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The Startup Ideas Accelerator: A pioneering launchpad for innovation

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Summary.

The economy of the 21st century has been characterized by rapid technological innovation, leading numerous observers to conclude that a fourth industrial revolution is well under way. It is also a period marred by growing inequality, uncertainty created by automation and a climate crisis of increasing gravity. It is, in short, a time that calls for unprecedented collaboration in defining and realizing a new inclusive and sustainable model for the economy. The right kind of entrepreneurship will be key to achieving this objective. This article analyzes the importance of promoting proactive collaboration between leaders at universities and in industry, with the goal of creating entrepreneurial ecosystems directed at forming a generation of sustainability-minded, skilled and empowered entrepreneurs ready to tackle the challenges of the century. This objective can be promoted through the creation of innovative university-based and industry-supported Startup Ideas Accelerators (SIAs), which we model in this article. SIAs can fill an important gap in the existing infrastructure, motivating aspiring entrepreneurs to begin the process of creative production, promoting the development of entrepreneurial skills, providing the necessary tangible and intangible resources to support the process of sustainability-minded innovation and generating creative synergies and productive interaction between universities and industry.

Key Words: Innovation, entrepreneurial university, start-up, accelerators, sustainability, industry-university collaboration.

In 2012, NASA and MIT initiated a program with the goal of creating a model for growing vegetation and raising insects on Mars. A project of utmost curiosity, it is one of NASA's several so-called Epic Challenges, the result of a comprehensive initiative designed to engage students at various stages in their education with subject-matter experts to solve 'unsolvable' problems of interest (Camarda et al., 2013). This is just one example of the recent surge in initiatives designed to source talent and entrepreneurial ideas, and to empower knowledge exchange via a ubiquitous network of participants. Ultimately, the goal is to promote innovation in the rapidly-evolving and increasingly complex new economy. Such open innovation models, in which research and development take place in collaboration with external partners, such as universities, research institutes, customers or suppliers, and not just within company walls, have slowly infiltrated the mainstream in the last two decades (Stal et al., 2016, p. 90), a trend that underscores the importance of forward-looking, creative models of innovation in the new economy.

Clearly, some of the most pressing problems currently facing society have nothing to do with Martian vegetation or Animalia. The ongoing health crisis, uncertainty in labor markets caused by increasing automation of production processes, and the climate crisis more readily come to mind. But also here, the solution lies in innovation and collaboration, and the response to these negative, wide-ranging dynamics must be rapid and comprehensive. In its Future of Jobs Report 2020, the World Economic Forum outlines the key skills that will be required of the future workforce to effectively tackle current challenges: analytical thinking and innovation, complex problem-solving, critical thinking and analysis, creativity, originality and initiative to name a few. In short, the world needs a generation with an entrepreneurial mind-set and skills to elaborate and implement a new, sustainable model of economic growth.

The effectiveness of any response to current challenges will not depend only on the decisions and actions of individuals, but rather on the collaboration between individuals and a number of other stakeholders, including businesses, the government and institutions of higher education, as the formerly-cited example of NASA's and MIT's Epic Challenge initiative underscores. One relatively recent development that reflects society's recognition of the need for increased collaboration in the realm of entrepreneurship in the new economy is the propagation of so-called incubators in the corporate sector, and even more recently, at a number of universities, most notably in the Americas, Europe and China (Buckley and Davis, 2018; Houser, 2014; Li Sun et al., 2016; Vu, 2013; Zhang et al., 2019). The purpose of these incubators, or accelerators, as the most recent model of incubators is known, is to pool tangible and intangible resources with the scope of providing physical space and high-value knowledge-intensive support services to entrepreneurs in the early stage of product development.

An increasing number of universities have joined the trend by creating in-house accelerators with the aim of capitalizing on knowledge produced by research departments and connecting with industry to transform such knowledge into marketable products. But unlike the Epic Challenge initiative, such enterprises fail to capitalize on one of the key sources of entrepreneurial potential abundant in the university context and frequently eager to be utilized. In particular, university accelerators often fail to engage students themselves in the process of innovation, focusing instead on establishing links between faculty-run research departments and external start-ups or established corporates (Buckley and Davis, 2018; Lackeus, 2015; Pauwels et al., 2016; Stal et al., 2016).

