Enhancing Strategic Partnerships in Higher Education: Developing and Implementing a Predictive Model

Georgios Eftychiou, MBA
Humber Polytechnic

Innovation Spotlights extremely brief contributions that highlight an innovative teaching practice, approach, or tool, and provide accompanying evidence that speaks to the effectiveness of the innovation.

Abstract
The Predictive Strategic-Fit Model (PSFM) represents a transformative approach to forging successful industry-academia collaborations. It offers higher education institutions, like Humber Polytechnic, a systematic, data-driven framework to assess potential partnerships by aligning institutional goals with industry capabilities. The model operates through a dual-sided analysis: the Demand Side, which focuses on value creation, revenue diversification, and systems leadership, and the Supply Side, which evaluates a partner's attributes, such as financial health, relevance, and existing relationships. By combining Subjective Evaluative Judgments (SEJs) and objective data, the PSFM ensures a balanced, evidence-based approach to decision-making. The model's integration into a web application enhances accessibility and scalability, providing users with actionable insights through an intuitive interface. This digital platform is designed to evolve, incorporating future advancements in machine learning and data analysis to further optimize partnership evaluations. While the PSFM offers new opportunities for strategic alignment, it also supports long-term, multi-faceted collaborations by addressing the untapped potential within the vast amount of underutilized data available to institutions. The PSFM complements traditional methods of relationship-building, providing a structured way to prioritize and assess partnerships.

Introduction

To explore the importance of strategic partnerships between academia and industry (often referred to in the literature as University-Industry, U-I relationship), it's essential to understand the mutual benefits these collaborations foster. These benefits include driving innovation, enhancing the student experience, and promoting economic growth (Bishop et al., 2011; D'Este et al., 2013; Rasmussen and Wright, 2015). These partnerships often are the source of new entrepreneurial ventures, elevate the quality and create new educational programs, and bridge the gap between theoretical knowledge and practical application. However, forming and sustaining these collaborations presents challenges, including

aligning diverse objectives and expectations, ensuring effective communication, and in some cases also managing intellectual property rights (Fang He et al., 2021).

The research objective focuses on developing a deeper understanding of how Strategic Fit between Post-Secondary Institutions and industry partners can be systematically assessed and enhanced through a predictive model. This involves identifying the factors that contribute to successful partnerships and the barriers that may hinder them, as well as highlighting the interrelationships between these factors, acknowledging their institution-specific nature. A future step in this research could be to determine how the PSFM can improve the formation and sustainability of these critical collaborations.

Existing literature portrays an ever-increasing need for academia and industry to collaborate (Evans et al., 2023). In the broader academic discourse on strategic partnerships, key themes have emerged, such as the direct and indirect benefits of these collaborations to both academia and industry (Frølund et al., 2018). These include accelerating research and development, enhancing the employability of graduates, and fostering innovation ecosystems. However, there's a recognized gap in the systematic approach to evaluating potential partnerships' strategic fit, an area where the Strategic-Fit Model aims to contribute significantly. By offering a structured framework to assess and predict the success of potential collaborations, the model addresses a crucial need in the strategic partnership discourse.

The initiative to bring the PSFM to life through an online platform embodies a pioneering approach to enhancing academia-industry collaborations. Aimed at scalability, the project is meticulously designed to accommodate future enhancements, such as advanced data analysis and machine learning features. The platform promises to streamline the partnership evaluation process, offering a user-friendly interface that simplifies complex analyses into actionable insights. This digital embodiment of the model not only facilitates the systematic identification of strategic partners but also opens avenues for data-driven decision-making in academic settings.

Concluding, the PSFM aims to become a beacon in the evolving landscape of academia-industry partnerships, addressing the critical gap in strategic alignment

assessments. Starting with Humber Polytechnic's partnerships environment and integrating a robust analytical framework with the accessibility of a digital platform, it paves the way for a new process of decision-making and strategy development.

