sustainability

MDPI

Article

Toward Institutionalizing Academic Advising: A Needs Assessment at a Korean Private University

Yedana Lee [1], Gayoung Lee [1,*] and Jung-Eun Ha [2]

[1] Department of Special Education, Baekseok University, Cheonan 31065, Republic of Korea; dana170415@bu.ac.kr
[2] Department of Health Sciences, Baekseok University, Cheonan 31065, Republic of Korea; hajungeun@bu.ac.kr
* Correspondence: gayounglee@bu.ac.kr

Abstract

Self-designed curricular pathways are expanding across Korean higher education, increasing the complexity of students' academic, major, and career decision-making. This study examined student and faculty perspectives on institutionalizing a professionalized Academic Advisor (AA) role through a needs assessment at a private university in South Korea. Data were collected from a non-probability sample of 407 undergraduate students, concentrated primarily in health-science and education-related departments, and 10 full-time faculty members through a cross-sectional student survey and semi-structured faculty interviews. Students reported difficulty establishing criteria for deciding among options; 62.9% preferred a single, continuous advisor, and 64.6% indicated greater willingness to seek consultation after developing trust. Students also showed endorsement of proactive, data-informed support, although human-mediated interpretation was not directly tested as a condition of acceptance. A significant but small grade-level difference was found in advisor-relationship perception ($F(2, 394) = 3.27$, $p = 0.039$, $\eta^2 = 0.016$). Faculty interviews identified role overload, demand for proactive intervention, and a need to differentiate emotional mentorship from professional advising. Integrating the findings informed a preliminary dual-track advising framework combining faculty mentoring, professional AAs, competency-based quality assurance, and a hybrid Early Alert process. Rather than representing an implemented or validated model, the framework provides a preliminary direction for institutional development and future evaluation. From a sustainability perspective, the findings highlight the need to build institutional advising capacity while reducing reliance on discretionary faculty labor.

Keywords: academic advising; Early Alert; sustainable higher education; SDG 4; student retention; faculty workload; developmental advising; mixed methods

Check for updates

Academic Editors: Boris Dumnić, Milan Vidaković, Minja Bolesnikov and Borka Malcic

Received: 23 August 2026
Revised: 15 September 2026
Accepted: 16 September 2026
Published: 20 September 2026

Copyright: © 2026 by the authors. Licensee MDPI, Basel, Switzerland. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license.

1. Introduction

Korean higher education has increasingly emphasized curricular flexibility through free-major admission tracks, multi-track and convergence-major systems, and more individualized academic pathways [1,2]. These reforms are intended to broaden student choice and autonomy, but they may also increase the complexity of academic, major, and career decision-making [2,3]. As students assume greater responsibility for constructing their own academic pathways, universities face a corresponding need for advising structures capable of providing continuous and specialized support. However, existing advising arrangements have not necessarily evolved at the same pace. In many Korean universities,

the traditional lifelong assigned-faculty-mentor system relies on faculty members who provide long-term, relationship-based support alongside their teaching, research, and administrative responsibilities [4,5].

Existing research suggests that formally assigning an advisor does not necessarily ensure frequent or meaningful faculty–student interaction [6]. These limitations become particularly consequential when students must navigate increasingly individualized academic pathways. Institutionalizing academic advising therefore involves more than relabeling an existing faculty-mentor role; it requires clarification of advising responsibilities, continuity of contact, professional competencies, referral structures, and institutional support. In this study, institutionalization refers to the development of a structured advising system in which responsibilities, competencies, support mechanisms, and quality-assurance processes are explicitly defined at the institutional level.

International research on academic advising similarly indicates that faculty-centered advising can be constrained by competing teaching, research, and administrative responsibilities, while referral pathways to specialized institutional resources may remain informal or fragmented. Such constraints underscore the need to distinguish relational faculty mentoring from functions that require specialized academic-advising knowledge, systematic referral, and sustained institutional support.