This article argues that filling this gap should be a matter of priority for leaders in industry and academia, and that this can be achieved by creating university-based accelerators referred to here as Startup Ideas Accelerators (SIAs). SIAs must capitalize on the academic curriculum, the enormous pool of young entrepreneurial minds and spirits, university-generated research and potentially powerful university-industry synergies. The prototype presented in this article is based on the idea born and implemented at the University of Applied Sciences and Arts of Southern Switzerland (SUPSI): the Startup Garage. The authors outline and justifies the essential characteristics of such SIAs, capitalizing on the experience accumulated by the creators of the SUPSI Startup Garage, and further demonstrate how such initiatives can be instrumental not only in stimulating innovation, but also in supporting additional vital objectives such as, most notably, a shift to a sustainable growth model through targeted innovation practices.

A brief history of innovation

On July 20, 1969, Neil Armstrong became the first man to land on the Moon, declaring the feat a "giant leap for mankind". But one other event that took place just months later in the same year, famously remembered with the far-less poetic declaration 'LO', had, perhaps, a far more dramatic impact on life on Earth in the coming decades than Armstrong's successful extra-terrestrial voyage. On October 29, 1969, the first computer network communication, an aspirational 'LOGIN' that was cut short by an unexpected system crash, was sent between computers each roughly the size of a two-car garage. This historic moment marked the start of what is commonly referred to as the third industrial revolution, which has been characterized by the development and expansion of the internet, an immense increase in computing power, a wholesale transformation and rapid automation of industrial production and distribution processes, as well as a dramatic rise in productivity and efficiency which has resulted in decades of unprecedented economic growth.

The third industrial revolution has also been characterized by a significant increase in the rate of innovation and creation of new business enterprises, especially in the 90s. And while few new business initiatives ultimately succeeded, this trend was crucial as it contributed to shaping a generation of entrepreneurs, whose innate talent is supported by a burgeoning culture of innovation and easy access to a growing body of free information via the world wide web.

Industry 3.0, as it is often referred to, is frequently associated with numerous Earth-bound but nonetheless life-changing voyages of successful entrepreneurs from run-down garages in their parents' or friends' homes to staggering success in Silicon Valley, California, the burgeoning start-up ecosystem for high-tech innovation. In reality, the 20th century is peppered with examples, some preceding the start of the third industrial revolution, of successful entrepreneurial feats, such as those of Harley Davidson, Hewlett-Packard, Disney and Apple, all of which started life within the walls of a humble garage.

The success of entrepreneurial output in the traditional start-up garage model was thus a factor of individual intelligence and creativity, combined with an appetite for risk, a good measure of stubbornness, curiosity and, at times, hubris; endogenous features that contributed to form an entrepreneurial personality honed by individual vocational training in a garage. Infrastructure and resource requirements were, in such cases, minimal. Starting in the early 1990s, an alternative to the home garage emerged in the form of the first business incubators, which focused primarily on providing entrepreneurs a physical space and, at times, financial support for the development of promising business ventures. During the 90s, these incubators developed to incorporate high-value, knowledge-intensive support and would subsequently evolve further to eliminate the provision of rental services, thus focusing entirely on the latter (Pauwels et al., 2016).

While the drastic changes that swept across industries in the advent of the third industrial revolution could be characterized as a tidal wave, the impact of what is frequently referred to as the fourth industrial revolution is more, perhaps, akin to a tsunami. Industry 4.0, a term first used at the Hanover Messe Fair, Germany, in 2011, has seen the emergence and growing importance of the Internet of Things, cloud computing, big data, robotics and artificial intelligence, a wholesale digital transformation of consumption, production, distribution and servicing processes.

