Check for updates

OPEN LETTER

When science meets entrepreneurship

[version 1; peer review: 2 approved, 2 approved with reservations]

Dara Satrio[1], Vanessa Rijkeboer[2], Angelica Reitsma[1], Edo Roos Lindgreen[2], Katja C. Wolthers[1], Dasja Pajkrt[1]

[1]Academic Medical Center of the University of Amsterdam, Amsterdam, The Netherlands
[2]Department of Economics and Business Administration, University of Amsterdam, Amsterdam, The Netherlands

v1 **First published:** 13 Jan 2023, **3**:9
https://doi.org/10.12688/openreseurope.15318.1
Latest published: 13 Jan 2023, **3**:9
https://doi.org/10.12688/openreseurope.15318.1

Abstract

Science industries, such as the health and medical industry, are experiencing increases in competition regarding commercializing, patenting, and funding of scientific outputs. As such, scientists are facing increased expectation to engage in academic entrepreneurship. OrganoVIR (Organoids for Virus Research) is a Horizon2020 Innovative Training Network (ITN) that aims to train Early Stage Researchers (ESRs) to lead innovation in the field of human organoids for virus research. To assist them in this process, OrganoVIR introduced a pre-Master of Business Administration program that introduced OrganoVIR's ESRs to the tools and knowledge necessary to navigate the competitive industry. In this article, we describe this innovative pre-Master of Business Administration program and highlight the importance as well as the need for having a pre-Master of Business Administration programs in a scientific training network.

Keywords

Early Stage Researchers, Scientists, pre-MBA program, Innovative Training Network, Researchers.

Open Peer Review

Approval Status ✓ ? ✓ ?

	1	2	3	4
version 1 13 Jan 2023	✓ view	? view	✓ view	? view

1. **James Dzisah**, University of Ghana, Accra, Ghana
2. **Danny Soetanto**, Lancaster University Management School, Lancaster, UK
3. **Noorlizawati Abd Rahim**, Universiti Teknologi Malaysia, Kuala Lumpur, Malaysia
4. **Sila Kaya-Capocci**, Agri Ibrahim Cecen University, Ağrı, Eastern Anatolia, Turkey

Any reports and responses or comments on the article can be found at the end of the article.

This article is included in the Marie-Sklodowska-Curie Actions (MSCA) gateway.

This article is included in the Horizon 2020 gateway.



This article is included in the Economics and Business gateway.



This article is included in the Research on Research gateway.

Corresponding author: Dara Satrio (d.satrio@amsterdamumc.nl)

Author roles: Satrio D: Project Administration, Writing – Original Draft Preparation; **Rijkeboer V**: Resources, Writing – Review & Editing; **Reitsma A**: Project Administration, Writing – Review & Editing; **Lindgreen ER**: Resources, Writing – Review & Editing; **Wolthers KC**: Conceptualization, Supervision, Validation, Writing – Review & Editing; **Pajkrt D**: Conceptualization, Supervision, Validation, Writing – Review & Editing

Competing interests: Vanessa Rijkeboer and Edo Roos Lindgreen, co-authors of this essay, are affiliated with the Amsterdam Business School and were responsible for coordinating the OrganoVIR pre-MBA programme. Vanessa Rijkeboer and Edo Roos Lindgreen have no connections with organizations who will gain or lose financially from the online listing of this work. Vanessa Rijkeboer and Edo Roos Lindgreen are not applying for any patents. Neither of them has received fees for patent related content. Vanessa Rijkeboer and Edo Roos Lindgreen have not co-authored a paper with any of the authors of the paper in question in the past three years.

Grant information: This project has received funding from the European Union's Horizon 2020 research and innovation programme under the Marie Skłodowska-Curie grant agreement No 812673.

Copyright: © 2023 Satrio D *et al*. This is an open access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

How to cite this article: Satrio D, Rijkeboer V, Reitsma A *et al.* **When science meets entrepreneurship [version 1; peer review: 2 approved, 2 approved with reservations]** Open Research Europe 2023, **3**:9 https://doi.org/10.12688/openreseurope.15318.1

First published: 13 Jan 2023, **3**:9 https://doi.org/10.12688/openreseurope.15318.1

Disclaimer

The views expressed in this article are those of the author(s). Publication in Open Research Europe does not imply endorsement of the European Commission.