Against this background, the present study was conducted as an exploratory institutional needs assessment at a private university in South Korea. Rather than evaluating an implemented advising model, it examines student and faculty perspectives to identify advising needs, constraints, and priorities that may inform future institutional development. Specifically, the study examines (a) difficulties students experience in academic, major, and career decision-making; (b) forms of institutional support perceived as necessary; (c) expectations regarding a professionalized Academic Advisor (AA) role; and (d) conflict and constraints experienced by faculty under the current advising arrangement. The integration of these perspectives is used to inform a preliminary institutional framework that differentiates relational faculty mentoring from professional academic advising and identifies potential competency, quality-assurance, and Early Alert components for subsequent development and evaluation.

This study was guided by four research questions:

RQ1. What difficulties do students experience in academic, major, and career decision-making, and what role do they expect an Academic Advisor to play?
RQ2. How do students perceive data-driven support, including Early Alert and recommendation/notification functions?
RQ3. What conflicts, limitations, and needs do full-time faculty experience in their current advising practice?
RQ4. How can the integrated student and faculty findings inform a preliminary institutional framework for academic advising?

Sustainability is used in this study as an interpretive institutional-capacity lens rather than as a directly measured outcome. From this perspective, sustainable academic advising concerns the capacity of universities to maintain continuous student support without relying disproportionately on discretionary faculty labor. This framing is relevant to Sustainable Development Goal 4 (Quality Education) insofar as inclusive and effective learning environments depend not only on curricular opportunities but also on the institutional capacity to support students navigating those opportunities [7]. However, the present study does not directly measure student persistence, faculty burnout, or institutional sustainability outcomes. Instead, it examines advising needs and constraints that may inform the development of more sustainable institutional support structures. The effectiveness and sustainability of any proposed framework therefore require subsequent implementation and empirical evaluation.

2. Literature Review

2.1. Defining the Academic Advisor Role

An Academic Advisor (AA), as conceptualized in this study, extends far beyond an administrative contact responsible for course registration or procedural inquiries. Rather, academic advising is increasingly recognized as an educational practice that supports students' academic progression, personal development, and long-term success [8,9]. Professional advisors are increasingly characterized as central institutional actors who facilitate academic planning, major and career exploration, and connections to university resources through continuous interaction with students. Consequently, the AA functions not as an episodic service provider but as a structural partner accompanying students throughout their educational journey [8]. Recent Korean research similarly highlights the growing importance of systematic academic advising. Analyses of advising programs for undeclared students show that Korean universities are expanding structured support for academic planning, career exploration, and major decision-making as flexible major-selection pathways grow [2].

More recently, academic advising has been reconceptualized as an integral component of higher education rather than a supplementary student service. White (2024) [10] argues that academic advising should be embedded within the academic structure of the institution, close to faculty and the curriculum, in order to preserve its academic character and advance the professionalization of advising. This perspective also strengthens the professional identity of advisors by positioning advising as an educational function comparable to teaching rather than merely an administrative responsibility.

2.2. Professionalization of Academic Advisors

In faculty-centered advising systems, the quality and continuity of advising may depend substantially on individual faculty members' availability, experience, and institutional support. However, the increasing complexity of higher education—including flexible curricula, interdisciplinary pathways, and individualized learning trajectories—has made informal advising increasingly insufficient. Korean studies of faculty-only advising models have likewise identified difficulties related to limited administrative support, insufficient systematic training and guidelines, psychological burden, and role limitations, underscoring the need for more structured institutional support [4,5].

Recent studies therefore emphasize that effective advising requires institutionally coordinated systems rather than isolated faculty efforts. Rust and Willey (2024) [11] define proactive advising as an institutionally supported practice characterized by coordinated outreach, timely intervention, systematic advisor development, and organizational infrastructure. Based on a national survey of four-year U.S. institutions, Rust and Willey (2024) [11] recommend institutionalizing proactive advising through coordinated rather than decentralized efforts and identify advising practices, implementation strategies, and technologies viewed as necessary for institutionalization [11].

This shift reflects a broader movement from advisor-centered practice toward institution-wide student success systems, where advising is regarded as a strategic institutional function.

2.3. Developmental and Proactive Advising

The theoretical foundation of academic advising has evolved substantially over the past decades. Early prescriptive advising focused primarily on providing procedural information and answering students' immediate academic questions. In contrast, developmental advising conceptualizes advising as a collaborative educational relationship that promotes students' autonomy, critical thinking, and lifelong decision-making capacity [12].

