Waterloo, Canada

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**Abstract :** The University of Waterloo is situated in central Canada in the Province of Ontario- one hour from the metropolitan city of Toronto. For over 30 years, it has held Canada's top spot as the most innovative university; and has been consistently ranked in the top 25 computer science and top 50 engineering schools in the world. Waterloo benefits from the federal government's over 100 domestic innovation policies which have assisted in the country's 15th place global ranking in the World Intellectual Property Organization's (WIPO) 2022 Global Innovation Index. Yet undoubtedly, the University of Waterloo's unique characteristics are what propels its innovative creativeness forward. This paper will provide a contextual definition of innovation in higher education and then demonstrate the five operational attributes that contribute to the University of Waterloo's innovative reputation. The methodology is based on statistical analyses obtained from ranking bodies such as the QS World University Rankings, a secondary literature review related to higher education innovation in Canada, and case studies that exhibit the operationalization of the attributes outlined below. The first attribute is geography. Specifically, the paper investigates the network structure effect of the Toronto-Waterloo high-tech corridor and the resultant industrial relationships built there. The second attribute is University Policy 73-Intellectual Property Rights. This creator-owned policy grants all ownership to the creator/inventor regardless of the use of the University of Waterloo property or funding. Essentially, through the incentivization of IP ownership by all researchers, further commercialization and entrepreneurship are formed. Third, this IP policy works hand in hand with world-renowned business incubators such as the Accelerator Centre in the dedicated research and technology park and velocity, a 14-year-old facility that equips and guides founders to build and scale companies. Communitech, a 25-year-old provincially backed facility in the region, also works closely with the University of Waterloo to build strong teams, access capital, and commercialize products. Fourth, Waterloo's co-operative education program contributes 31% of all co-op participants to the Canadian economy. Home to the world's largest co-operative education program, data shows that over 7,000 from around the world recruit Waterloo students for short- and long-term placements- directly contributing to the student's ability to learn and optimize essential employment skills when they graduate. Finally, the students themselves at Waterloo are exceptional. The entrance average ranges from the low 80s to the mid-90s depending on the program. In computer, electrical, mechanical, mechatronics, and systems design engineering, to have a 66% chance of acceptance, the applicant's average must be 95% or above. Singularly, none of these five attributes could lead to the university's outstanding track record of innovative creativity, but when bundled up into a 1000 acre- 100 building main campus with 6 academic faculties, 40,000+ students, and over 1300 world-class faculty, the recipe for success becomes quite evident.

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