In this new economy of immense complexity, as compared to previous iterations of industrial development (Felipe et al., 2012), aspiring entrepreneurs face growing opportunities and challenges in realizing their potential. Research suggests that societies with growing heterogeneity and complexity are associated with an increasing number of niche markets that are likely to spur product innovation (Andersson and Bögenhold, 2021). Simultaneously, increasing product complexity requiring high-level knowledge, specialization and cross-discipline collaboration, as well as fierce competition promoted by global interconnectedness, will create important hurdles for modern entrepreneurs. Concurrently, a novel resource fundamental for the process of innovation is being created as a result of the endless exchange of information in the so-called sharing economy: a new immaterial raw good in the form of knowledge and ideas that could be exploited for productive purposes. In response to this trend, in the recent decade a new model of the incubator, known as the accelerator, has emerged to support yearly-stage technology start-ups. In contrast to the earlier models of the incubator, the accelerator is characterized by intense monitoring, education, knowledge-based guidance and, at times, networking support aimed at promoting rapid progress through the early stages of ideas realization (Pauwels et al., 2016).

The global start-up ecosystem is enormous and growing (Startup Genome, 2020), and is accompanied by an increasing number of accelerators working to support new ventures. But the prospects of survival for start-ups have remained invariably bleak. In the US, the 5-year survival rate of new businesses in the past decades has hovered around 50%, with the 10-year survival rate dropping to below 35% (US Bureau of Labor Statistics, 2020). For start-ups, a subcategory of new businesses that includes enterprises which are innovative, high-risk, scalable and characterized by rapid growth (Santisteban and Mauricio, 2021), the survival rates are significantly more dismal. Recent data from the US, the country that produces the greatest number of successful, highly-valued start-ups also known as unicorns (Rudden, 2021), suggests that the failure rate of start-ups may be even more shocking, potentially as high as 9 out of 10 according to common industry conjecture and sources such as the 2019 Startup Genome Report. Among the most common reasons for failure are the inexistence of a market for the developed product, poor product quality, flawed business model, inappropriate team, competition from incumbents and liquidity or funding shortages (Autopsy, 2021; Insights, 2021). Surely, frequent start-up failure is an inherent result of a necessary and inevitable process of selection, and in and of itself embodies an effective and indispensable learning process for entrepreneurs (Camarda, 2014). Nonetheless, it represents a significant waste of resources, tangible, intangible and financial, particularly when it occurs in later stages of a start-up's life cycle. For example, in a 2012 study, Shikhar Ghosh of Harvard University found that at least three-fourths of venture-backed start-up firms never return investor funds (Nobel, 2011). Beyond such explicit monetary costs, failure clearly implies missed opportunities at creative production.

Accelerating ideas creation for an innovative, sustainable future

Filling in a crucial missing link in the process of business idea creation and realization can be instrumental to increasing the rate of innovation, to improving the success rates of early-stage start-ups and thus to reducing the waste of resources and opportunities which frequent start-up failure embodies. This crucial missing link is represented by the approach to business innovation within the home startup garage, rendered virtually obsolete in the increasingly complex context of Industry 4.0; an important link that the new generation of incubator and accelerators have not been able to fill, as they do not generally participate in the process of ideas creation, but grant access to their resources to entrepreneurs with an existing product proposal, and, furthermore, to only a select few. In the meantime, the need for a new, sustainable paradigm for economic growth becomes ever-more urgent. This, in turn, calls for the emergence of a new generation of skilled and creative entrepreneurs eager to contribute to resolving the massive challenges, such as sustainability, that society faces and will continue to face in the future.

Start-ups are an optimal vehicle for driving the transition towards a sustainable, green economy, inasmuch as start-ups define the products and hence shape the consumer needs of the future. But sustainability-minded innovation is not simple. Innovation for a sustainable future is a complex endeavour (Rauter et al., 2018) that cannot be accomplished by solo sailing of even the most talented and eager home garage-based entrepreneurs, the majority of which have limited support infrastructure at their disposal. In fact, addressing the growing challenges to innovation and sustainability simultaneously requires a significant and unprecedented level of cooperation between various stakeholders, and frequently necessitates the integration of different bodies of complex knowledge, as the NASA/MIT Epic Challenge initiative underscores. Collaboration between industry, aspiring entrepreneurs and universities represents one important step in the right direction.