Method

The model operates through a detailed analysis on two fronts: the Demand Side and the Supply Side. On the Demand Side, it assesses *Value Creation for both students and faculties*, *Revenue Diversification*, and *Systems Leadership*, using a mix of Subjective Evaluative Judgments (SEJs) and objective data to understand a partner's potential contributions. The Supply Side focuses on the partner's characteristics, such as financial health, academic relationships, and industry relevance, ensuring these attributes align with the institution's strategic goals.

Value Creation involves enhancing educational outcomes and professional development. It includes two sub-pillars:

- *For Students (A1)*: Providing internships, facilitating industry insights through events, and supporting competitions.
- *For Faculty (A2)*: Encouraging joint research, offering opportunities for interdisciplinary projects, and enabling access to industry tools.

Revenue Diversification seeks to broaden financial sources through:

- Collaborative ventures, commercializing joint innovations, and leveraging industry partnerships for funding opportunities.

Systems Leadership focuses on advancing the institution's role in shaping educational practices and policies by:

- Engaging in public advocacy, leading coalitions for educational reform, and establishing benchmarks for innovation and sustainability in education.

Each component within these pillars is meticulously evaluated for its potential to contribute to a strategic partnership, ensuring alignment with the institution's goals and the broader educational ecosystem.

The Supply Side assessment focuses on evaluating potential partners based on their attributes, which align with the institution's strategic goals. This side is structured around two pillars:

- *Partner Characteristics (A)*: Assessing amongst others the partner's existing relationships with the institution, their commitment to R&D, financial health, and the presence of alumni within the company.
- *Industry Relevance (B)*: Evaluating the partner's industry standing, growth outlook, and relevance to the institution's academic and research programs.

These components ensure a holistic view of potential partners, emphasizing compatibility with the institution's strategic objectives and potential for long-term collaboration.

Understanding the "mechanics" of the model in the context of Humber's strategic partnership definition—long-term, multi-faceted collaborations that create value for students, faculties, and Centers of Innovation (COIs), with the potential to diversify revenue and advance Systems Leadership—is crucial. This definition emphasizes the importance of partnerships that are not only financially beneficial but also enrich the academic and research environment.

i. Operational Framework of the Predictive Strategic Fit Model

The Strategic Fit Model evaluates the synergy between higher education institutions and potential industry partners through a detailed operational framework. By integrating both subjective judgments and objective data, the model assigns weighted scores to various factors underpinning strategic partnerships. More specifically:

Subjective Evaluative Judgments (SEJs) and Objective Data

The model starts with the operator inputting SEJs and objective data for a series of questions. SEJs are based on the operator's knowledge and perceptions, while objective data are factual details about the partner. The SEJs provide a structured way for the user to assess and assign values to the properties based on their knowledge and appraisal of potential industry partners. The categories for assessment offer a flexible and comprehensive framework for the user to input their evaluations. For components requiring quantitative

assessments, the operator's pre-defined options vary based on the specific metric. For example, when evaluating the number of yearly Work-Integrated Learning opportunities, the options include *None*, *Less than 5* (<5), *Between 5 and 10* (5<x<10), and *More than 10* (>10), etc.

Relevancy and Sensitivity Coefficients

Each input (SEJ or objective data) is assigned a *relevancy coefficient* that provides a weight to each property based on its importance in determining the strategic fit with Humber's objectives. The percentages assigned to each property indicate their relative impact on the overall assessment.

The *sensitivity coefficient* refers to the relative importance the selected SEJ has for each component of the demand side. The sensitivity coefficients provide a nuanced approach, considering various scenarios such as positive assessments, negative assessments, not knowing, and properties that are not applicable. This approach allows for a more flexible and realistic evaluation process.

This weighting system adds a layer of prioritization to the evaluation process, aligning with the strategic goals of Humber. The coefficients are predetermined based on the model's framework.