Plain language summary

The science industry is arguably one of the most competitive industries in the world. Nowadays, scientists are competing to commercialize, patent their research and obtain funding for future research. OrganoVIR, a Horizon2020 Innovative Training Network (ITN) under the EU Horizon 2020 research program, trains 15 Early Stage researchers (ESRs) to lead innovation in the field of human organoids for virology in Europe. Through one of its training programs, the innovative OrganoVIR pre-Master of Business Administration program aims to introduce the next generation of scientists to the European labour market. The implementation of this program marked the first time that a pre-Master of Business Administration (pre-MBA) program was successfully incorporated in a scientific training network. The OrganoVIR pre-MBA program is curated through collaboration with the Amsterdam Business School in the Netherlands. The program consisted of five modules: Process Improvement in Healthcare, Competitive Strategy, Marketing Strategy, Crisis Management, Navigating Life in Pharma Organizations and Writing a Business Plan. With this article, we aim to demonstrate the importance of integrating a pre-MBA program into a scientific ITN. Furthermore, we would like to encourage other ITNs operating within the science industry to also integrate a pre-MBA program into their scientific training program.

Introduction

OrganoVIR (Organoids for Virus Research), coordinated by Dr. Katja Wolthers and Prof. Dr. Dasja Pajkrt, is a Horizon2020 Innovative Training Network (ITN) under the EU Horizon 2020 research program. OrganoVIR aims to make human organoids a superior model for virus research and to transform the virology landscape.

OrganoVIR trains 15 Early Stage Researchers (ESRs) to lead innovation in the field of human organoids for virology in Europe. The OrganoVIR training program consists of three pillars that build up scientific, human and business skills for applying organoids for virus research. The three training pillars will enable the ESRs to lead innovation in the field of organoids for virus research and to hold a unique position within the European labour market.

Within OrganoVIR, scientific academic skills are being translated through peer-reviewed scientific publications. Furthermore, the training on human skills is provided by a unique personal development plan (PDP) which was previously reported in *Humanizing Science: seven actions for PhD students to become next generation, future-proof scientist* (Valks *et al.*, 2022). Moreover, the business competences are provided by the OrganoVIR pre-Master of Business Administration (pre-MBA) programme. The pre-MBA aims to train ESRs in entrepreneurial and managerial skills, as most young researchers end up working in a commercial setting.

Today, scientists are becoming more proactive in commercializing their research results through patenting, licensing, consulting, and firm founding (Krabel & Mueller, 2009). Since the Bayh-Doyle Act[1] was passed in 1980 in the United States of America (U.S.), there has been an apparent increase in the commercialization of science (Siegel & Wright, 2015). In the following years, there was a noticeable surge in university licensing, patenting and start-up creation in the USA which could also be seen in Europe and Asia, Australia, and Canada (Grimaldi *et al.*, 2011). Due to the competition, academic scientists, including faculty, postdoctoral fellows (postdocs), and graduate students are facing increasing expectations to engage in academic entrepreneurship (Siegel & Wright, 2015).

Currently, no scientific training network has implemented a pre-MBA as part of its training program. However, upon designing the OrganoVIR project, Wolthers and Pajkrt recognized that a pre-MBA program is needed to equip OrganoVIR's ESRs with knowledge of entrepreneurship and business analytics. The OrganoVIR pre-MBA program, a training program that was curated through collaboration with the Amsterdam Business School in the Netherlands, was implemented into the OrganoVIR training program to deliver next-generation scientists to the competitive labour market.

The OrganoVIR pre-MBA program has a different training purpose compared to the OrganoVIR PDP. In a previous study about the OrganoVIR PDP (Valks *et al.*, 2022), we highlighted how the latter focuses on training the *human skills* of the ESRs by focusing on topics such as: 1) well-being; 2) purpose in life; 3) identity; 4) values and beliefs; 5) emotional competences; 6) leadership behaviour; and 7) ethical dilemmas. The OrganoVIR pre-MBA programme focuses on the education of OrganoVIR's ESRs with the aim to equip them with entrepreneurial and business analytic skills. This way, this next generation of scientists will be able to operate within commercial settings. The pre-MBA program consists of the following modules: 1) Process Improvement in Healthcare, 2) Competitive Strategy, 3) Marketing Strategy, 4) Crisis Management and Navigating Life in Pharma Organizations and 5) Writing a Business Plan.