Startup Ideas Accelerators could potentially play a vital role in substituting the crucial missing link in the process of ideas generation and realization. Furthermore, they would be vital in promoting the much-discussed idea of making the capitalization of knowledge a third mission of universities (Rinaldi et al., 2018) with the goal of transferring academic knowledge to the process of ideas realization. The idea of university-based accelerators is, of course, not new, but the proposed Startup Ideas Accelerator is novel in its design, its focus on the student entrepreneur and its management of the student entrepreneur's potential creativity and ingenuity as a precious resource to process and channel towards productive activity in industry. This contrasts greatly with the traditional model of a university incubator, which either focuses on creating links between university research departments and external start-ups or businesses, or alternatively, acts to encourage entrepreneurial activity as part of the academic curriculum, usually in the isolated context of the business division of the university. While in the first version of the university incubator the student is simply not factored into the equation, in the second, the entrepreneurship program is generally a mere extension of the academic curriculum, and does not aim to be a vital source of ideas realization. However, in the context of today's knowledge-driven, increasingly automated Industry 4.0, creating a vibrant, productive innovation ecosystem in the university context is a way of making the most of both, a vital source of cutting-edge scientific and technological knowledge (Li Sun et al., 2019; Rosli and Rossi, 2016), as well as of the equally essential resource represented by the talent, innate entrepreneurial abilities, and innovative ideas of youth in the process of receiving a formal education. In collaboration with industry, such ecosystems, or 'entrepreneurial universities' (Sharifi et al., 2013) could become a source of indispensable innovation that can be purposefully directed towards the achievement of a well-defined social objective, such as, most notably, environmental sustainability.

The Startup Ideas Accelerator should be comprised of a number of fundamental components. This would include a required academic curriculum that will allow students participating in the SIA program to develop vital entrepreneurial soft and hard skills, thus transferring academic knowledge to the process of idea realization. Availability of physical infrastructure is also fundamental, and should include access to laboratories, a variety of equipment and a physical space for entrepreneurial students to meet and exchange ideas, and for keynote presentations to be held. Other essential requirements are a suitable IT platform for input and evaluation of ideas, calls for needs-resolution from industry partners, call for expertise to promote team-building among entrepreneurial students, as well as matching of students with suitable mentors. Finally, intangible resources in the form of active involvement of internal and external mentors and the engagement of a multitude of industry partners will add enormous value to the process of ideas creation and realization.

Through the implementation of each of the above-mentioned components, the university-based Startup Ideas Accelerator aims to capture a larger pool of entrepreneurial talent and to achieve the following crucial objectives:

1) Create an incentive for promising entrepreneurs to pursue a university degree. The traditional university model is designed to keep undergraduate students engaged in their course of study on a full-time basis, leaving them minimal time to pursue their entrepreneurial vocation. Many are thus forced either to postpone entrepreneurial undertakings until their degree is complete, or to drop out of university entirely (one might mention Steve Jobs, Bill Gates and Mark Zuckerberg). Others still may avoid enrolling in university altogether, so as to pursue their entrepreneurial aspirations. Research shows, however, that the right kind of education is key to entrepreneurial success (Lackeus, 2015). A recent survey of 549 company founders and successful entrepreneurs conducted by a cohort of university researchers found that 95.1 percent of those surveyed held at least a bachelor's degree. Interest in entrepreneurship arouse early in these individuals: more than half of respondents already thought of becoming entrepreneurs during their university years (Wadhwa, 2009). Colloquial evidence can also be cited to support the view that a university education is vital to entrepreneurial success: of the Forbes 30 under 30 young innovators and entrepreneurs profiled in 2012, 14 of the top 15 had attended or graduated from university (Houser, 2014). A general trend of increasing enrolment at university is also an important consideration (Statista, 2021). Higher university enrolment suggests that these institutions 'capture' a larger pool of potential entrepreneurial talent, and would be wise to cater to such students' abilities and ambitions, so as to prevent disillusionment and frustration, and to minimize the dropout rate. University based SIAs would contribute to creating a virtuous cycle: SIAs will satisfy entrepreneurial students' desire to find application for significant amount of theory they encounter over the course of their studies, while the universities that offer expanded opportunities to engage with real-world innovation and ideas application might even benefit from increasing enrolment.