Attributed Scores

The attributed score for each factor is calculated by multiplying the relevancy by the sensitivity coefficient. This score reflects the weight and impact of each component in the context of strategic fit. The aggregation of these scores within each pillar and then across the entire Demand and Supply sides provides a comprehensive measure of the strategic fit with potential partners.

Likelihood of Strategic Fit

The final step aggregates weighted attributed scores from both the Demand and Supply sides to determine the overall likelihood of a strategic fit. Weighing Demand and Supply determines the balance in the overall assessment, considering both sides' attributed scores, and reflects the importance assigned to each side in influencing the likelihood of strategic fit. This aggregated score is expressed as a percentage.

ii. Framework of the Digital Aspects of the Predictive Strategic Fit Model

The implementation of a Web Application was chosen for the project, utilizing HTML and CSS for website styling. Designed for scalability, the system can later incorporate advanced features like input data capture for research. The digital iteration of the model, though still developing, emphasizes a user-friendly interface to foster an intuitive space for users across different educational settings to easily input data, receive results, and grasp the model's implications. Future updates will focus on enhancing usability through improved visualizations and explanatory charts, further simplifying the interpretation of outcomes.

The digital version of the Predictive Strategic Fit Model (PSFM) can be accessed online at https://humberstrategicpartnerships.github.io/SP/

Results

The PSFM represents a significant leap in forging successful industry-academia collaborations. Empirical results show that the PSFM offers a robust framework for aligning institutional goals with industry capabilities. Initial deployments of the model at Humber have revealed promising outcomes, with several partnerships being prioritized based on strategic alignment. PSFM addresses a recognized gap within the field of Post-Secondary-Industry collaborations: the need for a systematic approach to evaluate potential partners (Skute et al., 2017).

To illustrate the application of the PSFM, a case scenario for an organization was used, summarized in Tables 1-6, which present evaluations across all the pillars.

Demand Side

Pillar A1: Value Creation for Students

This pillar (see Table 1) assesses the potential partner's contribution to enhancing student experiences, focusing on factors such as learning opportunities, scholarships, Work-Integrated Learning (WIL), graduate hiring, and student sponsorships. Each factor plays a crucial role in determining the overall value the partner can provide.

Summarized findings:

- *Learning Opportunities:* Limited available information about the partner's support for learning initiatives through events like town halls and site visits led to a 2% contribution. The absence of clear evidence underscores how insufficient data can hinder the perception of a partner's potential impact.

The Demand Side, Pillar A1
Table 1: Analysis of Pillar A1, Value Creation for Students

	SEJ	Relevancy coefficient	Sensitivity coefficient	Attributed Score
A1. Value creation for students				13%
Enable learning by sharing insights through Townhall events, site visits, etc.	Not known	8%	25%	2%
Offering scholarships and bursaries	Negative	8%	0%	0%
Number of WIL opportunities per year	<5	7%	50%	4%
Interest in building graduate hiring pipeline	Positive	7%	100%	7%
Sponsoring students for competitions, hackathons, etc.	Negative	5%	0%	0%

- *Scholarships and Sponsorships:* The partner does not offer scholarships or sponsorships, leading to a **0%** score for this factor. Scholarships are pivotal for supporting students financially, and a lack of contributions here represents a significant gap in potential value.
- *WIL Opportunities*: A low number of WIL opportunities were noted, contributing 4%. This shows some commitment but falls short of fully meeting Humber's expectations in providing experiential learning, which is essential for bridging academic learning with practical skills.
- *Graduate Hiring*: The partner has demonstrated a strong interest in developing a hiring pipeline for graduates, resulting in a **7%** contribution. This is a positive indicator, showing that the partner is invested in long-term engagement with students beyond their academic journey.

The total score for *Value Creation for Students* is **13%**, highlighting how gaps in clear information and limited opportunities can negatively affect the overall alignment with Humber Polytechnic's objectives for student development.

Pillar A2: Value Creation for Faculties and COIs
This pillar (see Table 2) evaluates the partner's contribution to supporting faculties and Centres of Innovation (COIs) at Humber through factors like interdisciplinary collaboration, capstone projects, and donations in kind.