Building upon developmental advising, recent scholarship has introduced the concept of proactive advising. Rather than waiting for students to seek assistance after problems arise, proactive advising emphasizes continuous monitoring, timely outreach, personalized communication, and sustained relationship-building throughout students' academic experiences [11]. Such approaches are particularly valuable in increasingly complex higher education environments where students are expected to make independent academic and career decisions.

Evidence from the Monitoring Advising Analytics to Promote Success (MAAPS) initiative provides a more qualified picture. A large-scale randomized trial implemented proactive outreach, degree planning, and targeted, analytics-informed interventions for more than 10,000 low-income and first-generation students across 11 U.S. universities. Interim implementation findings suggested that some students reported valuable advising experiences, while the six-year evaluation found no statistically significant average effects on persistence or degree completion [13,14]. These findings suggest that proactive advising is a promising institutional approach, but its effects depend on implementation and should not be overstated.

2.4. Advisor Competencies and Data-Informed Advising

Effective advising depends not only on organizational structures but also on advisor competencies. The NACADA Core Competency Framework identifies three essential domains of advisor competence: conceptual competencies, informational competencies, and relational competencies. Together, these competencies enable advisors to translate institutional knowledge into individualized guidance while fostering trusting relationships that facilitate student development [15].

Recent advances in learning analytics have also expanded the range of data that can inform academic advising. Advisor-facing dashboards can provide comparative and predictive information to support advisors' decision-making, while student-facing dashboards can support reflection on study behaviour [16]. Recent empirical research demonstrates that learning analytics dashboards can effectively support both students and academic advisors by visualizing learning behaviors in ways that facilitate self-regulated learning. De Vreugd et al. (2024) [17] found that a student-facing learning analytics dashboard supported appraisal of study behaviour, while participants also expressed a need for reference frames to facilitate interpretation; effects on study behaviour varied.

Hatala and Nazeri (2024) [18] analyzed 28,290 actions from 896 university students and found that students' subsequent discussion behaviours were associated with the standing displayed in different dashboard reference frames.

These findings underscore the importance of treating analytics as information to be interpreted within advising processes rather than as self-sufficient evidence for automated decisions. Beyond predictive accuracy, recent research emphasizes that Early Alert systems should also be equitable and trustworthy. Patterson et al. (2023) [19] show, through a case study of an Early Alert system, how anticipation, inclusion, responsiveness, and reflexivity can be incorporated into system development, emphasizing inclusive stakeholder participation and attention to equity [19].

Dumont (2021) [20] found that implementation of an academic analytics tool produced only minor disruptions and little perceived improvement in advising practice when advisors were unable to use many of its functions, while also identifying the need for clear, transparent, and frequent communication between institutional leaders and advisors [20]. The evidence cautions against assuming that the availability of analytics alone will improve advising practice. More recent research has examined generative AI as a potential complement to professional advising. Lekan and Pardos (2025) [21] compared

GPT-4-generated major recommendations with recommendations from human academic advisors for undeclared students, providing evidence for the potential of AI-augmented advising while retaining a comparative focus on human advisor expertise [21].

2.5. Sustainable Advising Systems

Sustainability in academic advising extends beyond improving student outcomes; it concerns whether universities can maintain effective student-support systems over time without exhausting the human and organizational resources on which those systems depend. In this study, sustainability is used as an institutional-capacity lens for considering whether academic advising structures can be maintained over time without disproportionate reliance on discretionary faculty labor. This perspective does not treat student persistence, faculty burnout, or institutional sustainability as outcomes measured in the present study. Rather, it draws attention to the organizational conditions—including professional competencies, coordinated support structures, data infrastructure, referral pathways, and quality-assurance mechanisms—that may enable universities to provide sustained student support.

Recent evidence indicates that academic-advisor burnout is associated primarily with excessive workloads, limited organizational support, and insufficient institutional recognition rather than individual characteristics [22]. The related literature also suggests that when faculty advising is valued but insufficiently recognized within workload structures, stress and burnout may result [23]. These findings highlight workload, organizational support, recognition, and role design as relevant considerations when institutions seek to maintain advising capacity over time.