2) Provide the necessary entrepreneurial skills, knowledge and strategy. A significant body of academic research points to the importance of entrepreneurial education as a foundation for successful innovation and emphasizes the growing interest of students around the world in entrepreneurship studies as a way of making a positive social contribution (Lackeus, 2015). Yet many businesspeople lack fundamental soft and hard skills to be successful (Bonnstetter, 2013; Rachapaettayakom et al., 2020; Wadhwa et al., 2009). A solid university education could help to deal with issues that contribute to frequent start-up failure, as previously cited, including poor product quality and flawed business models, and more generally, would contribute to improving entrepreneurs' decision-making and problem-solving abilities. In universities that house Startup Ideas Accelerators, the curriculum content is also likely to evolve to increase focus on subjects and skills of increasing importance in the new economy, such as mathematics, engineering, science, technology, creativity, critical and systems thinking, as well as agility, resilience and flexibility (Manyika et al., 2017).

3) Offer students vital tangible and intangible resources. An essential step towards filling the gap left by the traditional start-up garage involves offering aspiring entrepreneurs tangible and intangible resources to begin the process of idea development and testing. As mentioned previously, the increasing complexity of Industry 4.0 and the growing challenges posed by the need to steer innovation towards the achievement of socially-desirable objectives, such as sustainable growth, has greatly limited the possibility of successfully innovating in the absence of adequate infrastructure and support. While the need for tangible resources, such as physical meeting spaces, laboratories and materials, is obvious, the essential role potentially played by intangible resources should not be ignored. These include an entrepreneurial university culture, an informed and constantly-updated sustainability-focused innovation program, access to innovative research projects and ideas produced by the university's academics, as well as involvement of internal and external faculty members and industry practitioners as program mentors.

4) Motivate aspiring entrepreneurs to begin the process of innovation. The integration of SIAs into the university curriculum and culture will not only allow those aware of their entrepreneurial drive to begin the process of innovation, but is also likely to lead to the discovery of talent through the process of study and application in the context of the entrepreneurship curriculum and SIA activities. Relative to the general population, university students have an overall higher risk tolerance, as they are frequently unconstrained by overwhelming financial or family obligations that dampen risk-seeking behavior (Houser, 2014; Wadhwa et al., 2009). It is essential to positively harness the risk-taking inclination through a structured process of "learning-to-fail" while limiting the scale and fallout of such failure.

5) Teach aspiring entrepreneurs to fail, and fail small. In 2013, the Harvard Business Review published an article by Steve Blank called 'Why the Lean Start-Up Changes Everything" (Blank, 2013). In this article, the author demonstrates the validity of a pioneering model of innovation, which involves starting small, practicing agile development by moving through the process of innovation in iterations, gathering a significant amount of customer feedback and learning from failure. The SIA would be the ideal environment in which to implement this model of innovation. First, teaching of the Lean Start-Up approach should be integrated into the entrepreneurship curriculum. Second, a student entrepreneur's progression through the various stages of the SIA-based innovation process can and should support the application of the Lean Start-Up methodology, by forcing the participant to proceed in iterations, to gather feedback from mentors, industry participants and potential customers, and to fail small in a safe environment with limited repercussions. As Charles Camarda, a NASA astronaut and Senior Advisor for Engineering Development stated, "You have to fail in order to be successful and there are smart ways to fail. So, I try to teach students how to fail smart, fast, small, cheap, early, and often" (Camarda, 2014). Cleverly-designed Startup Ideas Accelerators would be the ideal environment for aspiring entrepreneurs to learn to fail with limited fallout.

6) Create positive collaboration and creative synergies. An 'ineffective team' is one of the most frequently-cited reasons for start-up failure, while an effective team, composed of individuals with a variety of talents and skills and motivated to collaborate effectively, is crucial to successful innovation (Banholzer et al., 2019). SIAs should be designed to create an optimal environment in which to foster the emergence of the latter. Universities generally attract students with a variety of characteristic, such as creativity, intellectual drive, motivation and discipline, that are also key ingredients to entrepreneurial success. They also tend to bring together students from diverse backgrounds, with diverse skills, visions and ideas, and to train these individuals in a variety of disciplines. By offering a common space in which to meet, interact, exchange ideas and create effective teams (via a call-for-expertise mechanism), an SIA fosters fertile ground for entrepreneurial creativity and productivity.