Summarized findings:

- *Interdisciplinary Collaboration*: The partner offers extensive opportunities for interdisciplinary collaboration, contributing **8%**. This is highly valued as it supports faculty research and fosters a collaborative environment across different disciplines.

The Demand Side, Pillar A2
Table 2: Analysis of Pillar A2, Value Creation for Faculties and COIs

	SEJ	Relevancy coefficient	Sensitivity coefficient	Attributed Score
A2. Value creation for Faculties and COIs				18%
Opportunity for interdisciplinary collaboration across Humber	Extensive	8%	100%	8%
Opportunity for capstone, research and innovation projects	Limited	8%	50%	4%
Donations in kind (equipment, licences, access to labs and/ or R&D resources, learning material)	Negative	8%	0%	0%
Knowledge dissemination through Townhall events, participation in PACs, conferences	Positive	5%	100%	5%
Co-creation of micro-credentials and CPL programs	Not known	5%	25%	1%

- *Capstone Projects*: The support for capstone projects is limited, resulting in a **4%** score. Capstone projects are vital for integrating academic learning with practical, innovative problem-solving. Limited support here indicates that opportunities for such projects are not being maximized.
- *Donations in Kind*: No contributions were noted in this area, leading to a **0%** score. Donations of equipment, licenses, or access to resources are crucial for enhancing educational quality, and their absence suggests a gap in tangible support.

The total score for *Value Creation for Faculties and COIs* is **18%**, representing a nuanced view of the partner's alignment potential. While interdisciplinary opportunities are a strength, limited support in other areas indicates room for improvement in strategic alignment.

Pillar B: Revenue Diversification

This pillar (see Table 3) evaluates the potential partner's contribution to diversifying Humber's revenue streams, such as through leasing, sponsorships, and tuition assistance programs.

Summarized findings:

- *Events and Leasing*: There is uncertainty regarding the partner's involvement in leasing premises or organizing commercial events, resulting in a score of **2%**. Leasing and events are valuable opportunities for revenue generation, and a lack of clarity impacts the evaluation negatively.

- *Donations and Sponsorships*: No evidence of financial donations or sponsorships led to a **0%** score. Contributions in this area would have demonstrated the partner's commitment to the institution's financial growth.
- *Employee Tuition Programs*: The absence of employee tuition assistance programs yielded **0%**. Such programs can be an effective way for the partner to contribute to the institution's growth while simultaneously investing in their employees' skills development.

The total score for *Revenue Diversification* is **3%**, underscoring the need for more proactive engagement in revenue-generating activities to strengthen the strategic partnership.

Pillar C: Systems Leadership

This pillar (see Table 4) assesses the partner's ability to contribute to Humber's systemic leadership initiatives, such as coalition building, public advocacy, and stakeholder alliances.

Key findings:

- *Coalitions and Advocacy*: Significant opportunities were noted in this area, contributing **3%**. Engaging in public interest advocacy and coalition building is crucial for systemic influence and shows that the partner has some potential for leadership contributions.
- *Alliances*: There was insufficient information on existing alliances with diverse stakeholders,

The Demand Side, Pillar B
Table 3: Analysis of Pillar B, Revenue Diversification

	SEJ	Relevancy coefficient	Sensitivity coefficient	Attributed Score
B. Diversify Revenue				3%
Events, lease of premises for commercial purposes	Not known	8%	25%	2%
Donations, general sponsorships	Negative	8%	0%	0%
Employee tuition assistance programs	Negative	6%	0%	0%
Candidate for InnoSurvey 360	Not known	4%	25%	1%

resulting in a minimal contribution of **1%**. A lack of clarity here weakens the potential impact on broader institutional objectives.

The total score for *Systems Leadership* is **4%**, with coalition opportunities being a relative strength but needing more clarity on alliances to maximize leadership contributions.