These considerations suggest that faculty mentoring and professional Academic Advisors should be viewed as complementary rather than competing functions. A possible institutional response is to differentiate complementary advising functions: faculty may retain disciplinary and relational mentoring, while professional Academic Advisors provide structured academic planning, data-informed support, and institutional coordination. In the present study, this differentiation is treated as a preliminary organizational proposition to be examined through the student and faculty needs assessment, rather than as an established or validated sustainability model.

2.6. Research Gap

Although previous studies have examined developmental advising, proactive advising, learning analytics, and advisor competency frameworks, several important gaps remain.

First, research on the transition from traditional faculty-centered advising toward more professionalized Academic Advisor structures remains limited, particularly in rapidly changing higher education contexts. Recent Korean studies have begun to examine structured advising for undeclared students, faculty-only advising constraints, and AA role frameworks under the autonomous major-selection system, but this evidence base is still emerging [2,4,5].

Second, existing studies have generally investigated either students or advisors independently, while fewer studies have explicitly brought student needs and faculty advising constraints together within the same institutional needs assessment.

Third, despite growing interest in learning analytics and Early Alert systems, Korean higher-education research has examined learning analytics for academic-risk prediction and, more recently, institutional learning-analytics systems, but evidence remains limited on how such data-informed technologies should be integrated with relationship-based academic advising in practice [24].

The study makes three related contributions. First, it examines advising reform simultaneously from the student and faculty perspectives, linking student decision-making needs with the organizational constraints of those who currently provide advising. Second, the integrated findings inform a preliminary dual-track framework that differentiates relational and disciplinary faculty mentoring from professional, data-informed academic advising. Third, the findings identify potential human-in-the-loop Early Alert and competency-based quality-assurance components for subsequent institutional development and evaluation. Together, these contributions position advising reform as an institutional-capacity issue relevant to sustainable higher education, rather than demonstrating sustainability outcomes directly.

3. Materials and Methods

3.1. Research Design

This study used a convergent parallel mixed-methods design [25], in which quantitative survey data from students and qualitative interview data from faculty were collected during the same period, analyzed separately using methods appropriate to each strand, and integrated at the interpretation stage through the joint display presented in Section 4.7. The two strands addressed complementary aspects of the institutional advising needs assessment and were integrated to address RQ4.

This design was selected, rather than a sequential explanatory or exploratory design, because the two data strands answer structurally distinct research questions (RQ1–RQ2 for students; RQ3 for faculty) rather than one strand explaining or building on the other; RQ4 is answered by their integration. Neither population alone could address all four research questions: students can report their own decision-making experience and expectations but not the operational constraints faculty face in delivering advising, and vice versa.

3.2. Student Survey

Undergraduate students at the participating university were recruited through an open online survey administered using Google Forms (Google LLC, Mountain View, CA, USA). Faculty members distributed the survey link through department-managed student messaging groups used for routine academic communication. Participation was entirely voluntary, and no incentives were provided. Because the survey employed an open recruitment strategy and the survey link could be freely accessed by students within these communication channels, the exact number of students who received or viewed the invitation could not be verified. Consequently, a response rate could not be calculated. A total of 407 valid responses were included in the quantitative analysis. Data were collected over a five-day window (26–30 January 2026) for the purpose of gathering baseline evidence to inform AA system design. Because sampling was non-probabilistic and concentrated in two colleges, the sample should not be treated as representative of the university's full student body; this constraint is revisited in Section 5.7.

The questionnaire included the following sections: (a) demographic and academic-status items (grade level, department, major-decision status, self-reported academic burden, career-decision certainty); (b) academic/major/career decision-making experience; (c) self-understanding support needs; (d) perceptions of the advisor relationship; (e) perceived need for a dedicated Academic Support Advisor system; (f) acceptance of data-driven support functions; and (g) open-ended items on decision-making difficulties, perceived limitations of current institutional support, and expectations for the AA role. Unless otherwise noted, closed-ended items used a 5-point Likert scale (1 = strongly disagree to 5 = strongly agree). Items were developed by the research team based on the advising literature reviewed in Section 2 (NACADA competency domains; developmental advising

theory; Early Alert practice) rather than adapted from a single pre-existing validated instrument; internal-consistency reliability for the resulting composite scales is reported in Section 4.2, but no external validity evidence (e.g., confirmatory factor analysis, convergent validity against an established advising-climate measure) is currently available for this instrument, which we note as a limitation in Section 5.7. Accordingly, the composite measures should be regarded as preliminary rather than as fully validated scales.