7) Generate productive interaction between entrepreneurial students and industry. Traditional incubators and accelerators usually 'capture' university students when they leave their institution and begin working on their first entrepreneurial idea. By offering university students the chance to try their hand at innovation earlier, and by giving industry access to the best ideas generated in the process, SIAs can help to anticipate the realization of entrepreneurial talent and to spur innovation. In the SIA model, business leaders have the opportunity to provide a call-for-needs-resolution (a business idea in need of development), through a predefined institutional gateway designed to give industry participants access to the SIA platform. Students engaged in the SIA program can adopt and investigate this idea, potentially proposing a solution and developing a prototype. Alternatively, firms can 'tap' the pool of existing ideas at various stages of development available on the SIA IT platform, potentially offering funding or bringing them in-house (creative ideas transfer) for further business development. Likewise, companies can source entrepreneurial talent from among the SIA's students, offering internships or employment opportunities alongside or upon completion of the students' university degrees. Such early-stage interaction and team building contribute to the formation of extensive and heterogeneous professional networks, which, according to successful entrepreneurs themselves, are a fundamental prerequisite for entrepreneurial success (Wadhwa et al., 2009).

Conclusion

In spite of the rapid growth in the number of university-based accelerators across Europe and the Americas, the existence of initiatives that effectively engage students as well as industry partners, while capitalizing on knowledge produced by university research departments, is insufficient. At the same time, it is probable that such ventures are rising in value, given the growing complexity of the modern economy, the increasing importance of sustainability-driven entrepreneurial activity, and the effective extinction of the home garage as a suitable venue for effective innovation practices. This article has argued for the creation of Startup Ideas Accelerators at universities as an effective solution to filling this vacuum. Creating a generation of entrepreneurs with all the prerequisites for success is essential if society is to confront effectively the global challenges of the century. At the same time, moving to a new growth paradigm where innovation and sustainability are intricately linked is becoming a priority of increasing urgency. Extensive collaboration will be necessary to achieve both objectives and Startup Ideas Accelerators should be part of the action plan. Leaders in industry and academia should take initiative to make them an integral element of the university landscape, thus promoting innovation by capitalizing on the abundance of drive, energy, talent, creativity and risk appetite that university students have to offer.

Researchers can contribute by collecting quantitative and qualitative data on university-based accelerator initiatives, thus contributing to elaborating both the theory and practice in the field. Let's remember, the future is always in the hands of the next generation.

References

Andersson, D. E., Bögenhold, D. &Hudik, M. (2021). Entrepreneurship in superdiverse societies and the end of one-fits-all policy prescriptions. *Journal of Entrepreneurship and Public Policy*, ahead-of-print.

Autopsy. (2021). Why Startups fail? A data analysis by autopsy. https://www.getautopsy.com/research/top-startup-failure-reasons

Banholzer, M., Metzeler, F. & Roth, E. (2019). Fielding high-performing innovation teams. *McKinsey & Company Strategy & Corporate Finance Report*. https://www.mckinsey.com/business-functions/strategy-and-corporate-finance/our-insights/fielding-high-performing-innovation-teams

Blank, S. (2013, May). Why the lean start-up changes everything.*Harvard Business Review Magazine*. https://hbr.org/2013/05/why-the-lean-start-up-changes-everything

Bonnstetter, B. J. (2013, April 1). The skills most entrepreneurs lack. *Harvard Business Review*. https://hbr.org/2013/04/the-much-needed-skills-most-en

Buckley, P. & Davis, S. (2018). University-based technology start-up incubators – evaluating their contribution to the co-production of knowledge, innovation and growth. Experience from the Edge. *Industry and Higher Education*, 32(4), 253-268.

Camarda, C. J. (2014, September 3). *A new strategy for improving innovation, education, and complex problem solving* [Conference session]. Siemens PLM Industry Analyst and Media Conference, Boston, Massachusetts, USA.

Camarda, C. J., de Weck, O. & Do, S. (2013, 9-13 June). Innovative conceptual engineering design (ICED): Creativity and innovation in a CDIO-like curriculum [Conference session]. 9th International CDIO Conference, Massachusetts Institute of Technology and Harvard University School of Engineering and Applied Sciences, Cambridge, Massachusetts, USA.