Supply Side
Pillar A: Partner Characteristics
This pillar (see Table 5) evaluates, amongst others, the partner's existing relationships with Humber, financial health, and alignment with the institution's goals.

Summarized key findings:

- *Existing Relationship*: There is no prior collaboration with Humber, which contributed **15%** to the score. Although a lack of historical engagement is not penalizing, existing relationships are advantageous for strategic partnerships.
- *Academic Partnerships*: Positive involvement with various post-secondary institutions led to a full **15%** contribution, indicating the partner's established credibility in the academic sphere.
- *Financial Health*: The partner's financial status is noted as "growing profits," contributing 5%. This indicates a stable financial foundation, which is critical for sustainable long-term collaboration.

The total score for *Partner Characteristics* is **50%**, highlighting a solid foundation in academic engagement and financial health, both of which are key to a successful partnership.

Pillar B: Industry Relevance
This pillar (see Table 6) assesses the alignment between the partner's industry and Humber's strategic needs, focusing on industry alignment, hiring outlook, and reputation.

Summarized findings:

- *Industry Alignment*: Rated as low, contributing 5%. This suggests limited overlap between the partner's industry and Humber's strategic areas of focus, which is a key consideration in evaluating partnership potential.
- *Hiring Outlook*: Lack of available data resulted in a 1% score, indicating that limited insight into the partner's hiring projections weakens alignment.
- *Industry Reputation*: The partner's industry is viewed positively, contributing 2%. A positive industry reputation is beneficial in fostering a credible and impactful collaboration.

The total score for *Industry Relevance* is **8%**, reflecting mixed alignment, with some positive aspects, such as industry reputation, but significant gaps in hiring outlook and strategic fit.

Strategic Fit Summary
The Demand Side and Supply Side evaluations, scoring **37%** and **58%**, respectively, together provide a holistic measure of the partner's strategic alignment with Humber Polytechnic. By combining these scores using a weighted average of **60%** for Demand and **40%** for Supply, the estimated likelihood of Strategic Fit is **45.5%**.

The Demand Side, Pillar C
Table 4 Analysis of Pillar C, Systems Leadership

	SEJ	Relevancy coefficient	Sensitivity coefficient	Attributed Score
C. Systems Leadership				4%
Opportunity to develop coalitions and public interest advocacy	Extensive	3%	100%	3%
Existing alliances of diverse stakeholders around a shared purpose	Not known	2%	25%	1%

The Supply Side, Pillar A
Table 5 Analysis of Pillar A, Partner Characteristics

	SEJ	Relevancy coefficient	Sensitivity coefficient	Attributed Score
A. Partner Characteristics				50%
Existing relationship with Humber	No	20%	75%	15%
Existing academic partnerships	Various post-secondary	15%	100%	15%
% of revenues spent on R&D	Not applicable	10%	25%	2.5%
Maturity stage	Growing	5%	50%	2.5%
Last 3-years Financial health check	Growing Profits	5%	100%	5.0%
Nr. of hirings / year	1<x<20	5%	50%	2.5%
Rate of growth (% of new hirings)	< 5%	5%	25%	1.3%
Geographic presence	Ontario only	5%	50%	2.5%
Potential Industrial Technology Benefits (ITB) candidate	Not applicable	5%	0%	0.0%
Number of Humber Graduates	< 5	5%	50%	2.5%
Geographic proximity to Humber	> 50Km (in Ontario)	5%	25%	1.3%

The Supply Side, Pillar B
Table 6 Analysis of Pillar B, Industry Relevance

	SEJ	Relevancy coefficient	Sensitivity coefficient	Attributed Score
B. Industry				8%
Relevancy to Humber	Low	10%	50%	5%
Hiring outlook	Not known	3%	25%	1%
Industry reputation	Positive	2%	100%	2%

It is important to interpret this estimation cautiously, as it represents a likelihood, not a definitive conclusion. The estimation offers an indication of potential alignment, acknowledging that qualitative factors and existing uncertainties could still impact the partnership's success. Thus, this score should be seen as a guiding metric rather than an absolute decision-maker, warranting further consideration before committing to action.

