SILESIAN UNIVERSITY OF TECHNOLOGY PUBLISHING HOUSE

SCIENTIFIC PAPERS OF SILESIAN UNIVERSITY OF TECHNOLOGY 2025
ORGANIZATION AND MANAGEMENT SERIES NO. 241

MANAGING ACADEMIC DROPOUT: AN INNOVATIVE SERVICE FOR MITIGATING INFORMATION APATHY

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Purpose: The paper presents an innovative academic service designed to prevent student drop-out by operationalising the research findings on information apathy, a newly conceptualised phenomenon in information science. The goal is to demonstrate how information science can contribute to academic retention by developing a professional, ethically responsible service that supports students experiencing informational dysfunctions that impair their motivation, decision-making, and agency.
Design/methodology/approach: The study applies the design-science research logic combined with analytical-descriptive approach and draws on empirical study and conceptual work previously reported in Korycińska (2025). The service is analysed through the lens of eight parameters defining a viable knowledge product, integrating the Knowledge Readiness Level Framework (KRLs) and elements of design thinking, phenomenon-based learning, and co-creation with students. The theoretical framework is grounded in academic drop-out prevention models and information behaviour theories within higher education.
Findings: The analysis demonstrates that the proposed service meets the criteria of a knowledge product and an innovative service in higher education. It addresses informational, motivational, and behavioural vulnerabilities linked to academic disengagement and aligns with current best practices in primary, secondary, and tertiary drop-out prevention. The prototype has reached level 5 on the Knowledge Readiness Level scale, with ongoing development aimed at level 6. Expert validation confirms its conceptual soundness and its potential for implementation in academic settings.
Research limitations/implications: The service remains at the pre-implementation stage and requires further empirical testing in diverse academic environments to confirm its scalability and measurable impact on retention. Future research should focus on longitudinal evaluation of outcomes and cross-institutional adaptability.
Practical implications: The service can be implemented without additional infrastructure costs and may be delivered by students, librarians, or academic staff within existing university structures. It offers a replicable, low-cost model for strengthening students' informational resilience and preventing premature withdrawal from studies.

Social implications: By enhancing students' informational well-being and resilience, the service contributes to reducing academic exclusion and promoting mental and social stability in the academic community. It can be adapted to non-academic contexts, supporting informational health and workforce retention.
Originality/value: This is the first study to propose an academic service explicitly derived from research in information science and framed as a knowledge product. The service, delivered within an ethics-of-care paradigm and under the guidance of Self-Determination Theory (SDT), introduces a novel application of informational resilience in higher education and extends the conceptual reach of information science into the field of academic retention and student support.
Keywords: academic drop-out prevention; information apathy; knowledge product; informational resilience; higher education innovation.
Category of the paper: Research paper / Conceptual paper.

1. Introduction

Academic drop-out is a global phenomenon of multifaceted causality and far-reaching social, economic, and personal consequences. Managing it through preventive strategies and the proactive enhancement of student retention has therefore become a key responsibility of higher education institutions (HEIs). The aim of this article is to present a possible operationalisation of research findings on information apathy by using them as the foundation for a specialised service forming part of academic drop-out prevention programmes at Polish universities.

This study adopts a design-science research logic (Storey, Baskerville, Kaul, 2025), wherein research-borne theory informs the creation of a service prototype, which in turn functions as an empirical testbed for refining theory. Specifically, information apathy is conceptualised as a maladaptive response to informational discontinuity, producing behavioural, motivational, and cognitive effects detrimental to academic persistence.

The proposed service thus represents both: 1) a conceptual contribution, advancing understanding of information apathy as an information-behaviour phenomenon linked to academic risk, and 2) a pragmatic contribution, designing an intervention intended to alleviate this condition and support students' academic resilience.

Although the service has not yet reached full implementation maturity, its conceptual and functional characteristics position it as a promising candidate for staged deployment and evaluation in academic environments. The forthcoming empirical phase will focus on incubation, pilot studies, and iterative refinement. At this stage, while immediate transfer to institutional practice is premature, the initiative already demonstrates qualities that warrant sustained development and, at minimum, justify dissemination of its underlying conceptual approach.

The service in question is conceived as a hybrid intervention that combines institutional preventive support, delivered under the auspices of the university, with personalised, student-centred guidance tailored to individual needs. Its anticipated outcome is the strengthening of students' academic competences and, consequently, a reduction in the risk of attrition.

The very idea of elaborating the service emerged from the application of a heuristic method (Antoszkiewicz, 2016) within a research and development process initially conducted under the Technology Readiness Level (TRL) model, with the aim of identifying the application potential of research findings on information apathy, a novel concept developed within the discipline of information science, itself a subfield of communication and media studies (Korycińska, 2025). The service is characterised using the method of descriptive analysis (Brożek, 2017).

The article is divided into three main parts. Part 1 establishes key definitions, presents statistics illustrating the scale of academic drop-out in higher education, and outlines the theoretical framework of academic prevention in which our proposed service is situated. Part 2 summarises the current state of research on drop-out prevention based on a review of recent literature (2020-2025). Part 3 offers a detailed description of the service, structured around eight parameters that, in our view, substantiate its potential for implementation within academic settings.

2. Definitions, Statistics, and Theoretical Framework

Drop-out, understood as "withdrawal from a chosen course of study before obtaining a degree, regardless of the reasons or circumstances", is an increasingly prevalent phenomenon, both in Poland and across other European Union countries (*Zjawisko drop-outu*…, 2020). It serves as a key quantitative indicator of how effectively the higher education system supports students from admission through to graduation, and as a measure of universities' capacity, under changing societal and technological conditions, to provide learners with the resources necessary to complete their studies within a reasonable timeframe (*Education at the glance*…, 2025).

As synthesised by Ewelina Konieczna from multiple scholarly sources, Polish academic discourse most frequently equates drop-out with academic failure, the cumulative outcome of overt or latent difficulties experienced during the course of study. It represents the inverse of academic success, defined as the failure to achieve "the intended goal of studies (obtaining a qualification appropriate to the level of study) within the time frame prescribed by the curriculum". The difficulties that lead students to abandon their studies, conceptualised as "obstacles to the realisation of intended or ongoing actions", may originate either in the student's environment (e.g. excessive academic demands, ineffective teaching, or limited access to information) or within the student themselves. They are thus both subjective and

objective in nature (Konieczna, 2019, p. 66). While some scholars caution against automatically equating drop-out with academic failure, arguing that, unlike fall-out, it may at times mark the beginning of a positive new trajectory, in this article we focus on those dimensions of drop-out that entail personal distress or suffering. Accordingly, we adopt the definition that aligns drop-out with academic failure (*Education at the glance*…, 2025).

As for the scale of student withdrawal from higher education in Poland, the most recent national dataset remains the report *Zjawisko drop-outu na polskich uczelniach* [*The phenomenon of drop-out in Polish universities*] (2020), prepared by the Laboratory of Statistical Analysis of the National Information Processing Centre (OPI) (*Zjawisko drop-outu*…, 2020) for the Ministry of Science and Higher Education. According to this report, between 2012 and 2020 over 1.3 million students discontinued their programmes and did not re-enrol within a year of removal from the register. The drop-out rates were 46% for first-cycle (bachelor's) studies, 30% for second-cycle (master's) studies, and 41% for long-cycle master's programmes (*Zjawisko drop-outu*…, 2020).