In this article, we aim to describe the various modules of the OrganoVIR pre-MBA program and highlight the importance as well as the need for having a pre-MBA program in a scientific training network.

[1] The Bayh-Dole Act, formerly known as the Patent and Trademark Act Amendments, is a federal law that was introduced in 1980 that enables universities, non-profit research institutions and small businesses to own, patent and commercialize inventions developed under federally funded research programs within their organizations.

Process improvement in healthcare

The OrganoVIR pre-MBA program began with the first module, Process Improvement in Healthcare. Managing a business involves identifying, analyzing and developing improvement opportunities in processes and the organization. To stand out in the European labour market, our ESRs will need to develop professional skills in problem analysis, problem-solving and decision-making.

Within this module, OrganoVIR's ESRs were trained in the following skills; increasing the ability to manage business improvement in the form of a project, dealing with the political force field in which such projects take place, rational problem solving and decision analysis, using quantitative analysis and decision techniques, applying the principles of the Lean Six Sigma.

The Lean Six Sigma, a structure for organizing improvement activities, incorporates the most effective approaches which offer a structure to establish an effective and continuous improvement (De Mast *et al.*, 2015). In this module, OrganoVIR's ESRs learn to solve problems by using their professional, science-like skills. OrganoVIR's ESRs were guided to analyse the causes of problems, understand quantitative problem definitions and perform data-based diagnoses.

The methodological principles underlying Lean Six Sigma were integrated with a collection of tools and techniques into one roadmap, called DMAIC (Define, Measure, Analyse, Improve, and Control). Each lecture focuses on the different tools and techniques of Lean Six Sigma. Additionally, topics regarding the organization of process improvement were discussed including; organizational structure, project management, deployment, political force field, and managing resistance.

Competitive strategy

The science industry is competitive regarding influence, faculty positions, funding, publications, and students (Bok, 2003). Over the years, numerous processes, theories and tools have been developed to help organizations compete successfully. This results in two outcomes; 1) a traditional strategic approach that relies on analysis and planning and 2) an alternative approach that relies on creativity, learning, co-creation, and design.

This module revolved around two questions. First, "why do some organizations have advantages over their competitors?" and second, "What can managers do to build and maintain such competitive advantages?". To answer these questions, the module introduced topics such as planned and emergent strategy, strategy process (activating, mapping, assessing, innovating and formulating), and the difference between inside-out and outside-in approaches to strategy.

Through interactive sessions in this module, OrganoVIR's ESRs answered the two questions by learning to apply strategic processes, theories and tools to their own case study. In essence, during this module the ESRs learned the following: 1) how strategy, competition, value creation and value capturing drive the performance of organizations; 2) the main processes, theories and tools of competitive strategy; 3) the main strengths and weaknesses of these processes, theories and tools; 4) how to diagnose strategy issues in case-based and real-life organizations; 5) utilise the processes, theories and tools in order to improve the strategy of case-based and real-life organizations.

Marketing strategy

The healthcare industry is constantly transitioning. In this phase of transition in the industry, the role of marketing strategy is changing as well. Although traditional marketing focused on identifying the market, customer segment, and products, it is also important to make a difference and to attract customers and patients with an appealing value proposition. Currently, marketing involves understanding customer behaviour and their emotional needs, providing a compelling service that is equivalent to valuable experience and designing a go-to-market strategy.

In the Marketing Strategy module, OrganoVIR's ESRs learned to: 1) recall and recognize the marketing frameworks, ideas and principles; 2) comprehend and translate the marketing and behaviour frameworks to a business and healthcare challenge; 3) select and synthesize the best marketing strategy tools and tactics to tackle a patient, product, service; 4) evaluate and translate perspectives from other industries to healthcare; 5) apply knowledge of marketing strategy, innovation and behaviour.

This module provided the knowledge and the skills to analyze, design and execute a marketing strategy. Within the course, several practical marketing strategy topics were addressed including: 1) patient-driven marketing; 2) design value proposition and (digital) healthcare services on the patient journey; 3) innovation in care – digital care services and innovation; 4) purpose-led marketing; 5) building brands in healthcare, brand experience and equity.

Crisis management

Every healthcare industry encounters a crisis at some point. During a crisis, organizations temporarily go "out of control". Crisis management offers an alternative and makes it possible for an organization to maintain control during a crisis.