Evaluating Strategic Fit in this dual manner ensures that partnerships are strategically advantageous, fostering growth, innovation, and mutual benefit. By systematically quantifying alignment, the PSFM offers an evidence-based approach that minimizes subjective biases and supports informed decision-making, identifying partners with the greatest potential for impact and synergy.

The versatility of the PSFM allows its application across various higher education settings. Whether for a research-focused university, a polytechnic, or a college, the model can be adapted to assess partners based on specific institutional needs and objectives. For instance, a research-intensive university may prioritize a partner's capacity for joint R&D projects, while a polytechnic may focus on a partner's ability to provide work-integrated learning opportunities for students. By tailoring the PSFM to institutional priorities, it effectively supports strategic decision-making and drives meaningful collaboration.

Discussion

The limitations of the PSFM, both theoretical and operational, offer areas for reflection and improvement. Theoretically, the model's institution-specific approach, while tailored to Humber Polytechnic's needs, risks a narrow interpretation of what constitutes a strategic partner. This specificity may limit its applicability across the broader academic landscape, where strategic goals vary significantly between institutions and within Humber Polytechnic itself in case of a fundamental strategy correction.

Operational challenges in its digital iteration include the very early stage of the web application, emphasizing the need for further development in user interface and experience to cater to diverse users effectively.

The model's current framework might also not fully capture the dynamic nature of strategic partnerships, which evolve over time, influenced by changing institutional goals, market conditions, and technological advancements. The current model might not adequately account for this dynamism, potentially leading to outdated or static evaluations. Enhancing the model to account for these temporal changes and incorporating feedback mechanisms could address some of these limitations.

Moreover, the model's effectiveness is contingent upon the quality and completeness of the input data. Inaccuracies or limitations in the data could lead to misinterpretations of Strategic-Fit, affecting decision-making processes. Especially, the reliance on SEJs (Subjective Evaluative Judgments) plays a crucial role in the model. This reliance on human judgment introduces the risk of biases in interpreting Strategic-Fit, a well-documented challenge in decision-making processes (Featherstone et al., 2018).

Finally, while designed for scalability, integrating advanced features such as machine learning for enhanced data analysis and prediction requires significant development. This process may encounter technical challenges, especially in maintaining model performance and usability, as complexity increases. Such a technical challenge in integrating machine learning for data analysis and prediction could be ensuring the model's interpretability and explainability. As machine learning algorithms become more complex, it might be harder for users to understand how decisions are made, which is crucial for trust and adoption in academic settings. Balancing complexity with transparency to maintain user confidence while leveraging advanced analytics represents a significant technical and design challenge.

Impact

The PSFM enhances the ability of higher education institutions to form sustainable, mutually beneficial partnerships with industry. By focusing on strategic alignment, the model helps institutions prioritize partnerships that offer the greatest potential for growth and innovation.

For academic stakeholders, the PSFM is not just a tool but a strategic asset. It streamlines the process of identifying and engaging with industry partners, ensuring that collaborations are not only fruitful but also align with the institution's long-term goals. The model serves as a bridge, bringing together academia and industry in a meaningful and structured way, fostering partnerships that are both sustainable and impactful.

Conclusion

The PSFM introduces a transformative approach to academia-industry partnerships, offering Humber Polytechnic and similar Post-Secondary Institutions a systematic, objective framework for evaluating potential collaborations. Beyond merely accommodating the dynamics of such partnerships, PSFM stands to transform decision-making processes by integrating data-driven insights, potentially shifting the paradigm from reliance on personal judgment to evidence-based strategies. Therefore, automating aspects of the evaluation process ensures that decisions are made on a comprehensive, data-driven basis, minimizing biases that can arise from personal interactions.