The principal international reference source is the annual OECD *Education at a Glance* report. According to its latest edition (2025), based on data from 2023, the drop-out rate after the first year of tertiary education, by level of education entered, was 19% for first-cycle students (compared with the EU and OECD averages of 13%) and 14% for students enrolled in long-cycle master's programmes (with corresponding averages of 7% for the EU and 6% for the OECD) (Figure 1, Appendix). However, the figures for all levels of study combined present a less favourable picture. The completion rate of full-time students at any tertiary level by the end of the theoretical duration of the programme stood at 53%, compared with 43% for the OECD and 44% for the EU (Figure 2, Appendix).

Consequently, the drop-out rate in Poland reached 47%, a value lower than the OECD and EU averages (57% and 56% respectively), but one that, in absolute numbers, corresponds to a vast cohort of students effectively lost to the higher education system.

In the OPI report, the only individual cause of study withdrawal associated with the cognitive-affective domain was stress, classified under the broader category of "health problems". It was noted that for some respondents, this was the principal reason for discontinuing their studies. Interestingly, all identified sources of stress were external to the individual and included an excessive academic workload, unapproachable or unsympathetic lecturers, financial difficulties, and family pressure to complete the degree. The consequences of chronic stress included physical exhaustion, burnout, sleep disturbances, and learning difficulties; in extreme cases, hospitalisation due to severe health disorders was reported. None of the former students surveyed had sought psychological support.

In Polish literature, Zając and Komendant-Brodowska (2018) proposed a typology of university drop-out encompassing three principal pathways: planned resignation (for instance, enrolment motivated by access to discounts), academic failure (69% of students from the lowest quintile of secondary-school leaving examination scores discontinued their studies during the

first year), and disappointment with the program (over half of students reported unfamiliarity with its structure and requirements). According to these researchers, an inappropriate choice of program, often rooted in insufficient knowledge of the curriculum, frequently resulted in disappointment. They also identified difficulties in social integration: some students noted problems with fitting into new groups in which they felt unwelcome, while others pointed to liberal admission policies and the consequent disparities in academic preparedness between the strongest and weakest entrants. The typology developed by Zając and Komendant-Brodowska (2018) thus demonstrates that university drop-out is not a one-dimensional phenomenon but rather the outcome of multiple, and often interrelated, factors.

Notwithstanding this, numerous recent findings, including systematic reviews, emphasise the importance of individual predictors of drop-out that are rooted in the student's subjectivity and concern the way in which the academic world, including its distinctive informational ecosystem, is experienced. Małgorzata Rosalska refers to these factors as "biographical", as they are directly linked to the characteristics, experiences, and personal resources of at-risk students who effectively self-exclude from the process of study. She argues that taking such factors into account, alongside systemic (institutional) causes, is a *conditio sine qua non* of effective prevention of academic failure. Rosalska posits that universities can reduce drop-out rates through preventive measures aimed at developing students' academic competences (Rosalska, 2019). Many international authors likewise explicitly or implicitly suggest the value of various educational offerings that strengthen students' study-related capabilities and, consequently, improve retention. What distinguishes Rosalska's approach is her consistent use of the concept of academic competences. She stresses that these competences do not merely coincide with learning skills (although they include them), but encompass all activities undertaken by the student as a result of the status they have acquired, performed within the university environment and at its interface with the socio-economic context. This perspective aligns fully with the aims of the present article and therefore serves as the theoretical foundation of our analysis.

Rosalska draws on the fourfold classification of academic competences proposed by Buis, Post, and Visser (2016), who distinguish thirteen specific competences grouped into four areas (Rosalska, 2019, pp. 244-246). In the context of this article, three of these areas are of particular relevance.

The first area encompasses competences that determine the effectiveness of studying. Among these are the ability to organise one's own work across different time frames, the capacity to maintain concentration on tasks, to take examinations effectively, and to sustain an adequate level of motivation (Buis, Post, Visser, 2016, p. 17).

From the second area, which concerns the ability to conduct independent research, one competence of particular interest is the capacity to engage in conversation and discussion with individuals (experts, supervisors, lecturers, tutors) with whom the student collaborates while undertaking educational or research projects, internships, or placements. The intention is that

students should, first, learn to overcome any internal resistance to direct verbal communication with academic interlocutors in study-related situations, and second, come to appreciate the value of information obtained from personal sources. This pertains both to information required for the completion of academic tasks and to the acquisition of knowledge about interpersonal and social relations. The second area also includes another competence whose deficiency may heighten the risk of drop-out – namely, proficiency in searching for scholarly information in appropriate sources and in collecting, analysing, and processing empirical research data (Buis, Post, Visser, 2016, p. 17).

From the perspective of this article, the fourth competence area, referred to by the authors as critical attitude, is also of particular significance. It comprises two specific competences: the ability to participate in discussions, debates, and critical dialogues, and the ability to engage in reflection ((Buis, Post, Visser, 2016, p. 108). Practising academic discussion and debate develops not only the scholarly principles of evidence-based argumentation but also, from an ethical and emotional perspective, the capacity to tolerate confrontation with opposing viewpoints. The ability, and, in time, the need and habit, of reflection concerns self-examination: one's own motivations, aspirations, and limitations, as well as the value of academic forms of work. This domain also encompasses questions about the relevance, in future professional environments, of such practical skills as teamwork, giving feedback, acting as a student representative, or participating in student governance. Rosalska observes that "within academic communities, competences in this area are of great yet underestimated importance" (Rosalska, 2019, p. 246).

Her approach is particularly inspiring because, although her article is intended to be general and introductory, it effectively outlines a comprehensive framework for the prevention of academic drop-out. She achieves this by applying the classical three-level model of prevention, well established in pedagogical theory: primary, secondary, and tertiary.

Primary prevention encompasses all students in the early years of study and focuses on developing the fundamental skills necessary for independent learning and for performing tasks required by individual courses. It is worth noting that all the competences identified by Rosalska within this domain are, without exception, included in the syllabi of first-cycle courses across general university programmes. Yet, since this has not succeeded in halting the progression of drop-out, it seems that the manner of implementation requires modification at the institutional level.

Given the aims of this article, the two remaining levels of prevention are of greater interest. Secondary prevention involves creating individualised forms of support and compensating for vulnerabilities in ways tailored to the needs of specific students. It is directed towards those at elevated risk, individuals willing to seek assistance because, in their subjective assessment, they experience difficulties in studying and sense an emerging dynamic of disengagement. In the English-language literature, such initiatives are generally referred to as academic guidance (see, for instance, Delgado-García et al., 2025). According to Rosalska, this level of

prevention may be undertaken by academic advisors, tutors, or psychological counsellors specialising in study-related issues. Their role is to equip students with the resources necessary to manage emotional and motivational stress, imperfect time management, task prioritisation, interpersonal difficulties, or a loss of sense of purpose. To this catalogue one might also add support for students in the process of resilience following a crisis of agency. In any case, the focus of this work lies in the enhancement of soft competences.

Tertiary prevention, in turn, constitutes an intervention aimed either at halting an already initiated process of withdrawal or at facilitating the return to study of a person who has already left university. For the sake of accuracy, let us add that the revised 2019 edition of this book retains the same division into areas of academic competences (Van der Gaast, Koenders, Post, 2019).

3. The state of research on academic drop-out prevention

Recent literature devoted to the prevention of academic drop-out is less extensive than might be expected, given the significance of the problem, at least on the scale of the EU and OECD. This is evidenced by the results of searches conducted in the Scopus, Web of Science, and Embase databases, presented in Table 1.