Five composite scales were computed, each as the mean of its constituent items. Academic/Major/Career Decision-Making-Experience (4 items) assessed the extent to which students found academic, major, and career decision-making difficult and burdensome to navigate independently; one item assessing sufficient understanding of one's major was reverse-scored prior to averaging so that higher scores consistently indicate greater perceived difficulty and burden. Self-Understanding Support Need (3 items) assessed students' perceived need for objective assessment of their academic strengths and weaknesses and for advising that accounts for their personal circumstances; higher scores indicate greater perceived need for such support. Advisor Relationship Perception (3 items) assessed students' preference for a consistent, trust-based relationship with a designated advisor; higher scores indicate more favorable perceptions of a continuous advisor relationship. Perceived Need for the AA System (4 items) assessed students' expectations that a dedicated advising system would support academic planning, major/career decision-making, and university adjustment; higher scores indicate greater perceived need for the proposed system. Acceptance of Data-Driven Support (3 items) assessed students' attitudes toward proactive, data-informed advising (e.g., academic-risk alerts based on attendance and grades); higher scores indicate more favorable attitudes toward data-informed advising. The complete questionnaire, including full item wording for each scale, is provided as Supplementary Material (Supplementary File S1).

Prior to data collection, participants were informed of the purpose of the study, the voluntary nature of participation, and the intended research use of the collected data. Informed consent procedures are detailed in Section 3.5.

3.3. Faculty Interviews and Qualitative Analysis

Ten full-time faculty members were purposively selected to represent variation in disciplinary area (natural sciences, humanities and social sciences, arts and physical education) and career stage (early-career, mid-career, and senior). Data were collected through semi-structured interviews in which participants described their advising experiences. The interview data were analyzed using an inductive thematic-analysis approach. In the first coding cycle, the first author identified recurring meaning units and initial codes related to advising constraints and needs, including time pressure, insufficient administrative expertise, emotional exhaustion, communication barriers, and lack of data access. In the second cycle, related codes were grouped into broader categories and refined into three overarching themes (Section 4.6). The themes were subsequently mapped onto components of the proposed AA policy model, including role definition, faculty-support redesign, data and systems infrastructure, referral protocols, evaluation and incentive structures, and quality assurance. To enhance analytic trustworthiness, the two co-authors independently reviewed the original qualitative materials together with the preliminary coding framework, including the codes, categories, and emergent themes. Differences in interpretation were discussed through iterative meetings until consensus was reached, and the coding framework was refined accordingly. This investigator triangulation was used to strengthen the credibility and consistency of the thematic analysis. Because the transcripts were not independently double-coded from the outset, formal inter-coder agreement statistics (e.g., Cohen's kappa) were not calculated.

The semi-structured interview guide was developed by the research team specifically for this study, informed by the same advising literature reviewed in Section 2 (NACADA competency domains; developmental advising theory; Early Alert practice), and organized around eight thematic domains: role conflict and time allocation; limitations in academic-administrative expertise; counseling-performance evaluation practices; timing of risk recognition and data access; career advising for students from particular backgrounds; psychological/emotional exhaustion; generational change in communication; and institutional needs for an Academic Advisor system. Narrative-inquiry prompts (e.g., "Could you tell me from the beginning what the situation was like at that time?") were used to elicit specific advising episodes. Interviews were audio-recorded with participants' consent (approximately 60 min each) and transcribed with the assistance of CLOVA Note speech-to-text software (NAVER Corp., Seongnam, Republic of Korea), after which transcripts were manually reviewed and corrected by the research team against the original recordings; brief summary notes were also taken during each interview.