The first masterclass in the Crisis Management module focused on crises and the core principles of crisis management. In this masterclass, the ESRs became acquainted with various crises they might face and how to prepare for a crisis. Questions such as "how to diagnose a crisis?", "what are the main challenges in crisis management?", "how does a crisis impact an organization" and "how to prepare for a crisis?" were addressed in this masterclass.

In the second masterclass of this module, the ESRs learned how to manage a crisis. Focusing on creating ownership and

leadership, the ESRs were introduced to the core aspects of the Crisis Management Model and the key characteristics of great crisis leaders. Furthermore, the ESRs became acquainted with an effective crisis meeting approach and experienced the dynamics of a crisis during a brief crisis simulation. This masterclass addressed questions such as "how do you manage a crisis?", "which leadership skills are needed during a crisis?" and "how to make quick and well-considered decisions?".

Navigating life in pharma organizations

The pharmaceutical industry is a rapidly growing landscape. In the U.S. alone, pharmaceutical industries develop a variety of expensive new drugs every year which contribute to an increase in healthcare costs for the private sector and the federal government (Congressional Budget Office, 2021). The increase in scientific breakthroughs may create opportunities for pharma organizations, the intensifying competition also means that these organizations must focus on meeting the needs of patients and create a sense of personalization to keep their products in the market (Aronowitz *et al*., 2022).

To help our ESRs navigate their lives through the commercial pharmaceutical industry, we began this module with the first masterclass which focused on the research and development (R&D) aspect of pharmaceutical organizations. This masterclass explored the history of the pharmaceutical industry and the pharmaceutical innovation process. During this masterclass, the ESRs learned to diagnose R&D inefficiency and potential remedies, rethink the innovation process and have discussions about existing innovation processes in healthcare.

The second masterclass focused on the landscape of the pharmaceutical industry, inter-organizational collaboration and entrepreneurship. OrganoVIR's ESRs learned the importance of collaboration between in-house and external R&D, the role of small and medium-sized organizations in the biotech industry, types of collaborations in the pharma industry, and funding opportunities for entrepreneurs. Topics such as the Stage-Gate process[2], its implementation in the development of medical devices, and innovation in healthcare were discussed.

The third masterclass focused on social value creation, ethics, and sustainability. The masterclass began with an introduction to ethical theories and ethical dilemmas in healthcare. Ethics does not refer to ethical guidelines, but more to the philosophical questions about ethics in healthcare practices (for example, who to treat first?). Furthermore, OrganoVIR's ESRs learned how the Sustainable Development Goals (SDGs) affect the healthcare landscape, the difference between social value and financial value in healthcare, and the role of patients in the healthcare innovation process.

Writing a business plan

To conclude the OrganoVIR pre-MBA program, the last module focused on writing a business plan. Although writing a successful business plan can be stimulating, it can also be challenging and requires knowledge of several entrepreneurship concepts and steps. The final module introduced the basic principles of entrepreneurship and the main tools that can be used to set up a new company and write a business plan.

Upon completion of this module, we found that our ESRs were able to identify and delineate the fundamental steps in the creation of a new company, from idea generation to financing. Furthermore, our ESRs learned to develop an effective business model and business plan for the new development of a new company. Finally, we also found that our ESRs were able to collaborate in a team when developing their business.

Conclusions and recommendations

The scientific industry is competitive. In this article, we have addressed how the global competition for university licensing, patenting and creation of start-up companies have increased since the Patent and Trademark act was introduced in 1980. OrganoVIR understands that implementing the pre-MBA program into a scientific training program will guide the next generation of researchers to become leading entrepreneurs in the science industry. Through the pre-MBA program, OrganoVIR's ESRs were trained in the skills involved in managing a business such as developing competitive and marketing strategies, navigating through crisis and organizations and writing a business plan. We believe that in order to excel in the competitive labour market, the next generation of scientists must not only be trained in science but also in human skills and entrepreneurial skills. Hence, with this article, we encourage other scientific training networks to also implement a pre-MBA program as part of their training program.

Data availability

No data are associated with this article.

Acknowledgments

We would like to thank all ESRs of OrganoVIR for their trust and engagement in the OrganoVIR Pre-MBA program: Emilia Barreto Durán, Asli Aybike Doğan, Igor Lopes Coqueiro, Georgios Stroulios, Louisa Wallace, Laurensius Kevin Lie, Inés García Rodríguez, Giulia Moreni, Thuc Nguyen Dan Do, Fatma Masmoudi, Nânci Ferreira, Louise Bondeelle, Andrew J. Barnhart and Ciro Esposito.