Table 1.
Search streams

Database	Query	Results before/after duplicates removal and selection
Scopus	(TITLE(academic dropout OR university dropout) AND TITLE(prevent*)) AND PUBYEAR > 2019 AND (LIMIT-TO (DOCTYPE,"ar") OR LIMIT-TO (DOCTYPE,"cp") OR LIMIT-TO (DOCTYPE,"re"))	8/8
WoS	(((TI=(academic dropout OR university dropout)) OR TI=("higher education" AND dropout))) AND (TI=(prevent*))	18/11
Embase	('academic dropout' OR 'university dropout') AND [2020-2025]/py AND ('article'/it OR 'clinical trial'/it OR 'review'/it)	24/6
	Total number of relevant papers	25

Source: authors' own compilation.

A targeted search strategy was employed to identify publications dealing specifically with the prevention of academic drop-out; therefore, keyword occurrences were limited to publication titles. The search included research papers, reviews, and conference papers, while in the Embase database, articles, clinical trials, and reviews were considered. The chronological scope was limited to the years 2020-2025, reflecting the view, articulated in the literature, that remote learning and the social isolation associated with the COVID-19 pandemic marked a turning point in approaches to academic retention and perseverance (Gonzalez et al., 2025).

A subject-matter overview of the collected material (25 articles) is presented in Table 2. For each publication, the following aspects were specified: 1) whether it includes a specific proposal for drop-out prevention measures, i.e., whether it displays a conceptual description of an as yet unimplemented project or a recommendation to design a particular tool or action based on empirical findings, or whether it reports on testing or pre-implementation validation of a tool already in operation or at the final stage of development (column "Measure proposed: Yes/No"); 2) the method applied by the researchers and the purpose of their investigation (column "Method/Goal"); and 3) the tool or intervention that was developed or implemented. Publications were arranged in reverse chronological order.

Table 2.
Results of the bibliographic search for the literature review

References	Measure proposed	Method/Goal	Tool/Action developed
(Romero, Liao, 2025)	Yes	design of a machine-learning models for predicting drop-out	Generalized Additive Model (GAM)
(Ticona et al., 2025)	Yes	design of a machine learning based tool to facilitate early detection of potential drop-outs + usability tests	SDR-Explorer, LLM-assisted visual analytics system
(Salazar et al., 2024)	Yes	prediction of drop-out	AI application for predicting academic performance
(Cruz et al., 2024)	Yes	screening survey to identify students at high risk of drop-out	screening tool + scoring system
(González-González et al., 2023)	Yes	survey, prediction & diagnosis of drop-out	"Survey on Successful Student Retention"
(Kantor et al., 2023)	Yes	systematic review protocol for comparing the effectiveness of customised educational and psychological intervention vs. standard care in HEI in enabling perseverance in students with autism spectrum assessed	systematic review protocol for assessing interventions such as: meta-cognitive and self-regulation training, psychological counselling, social skills training, peer-mentoring/academic coaching
(Urbina-Nájera, Méndez-Ortega, 2022)	Yes	design of a predictive model to anticipate drop-out	model integrating neural networks and decision trees
(Amor, Villamil, Dios, 2021)	Yes	design and validation of a survey tool for assessing guidance and tutoring as a possible protective factor against drop-out prevention in Latin American universities	"Questionnaire for the Assessment of Guidance and Tutoring in Higher Education" (Q-AGT)
(Bustamante, Garcia-Bedoya, 2021)	Yes	prediction of drop-out	machine learning model
(Negreiros, Lanzillotti, de Faria, 2021)	Yes	design of contingency tables and chi-square tests to outline the profile of students prone to drop-out	statistical model
(Amaya-Amaya, Huerta-Castro, Flores-Rodríguez, 2020)	Yes	identification of drop-out causes & influencing factors	Biga Data analytical model
(Olaya et al., 2020)	Yes	design of a tool for assessing the effectiveness of tutorials for students meant to increase retention	uplift modelling framework

Cont. table 2.

(Ferreira et al., 2020)	Yes	design of an interactive visual exploration of data gathered within the FICA project (Tools for Identifying and Combating Dropout) to identify drop-out risk indicators and failure factors	FICAvis, data Visualization tool
(Urbina-Najera et al., 2020)	Yes	design of an attribute selection algorithm to identify major factors influencing drop out decision	multifactorial data mining tool
(González-Ortiz-de-Zárate et al., 2025)	No	statistic inquiry on the effectiveness of a peer mentoring program used in drop-out prevention, encompassing the COVID-19 pandemic	-
(Arian et al., 2025)	No	machine-learning approach based on IPOD model to identify dropout predictors	-
(Heinrichs et al., 2021)	No	qualitative interview study evaluating perception and utility of German HEI counselling services for students	-
(Guerreiro, Jesus, 2025)	No	systematic literature review to assess the utility of peer mentoring in drop-out prevention	-
(Saltos et al., 2025)	No	scoping literature review on the use of AI techniques to predict academic performance, risk of dropout, and the need for academic advising, especially tutoring, with an emphasis on e-learning or technology-mediated environments	-
(Segovia-García, García, 2024)	No	systematic literature review to assess the utility of educational chatbots reducing critical drop-out factors	-
(De la Cruz-Campos et al., 2023)	No	systematic literature review on academic drop-out causes	-
(Ferrándiz et al., 2022)	No	diagnostic survey to identify neurodidactic factors predicting drop-out	-
(de Oliveira et al., 2021)	No	systematic literature review on learning analytics based on data mining procedures to favour retention and prevent drop-out	-
(Marinela, Alexandru, Haralambie, 2020)	No	mixed-method research to identify first-year students at high drop-out risk	-
(Stepanovic-Ilic et al., 2020)	No	exploratory study to analyse drop-out causes, tracking and available prevention forms (based on literature)	-

Source: authors' own compilation.

Out of the 25 analysed publications, concrete examples of actions aimed at preventing academic drop-out were presented in 14. These were mainly large language model (LLM)-based predictive models employing data mining, systems for statistical processing and visualisation of institutional data, survey questionnaires, and one systematic literature review protocol (Embase). The remaining papers did not include any specific proposals.

The sample of publications examined is relatively small, providing no basis for assessing whether the number of concrete initiatives is high or low. What can be stated with confidence, however, is that a large proportion of studies are limited to formulating general recommendations. Only two publications describe interventions supporting the prevention of

academic drop-out in the form of student services, specifically peer mentoring (González-Ortiz-de-Zárate et al., 2025; Guerreiro, Jesus, 2025).

There are, however, no publications presenting an academic service that:

A. fully meets the definition of a knowledge product, that is, one that constitutes a direct manifestation of research conducted within the university that promotes it.
B. satisfies the criterion of radical innovativeness, understood as a solution never previously applied, neither in higher education nor in other spheres of social life.
C. whose prototype emerged through co-creation involving students who themselves potentially belong to the group of service beneficiaries.
D. whose development process was subjected to readiness-level evaluation and conducted in accordance with the methodology of knowledge product incubation in higher education.
E. comprehensively and individually addresses the student's challenges related to adaptation to the university's informational ecosystem and, more broadly, to coping with the demands of the contemporary digital mediasphere.
F. could be swiftly incorporated into primary, secondary, and tertiary levels of academic drop-out prevention and delivered collaboratively by multiple academic actors, at a minimum by students, librarians at various levels, and academic staff.
G. whose implementation within the academic context would be cost-free for both the university and its recipients, requiring no acquisition of additional material resources; and
H. could be exported to other universities or even to non-academic contexts, including business environments, as a means of supporting informational well-being and retention among students, employees, or business partners.

With the aim of addressing this gap, the following section of the paper presents a concise description of a prototype service meeting these criteria. The first six criteria are discussed individually, while the final two (F & G) are considered together.