As such, the model could unveil new and alternative dimensions of strategic alignment and partnership potential,

highlighting areas for mutual growth and innovation previously overlooked. It is crucial to note that the use of the PSFM adds value not by creating entirely new realms of possibility but by systematically identifying and quantifying the strategic alignment and potential benefits of such collaborations, which might not be as evident without a structured analysis.

While personal contacts will always remain invaluable for building trust and understanding cultural fit, the use of the PSFM ensures that partnership opportunities are systematically evaluated and prioritized based on objective criteria that might be overlooked or undervalued in a purely human-centric evaluation process, which sometimes may fail to capture the full spectrum of strategic alignment or the potential for long-term collaboration.

The use of PSFM has broader implications for innovation within academia and industry collaborations. While not suggesting the replacement of the human element in broader collaboration approaches, it clearly advocates for the use of existing technology to optimize these and enhance their potential and reach. It's in the less well-illuminated corners of these partnerships and the vast amount of idle data available to many higher education institutions that the PSFM shines. By focusing on the untapped corners of these collaborations, PSFM enhances the discovery and strategic alignment of partnerships and complements traditional, relationship-building approaches to foster innovation and mutual growth.

Conflict of Interest
No conflicts of interest to declare.

Acknowledgement

Funding

Note on Contributor
With nearly two decades of experience in strategic partnership development across the renewable energy, pharmaceutical, and education sectors, **Georgios Eftychiou** is dedicated to advancing impactful collaborations between academia and industry. At Humber Polytechnic, he has been instrumental in developing the Predictive Strategic-Fit Model (PSFM), a pioneering framework that leverages data-driven insights to strengthen academia-industry partnerships. His work emphasizes aligning institutional objectives with industry needs to drive mutual growth and foster innovation.

Georgios holds an MBA from the University of Glasgow and a Bachelor of Arts in Economics from the Athens University of Economics and Business. His extensive international experience includes international business and partnership development, strategic decision-making, and change management. In his current role, he supports Humber Polytechnic's mission by advancing workforce readiness and continuous professional learning initiatives, focusing on enhancing partnerships through data-driven strategies and technological innovation.

References
Awasthy, R., Flint, S., Sankarnarayana, R., & Jones, R. L. (2020). A framework to improve university–industry collaboration. *Journal of Industry-University Collaboration, 2*(1), 49-62.

Bishop, K., D'Este, P., & Neely, A. (2011). Gaining from interactions with universities: Multiple methods for nurturing absorptive capacity. *Research Policy, 40*(1), 30-40.

D'Este, P., Guy, F., & Iammarino, S. (2013). Shaping the formation of university–industry research collaborations: what type of proximity does really matter?. *Journal of Economic Geography, 13*(4), 537-558.

Evans, N., Miklosik, A., & Du, J. T. (2023). University-industry collaboration as a driver of digital transformation: Types, benefits and enablers. *Heliyon, 9*(10).

He, V. F., von Krogh, G., Siren, C., & Gersdorf, T. (2021). Asymmetries between partners and the success of university-industry research collaborations. *Research Policy, 50*(10), 104356.

Frølund, L., Murray, F., & Riedel, M. (2018). Developing successful strategic partnerships with universities. *MIT Sloan Management Review, 59*(2), 71-79.

Kettunen, P., Järvinen, J., Mikkonen, T., & Männistö, T. (2022). Energizing collaborative industry-academia learning:

a present case and future visions. *European Journal of Futures Research, 10*(1), 8.

Nsanzumuhire, S. U., & Groot, W. (2020). Context perspective on University-Industry Collaboration processes: A systematic review of literature. *Journal of cleaner production, 258*, 120861.

Rasmussen, E., & Wright, M. (2015). How can universities facilitate academic spin-offs? An entrepreneurial competency perspective. *The Journal of Technology Transfer*, 40, 782-799.

Skute, I., Zalewska-Kurek, K., Hatak, I., & de Weerd-Nederhof, P. (2019). Mapping the field: a bibliometric analysis of the literature on university–industry collaborations. *The Journal of Technology Transfer, 44*, 916-947.