[2] *State-Gate Process* is a conceptual and operational map for moving new product projects from "idea" stage to launch. It is the blueprint for managing the new product development (NPD) process.

References

Aronowitz S, Bleys J, Fleming E, *et al.*: **Transforming Biopharma R&D at scale.** McKinsey & Company. 2022; Retrieved October 13, 2022.
Reference Source

Bok D: **Universities in the marketplace: The commercialization of higher education.** Princeton: Princeton University Press. 2003.
Reference Source

Congressional Budget Office: (rep.). **Research and Development in the Pharmaceutical Industry**. 2021.
Reference Source

Grimaldi R, Kenney M, Siegel DS, *et al.*: **30 years after Bayh-Dole: reassessing academic entrepreneurship.** *Research Policy.* 2011; **40**(8): 1045–1057.
Publisher Full Text

Krabel S, Mueller P: **What drives scientists to start their own company?: An empirical investigation of Max Planck Society scientists.** *Research Policy.* 2009; **38**(6): 947–956.
Publisher Full Text

Mast de J, Does RJMM, Koning de H: **Lean Six Sigma for Service and Healthcare.** *Develop Neuropsychol.* 2006.
Reference Source

Valks I, Satrio D, Reitsma A, *et al.*: **Humanizing science: seven actions for PhD students to become next generation, future-proof scientists.** *Opean Research Europe.* 2022.
Publisher Full Text

Siegel DS, Wright M: **Academic Entrepreneurship: Time for a Rethink?** *British Journal of Management.* 2015; **26**(4): 582–595.
Publisher Full Text

Open Peer Review

Current Peer Review Status: ✔ ? ✔ ?

Version 1

Reviewer Report 18 September 2023

https://doi.org/10.21956/openreseurope.16560.r34068

© **2023 Kaya-Capocci S.** This is an open access peer review report distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

?

Sila Kaya-Capocci
Agri Ibrahim Cecen University, Ağrı, Eastern Anatolia, Turkey

The research aimed to aims to train Early Stage Researchers (ESRs) as part of a Horizon 2020 project to lead innovation in the field of human organoids for virus research. The research sounds interesting but needs clarifications and literature support. Some parts do not flow well due to the unclear links and the jumps between general and specific information. A funnel model should be adapted moving from general to specific information. A clear structure is recommended in the pdf attached.

The developed pre-MBA programme includes five modules. However, rationalisation of the modules based on the current research is not enough. In each module, the need and the importance should be highlighted more in the light of the current research. In each module, the strategies used to reach the learning outcomes are not clearly stated. Currently, if I want to develop and implement a module based on this research, I am not sure how I should structure the module, what skills I should focus on and what strategies I should use, how long the modules should be or how many masterclasses the module should include. Therefore, I do not have a clear guideline. Furthermore:

- Three types of skill sets are mentioned in the introduction (scientific academic, human, and business). Can you please introduce what skills are focused in each module?

- I recommend adding a sentence at the end of each section introducing the activities applied in each module. Currently, the aims of the modules are clear but how it is targeted to be achieved (methods/strategies/approaches) is vague. These would really benefit the audience.

- To increase the validity and reliability, how the researchers know the learning was improved should be clarified, and the details mentioned above should be provided.

Further details about the comments and recommendations can be found on the pdf document attached here.

When the parts are clarified a bit more and enriched with recent references, the research is worth

reading. I believe the research can contribute to the field.

Is the rationale for the Open Letter provided in sufficient detail? (Please consider whether existing challenges in the field are outlined clearly and whether the purpose of the letter is explained)
Yes

Does the article adequately reference differing views and opinions?
Partly

Are all factual statements correct, and are statements and arguments made adequately supported by citations?
Partly

Is the Open Letter written in accessible language? (Please consider whether all subject-specific terms, concepts and abbreviations are explained)
Yes

Where applicable, are recommendations and next steps explained clearly for others to follow? (Please consider whether others in the research community would be able to implement guidelines or recommendations and/or constructively engage in the debate)
No

Competing Interests: No competing interests were disclosed.

Reviewer Expertise: My area of expertise includes STEM and enterprise education.

I confirm that I have read this submission and believe that I have an appropriate level of expertise to confirm that it is of an acceptable scientific standard, however I have significant reservations, as outlined above.