4. Description of the service mitigating information apathy

The service described below possesses all eight characteristics listed previously (points A-H). This will be substantiated in the subsequent sections of this chapter, where each of these eight features is discussed in turn.

The service consists in providing professional assistance to individuals (in this paper: students) who actively seek ways to overcome information apathy in a professional context. Information apathy is a new scholarly concept outlined, on the basis of long-term research findings, in the article *Designing an information service related to information avoidance*

(Korycińska, 2025). The term originates from information science and denotes "a set of non-adaptive behaviours developed in response to a change (discontinuity) in the way an individual experiences information. It encompasses multiple forms of information avoidance, whose common denominator is the paralysis of core motivational domains, and consequently a functional dysfunction of the individual in everyday life, associated with fatalistic resignation, anhedonia, indecision and inaction, a diminished sensitivity to the informational affordances of the environment, a distinct experience of temporality, a reduced sense of informational security, and prolonged suffering" (Korycińska, 2025, pp. 84-85).

Empirical observations indicate that information apathy manifests itself in two main ways: 1) as the abandonment of information behaviours previously practised by the individual to safeguard their own interests effectively; and 2) as the adoption of new, non-adaptive behaviours, those inappropriate to the intended goal or situation, which undermine the person's sense of agency and self-efficacy. A key distinguishing feature of information apathy is that it develops as a result of an ecosystemic shock that deprives the individual of access to vital informational resources, generating a sense of loss or deprivation. The individual enters an escalating crisis, the resolution of which, i.e. the attainment of informational resilience, requires external assistance. The prototype service is designed to provide such assistance.

It must be emphasised, however, and this is a crucial reservation, that the service is to be delivered exclusively by information professionals and confined strictly to their domain of competence. Accordingly, it explicitly excludes: 1) the diagnosis or mitigation of the psychological or mental causes of information apathy, which fall solely within the remit of qualified specialists (psychologists, psychotherapists, physicians, etc.); and 2) any interventions extending beyond the enhancement of the beneficiary's individual information management practices (Korycińska, 2025, pp. 86-87).

To dispel any potential ambiguities regarding competence, it should be reiterated that the service constitutes a form of academic guidance and is implemented according to the following scheme: 1) substitution – temporarily performing information activities on behalf of the client who has lost the ability to carry them out; objective: to restore a sense of control over reality and to compensate for stressful or objectively threatening arrears; 2) demonstration – modelling new adaptive behaviours for the beneficiary to internalise; objective: adaptation to a new informational ecosystem.

Assuming that a service supporting students in recovering from information apathy can contribute to the prevention of academic drop-out, we propose the following hypotheses:

(H1) Among students, information apathy may arise as a consequence of a rupture (discontinuity) in their established mode of living with information, occurring at the moment of entering higher education.

(H2) The essence of this discontinuity lies in the student's initiation into the academic information culture, to which they fail to adapt without experiencing a marked sense of informational loss and ecosystemic alienation.

(H3) The behaviours characteristic of information apathy fully coincide with the set of causes or risk factors of academic drop-out identified in recent scholarly literature.

(H4) Professional and ethically responsible assistance in coping with information apathy contributes to neutralising the causes and risk factors of academic drop-out and therefore constitutes a preventive measure.

With reference to hypothesis (H2), it should be noted that the cluster of avoidant, withdrawn, and postponing behaviours constituting the pattern of information apathy corresponds to those described as manifestations of the causes or predictors of academic drop-out across all three explanatory models: the sociological, the psychological, and the integrative model combining both.

To recall briefly: in the sociological model, the principal risk factor for dropping out is poor integration into the institutional and social academic system (Tinto, 2010, pp. 51-89), including the university's information culture[1], that is the inability to bridge the gap in one's informational life caused by entry into the university environment. The psychological model, by contrast, focuses on the personal attributes and behaviours that lead students to decide to leave higher education. Gonzalez et al. write: "Students enter university with pre-entry psychological traits like self-efficacy and attributions. These traits influence their interactions with the institutional environment, which trigger psychological processes such as self-efficacy assessment and coping. Successful processes enhance self-efficacy, reduce stress, and foster internal attribution and motivation, aiding academic and social integration, which positively influence students' persistence and determination. For psychological theories, the focus is placed on individual self-regulatory long-term processes, meaning that students' dropout is driven and regulated from within, placing less emphasis on institutional factors" (Gonzalez et al., 2025; Bean, Eaton, 2001; de la Fuente-Arias, 2017).

Hypotheses (H1)-(H4) require empirical verification during the incubation and implementation of the service within the academic environment. Although the service is not yet ready for transfer to practice, it possesses qualities that, in our view, make it a promising candidate for further development and at least justify the dissemination of the underlying concept.

To present the service concept synthetically, its key aspects are discussed below according to the eight criteria outlined in the preceding section (A-H).

A. Knowledge product

The proposed service is an operationalisation of the research presented in the article (Korycińska, 2025). It therefore meets the criteria of a knowledge product (KP), defined as "knowledge resulting from research with potential to improve individual or public health. KPs involve knowledge emerging from scientific research (i.e., systematic, internally valid data collection and analysis aimed at drawing broader, externally valid inferences), [that] might prove effective when applied in specified real-world settings (…). KPs can therefore arise from

research addressing questions around conception, formulation, applications, or context-specific uses and policies. Examples of KPs include such outputs of research as (…) conceptual and analytical tools and methods, (…) information or guidance used to improve health and performance" (Engel et al., 2019).

It is somewhat surprising that the term knowledge product is used in the literature exclusively in relation to the health domain, although in our view it is equally applicable to scientific research outputs produced in the humanities and social sciences. Nevertheless, we assume that the research material underpinning our service may be regarded as a knowledge product because it has the potential to enhance health security within the academic environment.

We define information security, in the spirit of information ecology[2], as the creation of a system that protects individuals and communities from the threats inherent in the contemporary mediasphere, including a system for preventing information disorders (Batorowska, 2021, p. 118). Our service may also be classified as a KP in the original sense (derived from medical and health sciences), as it serves to cultivate sound practices in information hygiene (Rudenko, 2025). It should be clarified that the service would first be implemented at the university where the research forming its basis was conducted.

B. Innovativeness

The service is innovative for two reasons. First, its subject matter concerns a phenomenon (a particular complex of information behaviours) that has not previously been identified or operationalised in research. Second, the literature contains no reports of services identical or comparable being implemented in academic settings.

It corresponds to the most consensual definition of service innovation, which states that it is "a novel combination of new and existing knowledge" (Gustafsson, Snyder, Witell, 2020, p. 111), where the degree of novelty is assessed from the perspective of the organisation. The innovativeness of the service can also be inferred from the fact that it emerged within the university's corporate innovation ecosystem, defined as "the set of actors, activities, resources and institutions and the causal interrelations that are in some sense important for the innovative performance of a corporation or groups of collaborating companies and other actors (e.g. universities, institutes, agencies)" (Granstrand, Holgersson, 2020).

According to the standard model of innovation development in services (Figure 3), the full cycle remains incomplete: the innovation has yet to be adopted by the market and to generate added value for stakeholders. The aim of this article is to encourage progress towards this final stage.