Felipe, J., Kumar, U., Abdon, A. &Bacate, M. (2012). Product complexity and economic development. *Structural Change and Economic Dynamics*, 23(1), 36-68

Startup Genome. (2020). The Global Startup Ecosystem Report. https://startupgenome.com/reports/gser2020

Houser, C. (2014, September 30). Why the university is the ideal startup platform, *WIRED*. https://www.wired.com/insights/2014/02/university-ideal-startup-platform/

CB Insights. (2021, August 3). The top 12 reasons startups fail. *CB Insights Research Brief*. https://www.cbinsights.com/research/startup-failure-reasons-top/

Lackeus, M. (2015). Entrepreneurship in education: What, why, when, how. *Organization for Economic Cooperation and Development*. https://www.oecd.org/cfe/leed/BGP_Entrepreneurship-in-Education.pdf

Li Sun, S., Zhang, Y., Cao, Y., Dong, J. & Cantwell, J. (2019). Enriching innovation ecosystems: The role of government in a university science park. *Global Transitions*, 1, 104-119.

Manyika, J., Chui, M., Miremadi, M., Bughin, J., George, K., Willmott, P. &Dewhurst, M. (2017, January 12). A Future that works: Automation, employment, and productivity. *McKinsey Global Institute Report*. https://www.mckinsey.com/featured-insights/digital-disruption/harnessing-automation-for-a-future-that-works

Nobel, C. (2011, December 9). Why companies fail - and how their founders can bounce back. *Harvard Business School Working Knowledge*. https://hbswk.hbs.edu/item/why-companies-failand-how-their-founders-can-bounce-back

Pauwels, C., Clarysse, B., Wright, M. & Van Hove, J. (2016). Understanding a new generation incubation model: The accelerator. *Technovation*, 50-51, 13-24.

Rachapaettayakom, P., Wiriyapinit, M., Cooharojananone, N., Tanthanongsakkun, S.&Charoenruk, N. (2020). The Need for Financial Knowledge Acquisition Tools and Technology by Small Business

Entrepreneurs. *Journal of Innovation and Entrepreneurship*, 9(25), 1-28. https://doi.org/10.1186/s13731-020-00136-2

Rauter, R., Globocnik, D., Perl-Vorback, E., &Baumgartner, R. (2018). Open Innovation and Its Effects on Economic and Sustainability Innovation Performance. *Journal of Innovation & Knowledge*, 4, 226-233.

Rosli, A. & Rossi, F. (2016). Third-mission policy goals and incentives from performace-based funding: Are they aligned? *Research Evaluation*, 25(4), 427-441.

Rudden, J. (2021, August 3). Global startups - statistics & facts, *Statista*. https://www.statista.com/topics/4733/startups-worldwide/

Santisteban, J. & Mauricio, D. (2021). Critical success factors for technology-based startups. *International Journal of Entrepreneurship and Small Business*, 42(4), 397-421.

Sharifi, H., Weisheng, L. & Ismail, H. (2013). Higher education system and the 'open' knowledge transfer: a view from perception of senior managers at university knowledge transfer offices. *Studies in Higher Education*, 39(10), 1860-1884.

Stal, E., Andreassi, T., &Fujino, A. (2016). The role of university incubators in stimulating academic entrepreneurship. *RAI Revista de Administração e Inovação*, 13, 89-98.

Statista. (2021). *College enrollment in public and private institutions in the U.S. 1965-2029*. https://www.statista.com/statistics/183995/us-college-enrollment-and-projections-in-public-and-private-institutions/

U.S. Bureau of Labor Statistics. (2020). *Table 7: Survival of private sector establishments by opening year*. https://www.bls.gov/bdm/us_age_naics_00_table7.txt

Vu, M. (2013, June 21). Educators: Learn from three universities that create and train entrepreneurs. *The 3 Day Startup Blog*. https://3daystartup.wordpress.com/2013/06/21/educators-learn-from-3-universities-that-create-and-train-entrepreneurs/

Wadhwa, V., Aggarwal, R. Holly K. &Salkever, A. (2009, July 7). Anatomy of an Entrepreneur: Family Background and Motivation, Kauffman Foundation Small Research Projects Research. https://ssrn.com/abstract=1431263