Reviewer Report 18 September 2023

https://doi.org/10.21956/openreseurope.16560.r34610

© 2023 Rahim N. This is an open access peer review report distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

Noorlizawati Abd Rahim
Razak Faculty of Technology and Informatics, Universiti Teknologi Malaysia, Kuala Lumpur, Kuala Lumpur, Malaysia

Summary:
The article discusses the OrganoVIR (Organoids for Virus Research) program, a Horizon2020

Innovative Training Network (ITN) that aims to train Early Stage Researchers (ESRs) in the field of human organoids for virus research. The focus is on the introduction of a pre-Master of Business Administration (pre-MBA) program within OrganoVIR to equip ESRs with entrepreneurial and managerial skills, acknowledging the increasing expectation for scientists to engage in academic entrepreneurship. The program is unique in its approach, as no other scientific training network has implemented a pre-MBA as part of its training. The pre-MBA program consists of five modules: Process Improvement in Healthcare, Competitive Strategy, Marketing Strategy, Crisis Management, and Navigating Life in Pharma Organizations. Additionally, a module on Writing a Business Plan concludes the program. Each module aims to provide ESRs with practical skills and knowledge needed to excel in commercial settings.

Recommendations

1. While the article provides a comprehensive overview of the pre-MBA program, it could benefit from including concrete outcomes or success stories of ESRs who have completed the program. Providing data on how the program has benefited participants and their subsequent careers would strengthen the article's argument for the importance of pre-MBA programs.

2. To further emphasize the uniqueness and effectiveness of the OrganoVIR pre-MBA program, the authors could compare it to alternative approaches or models for training scientists in entrepreneurship. This could include discussing the strengths and weaknesses of different approaches and why the pre-MBA model was chosen.

3. The article acknowledges the need for pre-MBA programs but does not directly address potential criticisms or concerns. For a more balanced perspective, the authors could discuss any drawbacks or challenges associated with integrating business education into scientific training and propose strategies to mitigate these issues.

Is the rationale for the Open Letter provided in sufficient detail? (Please consider whether existing challenges in the field are outlined clearly and whether the purpose of the letter is explained)

Yes

Does the article adequately reference differing views and opinions?

Partly

Are all factual statements correct, and are statements and arguments made adequately supported by citations?

Yes

Is the Open Letter written in accessible language? (Please consider whether all subject-specific terms, concepts and abbreviations are explained)

Yes

Where applicable, are recommendations and next steps explained clearly for others to follow? (Please consider whether others in the research community would be able to implement guidelines or recommendations and/or constructively engage in the debate)

Partly

Competing Interests: No competing interests were disclosed.

Reviewer Expertise: academic/technology entrepreneurship, entrepreneurial leadership, entrepreneurship education

I confirm that I have read this submission and believe that I have an appropriate level of expertise to confirm that it is of an acceptable scientific standard.

Reviewer Report 08 September 2023

https://doi.org/10.21956/openreseurope.16560.r34609

© 2023 Soetanto D. This is an open access peer review report distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

?

Danny Soetanto
Lancaster University Management School, Lancaster, UK

I appreciate the privilege of reviewing the submission titled 'When Science Meets Entrepreneurship' and would like to extend my gratitude for this opportunity. This paper delves into the compelling intersection of science and entrepreneurship, with a specific focus on the induction of an entrepreneurship curriculum for Early-Stage Researchers (ESRs). While the paper contains valuable insights, I believe there is potential for further enhancement to truly elevate its impact and contribution to the field. In this feedback, I aim to provide constructive suggestions and insights to help refine and strengthen the paper.

First, I believe the paper could benefit from greater clarity regarding its research questions and the contributions it aims to offer. Clarifying how this paper fills gaps in existing knowledge would enhance its overall contribution. It would be nice if there is a clear explanation how the current programme addresses the challenges faced by academic scientists. Alternatively, if the authors could devote more attention to identifying current debates in entrepreneurship education for scientists and explaining how the newly designed pre-MBA modules can address these challenges, the paper would undoubtedly provide greater value.