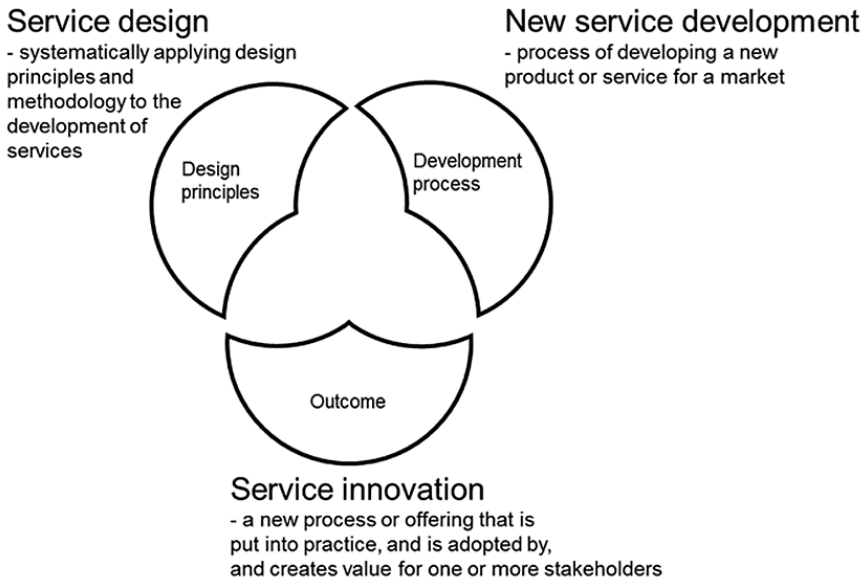

Figure 3. Scheme of service innovation creation.
Source: (Gustafsson, Snyder, Witell, 2020, p. 112).

C. Co-creation

The concept and framework of the service emerged through co-creation processes involving students of the Institute of Information Studies at the Jagiellonian University. Its development employed a combination of teaching and research methods, including simulation, design thinking, project-based methods, personas, and phenomenon-based learning. The latter constitutes part of a broader concept of building the university around a culture of experience, developed by Grzegorz Baran (Baran, 2019). This concept is founded on five pillars: "1) events and interactions as the basis of experience; 2) the human being at the centre of events; 3) logistics instead of tactics; 4) participation; 5) vibrant university" (Baran, 2019, p. 198). The process by which the service was shaped is described in detail in the article (Korycińska, 2025).

D. Maturity assessment

When we began developing the service in 2022, we decided to assess its readiness for market transfer using the 9-level TRL (technology readiness level) scale. In 2024, during routine literature searches conducted for the project, we identified an important study by Luis Salvador-Carulla et al., *Adaptation of the technology readiness levels for impact assessment in implementation sciences: The TRL-IS checklist* (Salvador-Carulla et al., 2024). This systematic literature review examines the application of TRL, including in the development of services, and highlights shortcomings of the method. Consequently, the authors suggest the possibility of using the Knowledge Readiness Level Framework (KRLs) as an alternative (Engel et al., 2019). We concluded that this solution was better suited to the specific nature of our project, and therefore decided to replace TRL with KRLs. Following the pathway outlined by the TRL

model, we reached level 5. Subsequent steps will be carried out according to KRLs. This is feasible because Engel et al. explicitly note a homology between the two systems. Although not fully congruent, they are sufficiently similar to allow a transition during the process. The KRLF ladder is presented in Figures 4 and 5.

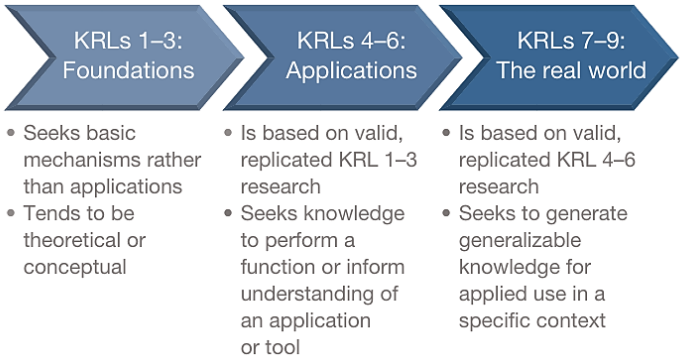

Figure 4. Overall schematic of KRLs.

Source: (Engel et al., 2019).

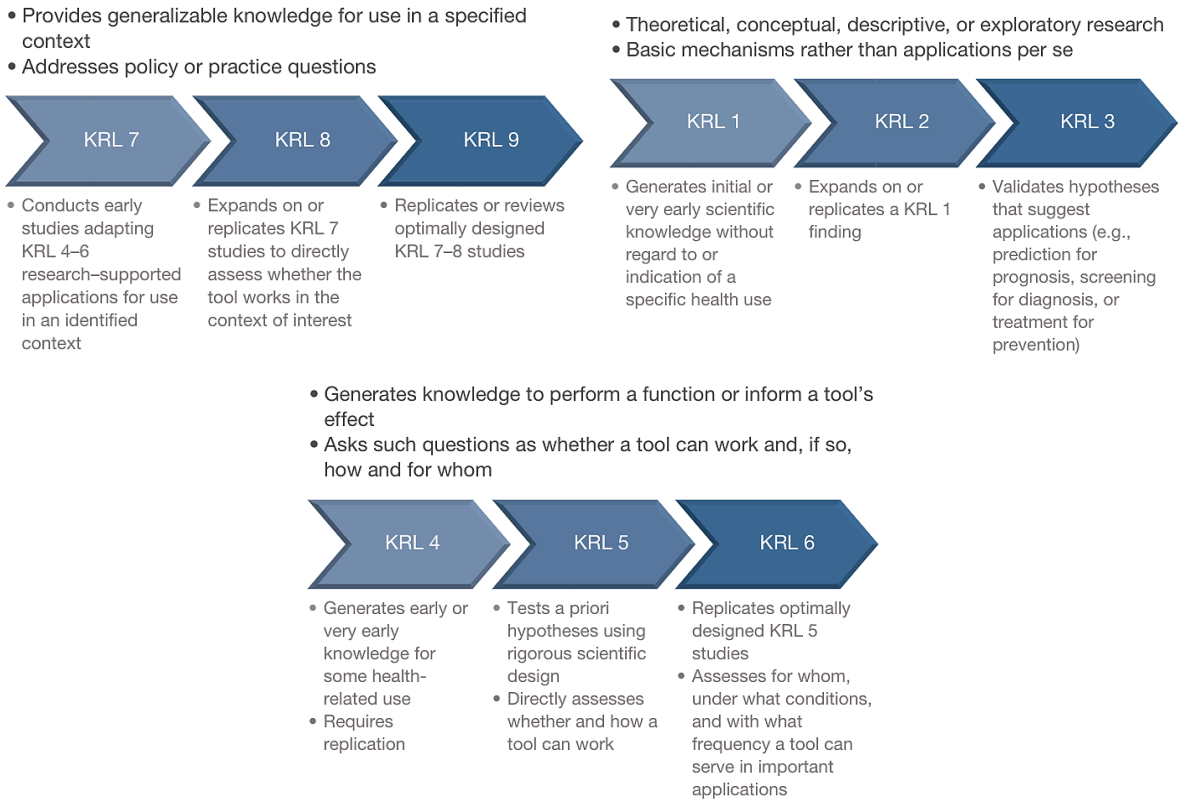

Figure 5. Detailed schematic of KRLs

Source: (Engel et al., 2019)

The article (Korycińska, 2025) describes the process of preparing the service up to TRL level 4 inclusive. In May 2025, a seminar was held at the Institute of Information Studies of the Jagiellonian University, during which the service prototype, together with specific proposals for supporting recipients affected by information apathy, was presented to a panel of seven experts. These included scholars in librarianship and information science, an entrepreneur

managing a knowledge and technology transfer company operating between universities and business, a researcher in psychology, a psychiatrist undertaking postgraduate training in psychodynamic psychotherapy, and a psychotherapist and supervisor with extensive professional experience. During the seminar, we tested hypotheses H1-H4 *a priori*, obtaining confirmation from the experts. It was in the course of the discussion on planning the subsequent stages of project maturation that the experts identified the potential to apply the service in academic drop-out prevention and suggested ways of evaluating its usefulness in this area.

At this stage, the service has therefore reached level 5 of KRLs. Work is currently underway to advance it to level 6.

E. Target beneficiaries

Focusing the service on reversing the effects of information apathy among students means that it would encompass all issues identified in the most recent literature as personal causes (i.e., related to student characteristics) and risk factors of drop-out. These are listed alphabetically in Table 4. We do not divide them into causal factors and predictors, as this distinction is not applied consistently in the literature. Nor do we attempt to group or prioritise them, as we lack the competence to do so. Moreover, such categorisation is not relevant for our purposes, since the reversal of information apathy exerts a global effect on all these problematic aspects. This is because, according to the very definition of information apathy, combating it consists primarily in restoring the student's motivation. Impairment of motivation, in turn, is identified in the literature as the most important correlate of academic drop-out (De Alencar Ribeiro et al., 2025; Quincho Apumayta et al., 2024; Pham et al., 2024; Lorenzo-Quiles et al., 2023). The service should be addressed to students at all levels of education, including doctoral candidates. The rationale is that information apathy may develop in any information user, and its underlying mechanisms are unrelated to the level of study. Apathy is a consequence of any rupture in the way an individual experiences their interactions with a given information ecosystem. Such a rupture may occur at any stage of studying, including among experienced students.

Table 4.
Student-related ("biographical") academic drop-out causes and predictors according to the most recent research output

Feature	Reference
anxiety	(Leow et al., 2025; Sinval et al., 2025; Camarillo-Nava et al., 2024; Lorenzo-Quiles et al., 2023; Buizza et al., 2024a; Vera-Cortázar, Álvarez-Lozano, 2022)
burnout (academic)	(Lorenzo-Quiles et al., 2023; Olson et al., 2023; Estrada et al., 2017) 07/04/2026 09:26:00
competences (academic: low)	(Suárez Perdomo et al., 2025)
depression	(Leow et al., 2025; Sinval et al., 2025; Camarillo-Nava et al., 2024; Lorenzo-Quiles et al., 2023)
efforts and dedication (lack of)	(Suárez Perdomo et al., 2025)
emotional self-regulation (poor)	(Buizza et al., 2024b)

engagement (academic, poor)	(Suárez Perdomo et al., 2025)

Cont. table 4.

engagement (academic: poor)	(González-Morales et al., 2025)
exhaustion (academic: physical and mental)	(González-Morales et al., 2025; Lorenzo-Quiles et al., 2023; Vera-Cortázar, Álvarez-Lozano, 2022; Estrada et al., 2017)
failure and guilt (feelings of)	(Lorenzo-Quiles et al., 2023; Lydner, 2022)
fear	(Lorenzo-Quiles et al., 2023; Vera-Cortázar, Álvarez-Lozano, 2022)
frustration	(Suárez Perdomo et al., 2025; Quincho Apumayta et al., 2024; Lorenzo-Quiles et al., 2023; Vera-Cortázar, Álvarez-Lozano, 2022)
interest in studies (loss of)	(Lorenzo-Quiles et al., 2023)
maladaptation to the university context in terms of competence, autonomy, organization, self-regulation in learning and social skills (lack of integration at university)	(González-Morales et al., 2025; Suárez Perdomo et al., 2025; Buizza et al., 2024a)
motivation (lack of)	(González-Morales et al., 2025; Suárez Perdomo et al., 2025; Buizza et al., 2024a; Quincho Apumayta et al., 2024; Lorenzo-Quiles et al., 2023)
procrastination	(Delgado-García et al., 2025; Gonzales-Morales et al., 2025; Suárez Perdomo et al., 2025)
resilience (poor)	(Suárez Perdomo et al., 2025; López-Aguilar, 2023; Olson et al., 2023)
satisfaction (lack of)	(González-Morales et al., 2025; Buizza et al., 2024b; Lorenzo-Quiles et al., 2023)
self-efficacy (lack of)	(Suárez Perdomo et al., 2025; Buizza et al., 2024b)
self-esteem (lack of)	(Quincho Apumayta et al., 2024; Lorenzo-Quiles et al., 2023)
sense of adequacy (lack of)	(Buizza et al., 2024a)
sense of belonging (poor)	(Álvarez-Pérez et al., 2025; Suárez Perdomo et al., 2025)
sense of insecurity	(Lorenzo-Quiles et al., 2023)
stress	(González-Morales et al., 2025; Leow et al., 2025; Sinval et al., 2025; Lorenzo-Quiles et al., 2023; Vera-Cortázar, Álvarez-Lozano, 2022)

Source: authors' own compilation.

F. Integrating the service into drop-out prevention

A service supporting students in recovering from information apathy may be incorporated into primary, secondary, and tertiary forms of prevention, in accordance with the consensual best-practice recommendation recurrently emphasised in the scientific literature and succinctly summarised by Quincho Apumayta et al.: "To prevent university dropout, it is essential to constantly monitor academic performance and include formal academic reinforcement activities. Educational policies should be designed with the realities and needs of students in mind, using innovative methodologies to increase motivation. Communication between university administration, faculty, and students is crucial in academic retention processes. Strategies to prevent dropout involve constant monitoring of academic performance, designing educational policies aligned with student needs, and implementing interventions that provide support and motivation to at-risk students. Finally, institutional aspects, such as the quality of support services and the availability of academic and social resources, are also critical factors affecting retention" (Quincho Apumayta et al., 2024).

This service may be delivered by students or doctoral candidates in fields related to information science, as well as embedded librarians[3] working in their home academic libraries and, by virtue of their role, familiar with the local information culture (Deja, Wójcik, 2021). Its most natural, though not exclusive, modes of delivery may include mentoring, tutoring, academic coaching, and various workshops in which teaching staff representing information science, particularly specialists in studies of information behaviour, should play a supportive role. These activities could also be implemented under the auspices of university units responsible for ensuring equal access and in cooperation with such units. We propose this form as a priority, as it aligns with current trends in the literature on academic drop-out prevention (Fierro Saltos et al., 2025; González-Ortiz-de-Zárate et al., 2025; Guerreiro, Jesus 2025; Kantor et al., 2023; Skrbinjek, Lesjak, Dermol, 2024, p. 570). Moreover, Yarborough and Fedesco (2020) observe that even simple gestures, such as efforts to get to know students, encouraging them to integrate their personal interests into coursework, or introducing group activities, can strengthen students' sense of connection and relational belonging. A pedagogical approach that addresses these needs is collaborative learning, which involves work in small groups wherein students take an active role in constructing understanding, while the instructor's task is to create conditions conducive to engagement and to provide formative feedback. Such initiatives not only cultivate responsibility and cooperation but also enhance students' sense of belonging and foster the development of durable support networks within the academic environment.

G. Material resources, cost efficiency, and potential for transfer beyond the university

In the proposed format, the service is delivered either on campus or remotely, and therefore does not require the acquisition of additional equipment. In the business model that will be developed at later KRL stages, it will nonetheless be necessary to consider various possible solutions for financing and remunerating the service providers, including cases in which these providers are students. In the longer term, the option of implementing the service commercially on the open market can certainly be envisaged. Such an implementation path has been described by Amelia Gil, Julia Olszewska, Jakub Pietrzak, and Dominika Siciarz, students of the Institute of Information Studies at Jagiellonian University, in the article *Preliminary design of an information service supporting the recovery of information competencies* (preprint), soon to be published in the series *Horyzonty informacji* [*Information Horizons*], which we recommend to interested readers.