Another avenue to strengthen the paper's contribution is by introducing novelty. While I agree with the paper's assertion that introducing entrepreneurship to pre-MBA courses is relatively new, it is worth noting that entrepreneurship is already a common skill taught in many MBA programs and training courses for academic entrepreneurship. Given the shortage of entrepreneurship skills and knowledge among scientists, coupled with a growing emphasis on knowledge commercialization in Europe, numerous initiatives have emerged to enrich and expand the entrepreneurship capabilities of researchers, academics, and scientists. I believe it is crucial to distinguish this program from previous or existing initiatives. Also it would be advantageous to highlight the uniqueness of the proposed program within this broader context, such as its relevance to the Organovir project.

Once the research objectives are well-established, the next step is to find a theoretical framework that can serve as the foundation for the curriculum design. This does not necessarily mean the authors must find pedagogical theories to support the design, but they can explain the rationale behind selecting particular modules contents. Since the pre-MBA program includes modules such as "Process Improvement in Healthcare," "Marketing," and "Navigating Life," it would be highly informative to understand the rationale behind the development of these modules and how they integrate within the entrepreneurial narrative of the program. Moreover, the section on "Writing a Business Plan" deserves more in-depth explanation. Entrepreneurship pedagogy has evolved significantly over the past few decades, with various contemporary approaches that go beyond mere business plan writing. I am confident that this module incorporates unique approaches or contextual elements that are worth showcasing.

Regarding the conclusion, it would be valuable to include an evaluation of the program and provide recommendations. As far as I can discern, there have been no significant breakthroughs in teaching entrepreneurship to scientists in general. Therefore, if this pre-MBA program has specific measurable criteria or successful stories, it would be worthwhile to mention them in this section.

Finally, the introduction appears somewhat lengthy compared to the overall content. A more concise introduction that clearly communicates the research objectives, reasons for conducting the research, and the intended contributions of the paper would be preferable.

Is the rationale for the Open Letter provided in sufficient detail? (Please consider whether existing challenges in the field are outlined clearly and whether the purpose of the letter is explained)
Partly

Does the article adequately reference differing views and opinions?
Partly

Are all factual statements correct, and are statements and arguments made adequately supported by citations?
Yes

Is the Open Letter written in accessible language? (Please consider whether all subject-specific terms, concepts and abbreviations are explained)
Yes

Where applicable, are recommendations and next steps explained clearly for others to follow? (Please consider whether others in the research community would be able to implement guidelines or recommendations and/or constructively engage in the debate)
Partly

Competing Interests: No competing interests were disclosed.

Reviewer Expertise: Entrepreneurship, Academic entrepreneurship.

I confirm that I have read this submission and believe that I have an appropriate level of expertise to confirm that it is of an acceptable scientific standard, however I have significant reservations, as outlined above.

Reviewer Report 22 August 2023

https://doi.org/10.21956/openreseurope.16560.r34074

© 2023 Dzisah J. This is an open access peer review report distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

James Dzisah
University of Ghana, Accra, Greater Accra Region, Ghana

This brief article describes the ongoing attempts by various policymakers to bridge the gap between knowledge discovery and application. It follows the Edinburgh-Standford link which was directed at harnessing the entrepreneurial and innovation ecosystem of the Silicon Valley experts through collaborative research linkages with their Scottish counterparts.

In broad strokes, the paper describes a variant of the quest to embed business skills in research practices of early career scientists. The novelty here is the introduction of pre-MBA program to anchor the scientific training networks.

Though very promising, as the pre-MBA program practicalizes 'science-business', it remains to be seen how the transition from pre-MBA to actual practice works for the early scientists. In spite of this reservation, this paper provides a translatable approach that is likely to become a cost effective model, compared to the integration of a fully-fledged MBA masterclass model, to moving knowledge to the marketplace.

Is the rationale for the Open Letter provided in sufficient detail? (Please consider whether existing challenges in the field are outlined clearly and whether the purpose of the letter is explained)
Yes

Does the article adequately reference differing views and opinions?
Yes

Are all factual statements correct, and are statements and arguments made adequately supported by citations?
Yes

Is the Open Letter written in accessible language? (Please consider whether all subject-specific terms, concepts and abbreviations are explained)

Yes

Where applicable, are recommendations and next steps explained clearly for others to follow? (Please consider whether others in the research community would be able to implement guidelines or recommendations and/or constructively engage in the debate)
Yes

Competing Interests: No competing interests were disclosed.

Reviewer Expertise: Triple Helix, Globalisation and Innovation Policy, Public Policy, Sociology of Science and Knowledge

I confirm that I have read this submission and believe that I have an appropriate level of expertise to confirm that it is of an acceptable scientific standard.