5. Limitations

We acknowledge that our transition from a theoretical account of information apathy to the mechanisms underpinning academic dropout is, at this stage, primarily deductive. This is largely due to the paucity of research within informatology that explicitly examines the relationship between students' information competencies and behaviours in the university learning environment, and their potential or actual withdrawal from study. Indeed, we identified only one directly relevant contribution: Hillmert et al. (2019) *Informational Environments and College Student Dropout*, which provides empirical evidence that "informational environments can play an important role for the intention to leave college prematurely beyond academic performance and related factors which have long been studied as predictors of student attrition. The scarcity of such work is further confirmed by the recent and comprehensive *Bibliometric Review of Factors Influencing University Dropout (2018-2022)* by Álvarez-Ferrándiz et al. (2025).

In the absence of established evidence demonstrating the efficacy of optimizing information behaviour as a strategy for reducing dropout, our argument necessarily relies on deduction, albeit deduction grounded in robust premises. The underlying causal chain informing our reasoning unfolds as follows:

a) Empirically anchored research in informatology has demonstrated the objective difficulty of navigating academic information environments, a challenge intensified in contexts of liminality (e.g. entering university, embarking on an academic career) (Ruthven, 2021; Willson, Given, 2020; Willson, 2019).
b) These difficulties render the process of adapting to university information culture emotionally charged, often eliciting negative affective responses.
c) In turn, "emotions and feelings prompt information seeking in multiple ways (starting, expanding, limiting, and terminating), but also lead to information avoidance" (Willson, Given, 2020), because they directly influence the motivation to engage with information. Figure 6 below illustrates the correlations between emotional burden and and information behaviors, including non-using, avoiding and discontinuing, among early career academics (Willson, Given, 2020).
d) Information apathy is a generalized avoidance posture stemming from emotionally induced depletion of motivation. Restoring students' autonomous motivation and sense of agency should, accordingly, mitigate the risk of academic withdrawal.

Although empirical evidence validating this causal pathway is not yet available, our study adopts a design-science research approach precisely to generate such evidence. Through the implementation of the information service described herein, we aim to produce data capable of testing and potentially corroborating these initial deductive propositions.

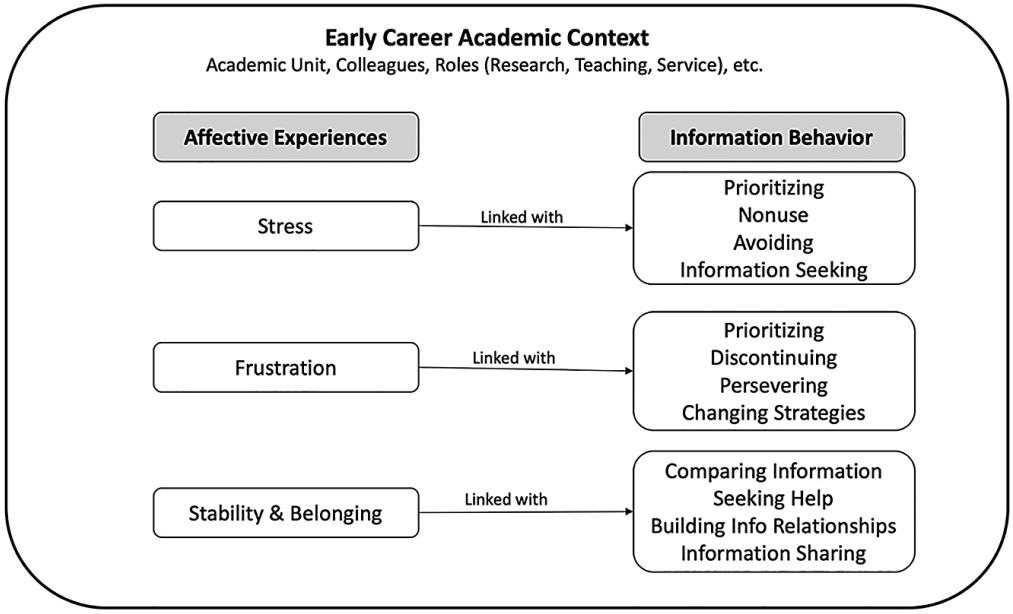

Figure 6. The influence of affective experiences on information behaviour among early career scholars. Source: (Willson, Given, 2020).

Examples of information behaviours associated with information apathy, derived from qualitative inquiry, are presented in (Korycińska, 2025). In their phenomenological concreteness, these behaviours do not diverge from the typical manifestations of information avoidance described in the well-established corpus of informatology research. What distinguishes them, however, is that participants experience them uniformly as debilitating, anxiety-inducing, and obscuring their perception of reality. Hence, the eight features defining the apathetic mode of engaging with information capture these experiential dimensions rather than representing discrete categories of avoidance behaviours.

The innovative component of our service lies in conducting a comprehensive diagnostic assessment of the client's multiple forms of information avoidance prior to implementing tailored interventions aimed at addressing underlying motivational deficits. These interventions will be selected (combined and adapted as necessary) from the broad repertoire of modalities designed to support personal information management (PIM)[4]. The service will be implemented within an ethics-of-care framework (Cushing, 2023) and shaped by Self-Determination Theory (SDT) as developed by Jeno, Danielsen and Raaheim (2018). In this setting, SDT, which "embraces a growth-centred approach", provides a means of directing analytic focus toward the motivational bases of students' academic success. As the authors emphasise, "it differentiates motivation as classes that vary in relative autonomy. Autonomous motivation encompasses behaviours high in autonomy, that is, done out of choice, with a sense of volition and self-endorsement. In contrast, controlled motivation is very low in autonomy and concerns activities done for a separate consequence (e.g. obtaining or avoiding external or internal contingencies). Autonomous motivation, as opposed to controlled motivation, is associated with high-quality

functioning, positive psychological well-being, and behavioural outcomes such as persistence and achievement in school" (Jeno, Danielsen, Raaheim, 2018).

The overarching purpose of our service is thus to assist students in their everyday personal information management, thereby alleviating the stress generated by academic information culture and, in consequence, restoring autonomous motivation. Peer-based support situated within an ethics-of-care environment will help meet apathetic students' "basic needs for autonomy (experience of choice and self-endorsement), competence (feeling efficacious), and relatedness (being cared for)", which are "assumed to facilitate students' autonomous motivation, persistence, and learning". Following implementation, we plan to assess outcomes using, at minimum, an SDT-informed scale and the Academic Motivation Scale (Kotera, Conway, Green, 2023).

6. Conclusion

The study introduces a research-informed, ethically grounded service designed to help students overcome information apathy, a condition that undermines their ability to engage with the academic environment and heightens the risk of drop-out. By translating conceptual insights from information science into a practical, preventive intervention, the project demonstrates how this discipline can meaningfully contribute to institutional strategies for enhancing student retention.

Developed through co-creation and situated within the Knowledge Readiness Level Framework, the service represents an academically rigorous yet operationally feasible form of innovation. Although the prototype has so far reached level 5 of the Knowledge Readiness Scale, expert evaluation has confirmed both its conceptual maturity and its potential for implementation. Progressing toward higher levels of readiness will require further empirical validation to assess its effectiveness across diverse institutional contexts.

Ultimately, the project offers a novel model of academic guidance that builds informational resilience and restores student motivation. Its conceptual coherence and low-cost feasibility make it adaptable to different settings and applicable across all levels of prevention. By reframing student support as a matter of informational well-being, the study links individual resilience with institutional responsibility for sustaining inclusive, responsive learning environments and equitable access to information-related competencies. From a policy and practice perspective, the proposed service promotes information behaviour interventions as relevant tools for addressing academic retention challenges.

By integrating theoretical innovation with applied service design, the project advances a research agenda that situates information apathy as both a conceptual and practical problem, one that the information science community is uniquely positioned to address.

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Footnotes

[1] "Information culture is understood as the norms of information behaviours towards information management in workgroups and organisations that facilitate conditions for effective information use and knowledge creation" (Deja, Wójcik, 2021).

[2] Information ecology: "a discipline concerned with uncovering the laws governing the flow of information within biosystems, including humans and society, their impact on individuals' mental, physical, and social health, and the development of appropriate methodologies aimed at shaping the information environment" (Eryomin, 1998, p. 251, cited in: Babik, 2022, p. 680).

[3] Embedded librarian is defined as "a member of the academic community who is a professional information expert with knowledge of the problems, needs and work environment of a specific group of users. The main role of an embedded librarian as a member of the academic community is to facilitate the process of effective information management. As S. Nagarkar and D. Murari pointed out: Instead of sitting in the library, embedded librarians work outside the library in a group of other domain experts. As a co-worker, they understand the information needs of other group members and try to solve these needs immediately (Nagarkar, Murari, 2010, p. 375; Deja, Wójcik, 2021).

[4] In information science, personal information management (PIM) "refers to people's activities utilized for acquiring, organizing, maintaining and retrieving information" (Alon, Forkosh, Baruch, Nachmias, 2020).

Appendix

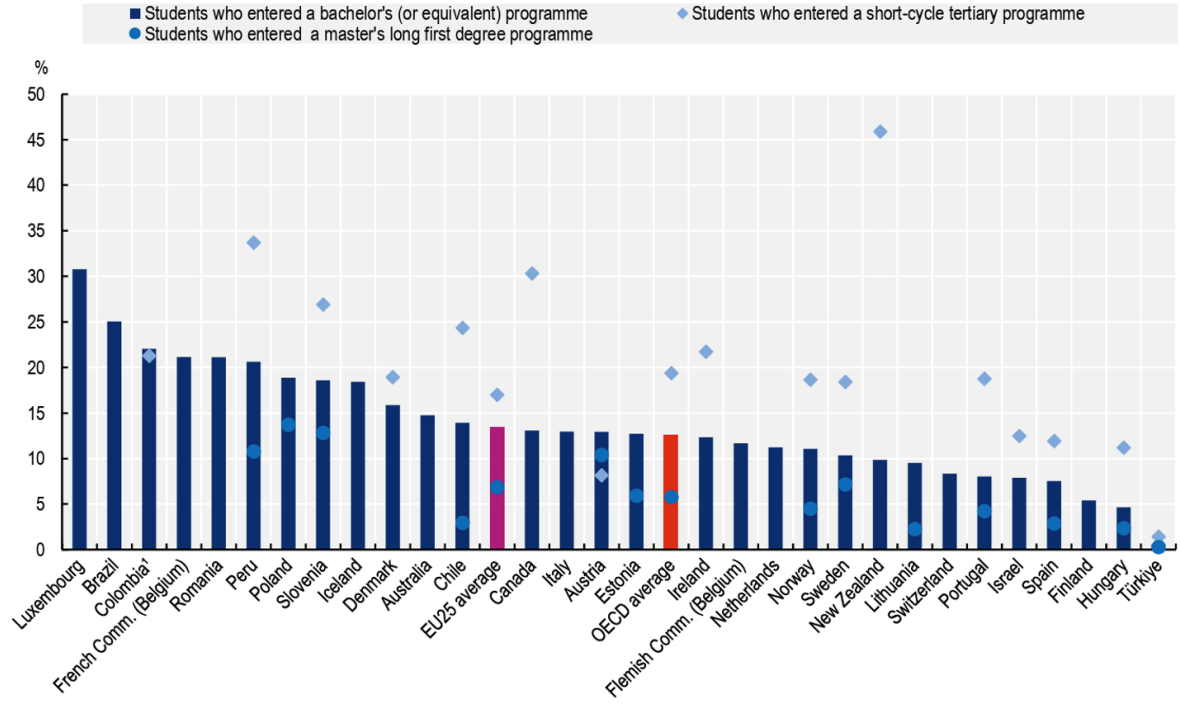

Figure 1. Drop-out rates after the first year of tertiary education, by level of education entered (2023).

Source: Education at a Glance: OECD Indicators 2025.

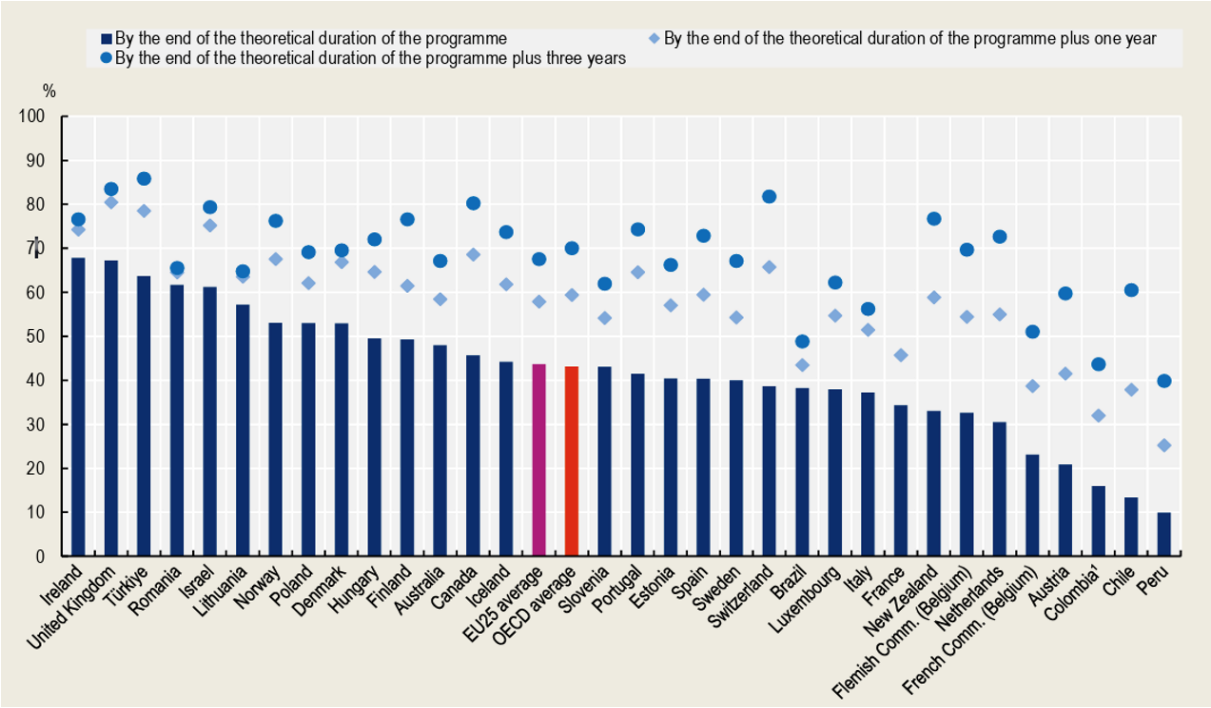

Figure 2. Completion rates of full-time students at any tertiary level (2023).

Source: Education at a Glance: OECD Indicators 2025.