3.4. Data Analysis

Quantitative survey data were analyzed using descriptive statistics (frequencies and percentages for categorical items; means and standard deviations for scaled items), internal-consistency reliability (Cronbach's α) for five composite scales, and one-way analysis of variance (ANOVA) with Tukey HSD post hoc comparisons to test for grade-level (2nd–4th year) differences on each composite scale, conducted using IBM SPSS Statistics for Windows, Version 29.0 (IBM Corp., Armonk, NY, USA), with statistical significance set at $p < 0.05$. Eta-squared (η^2) was reported as an effect-size estimate for the omnibus ANOVA results. Because five separate omnibus ANOVAs were conducted without a familywise multiple-comparison correction, statistically significant findings were interpreted cautiously and in conjunction with effect size. First- and fifth-year students (n = 10 combined) were excluded from the grade-comparison analysis due to small cell sizes, yielding an analytic sample of n = 397 for that analysis.

Open-ended student responses were analyzed through keyword-assisted categorization and thematic coding. Faculty interview data were analyzed manually, without qualitative data analysis software, using the thematic-analysis procedure described in Section 3.3. Quantitative and qualitative findings were integrated at the interpretation stage through a joint display, which maps survey-based student findings against faculty themes and the resulting preliminary institutional implications.

3.5. Ethics Statement

This study was originally conducted as part of an institutional policy evaluation project. Participation in both the questionnaire survey and faculty interviews was voluntary. Prior to participation, all participants were informed that the collected data would be used for research purposes, that participation was voluntary, and that their responses would be analyzed in an anonymized form. Personally identifiable information was not collected, and all data were de-identified before analysis.

At the time of original data collection (January 2026), this survey was administered as an internal program-evaluation activity and did not undergo prospective Institutional Review Board (IRB) review. Following data collection, the authors contacted the Baekseok University IRB to request retrospective review; the IRB confirmed that it reviews human-subjects research only prospectively and therefore could not issue a retroactive approval or exemption determination for a study whose data collection had already been completed. Under Korean bioethics regulation, anonymous surveys and interview research that collect no personally identifiable information and pose no more than minimal risk to participants

may be exempt from IRB review (Enforcement Rule of the Bioethics and Safety Act, Article 13, Paragraph 1, Subparagraph 2); the authors' assessment is that the present study meets these criteria, as no identifying information was collected and all data were analyzed in de-identified form. This explanation, together with the blank student questionnaire and faculty interview protocol, was submitted to the Editorial Office for review, and the authors will incorporate any further determination the Editorial Office provides.

4. Results

4.1. Sample Characteristics

Table 1 summarizes the demographic and academic-status characteristics of the 407 student respondents.

Table 1. Sample characteristics of student respondents (N = 407).

Characteristic	Category	*n*	%
Grade level	1st year	3	0.7
	2nd year	128	31.4
	3rd year	146	35.9
	4th year	123	30.2
	5th year	7	1.7
Major-decision status	Major confirmed	340	83.5
	Exploring major	53	13.0
	Considering transfer	7	1.7
	In double/multiple major	7	1.7
Self-reported academic burden	No substantial burden	239	58.7
	Substantial burden	162	39.8
	Academic warning/at-risk level	6	1.5
Career-decision certainty	Somewhat certain	227	55.8
	Very certain	88	21.6
	Still exploring	87	21.4
	Very uncertain	5	1.2

Note. Department-level distribution was concentrated in health-science and education-related fields (Emergency Medical Services 31.0%, Physical Therapy 29.5%, Dental Hygiene 24.3%, Optometry 9.1%, remaining departments < 3% each), reflecting the sampling frame of the College of Health Sciences and College of Education.

4.2. Reliability and Descriptive Statistics for Composite Scales

Five composite scales were constructed from the closed-ended items. Internal consistency was acceptable to excellent for four of the five scales (Table 2); the Decision-Making Experience scale showed marginal reliability (α = 0.649), which we note as a limitation in Section 5.7. Results involving this scale should therefore be interpreted cautiously.

Full item counts, item wording, the mean-scoring procedure (including reverse-scoring of one item in the Decision-Making Experience scale), and the interpretation of higher scores for each scale are provided in Section 3.2 and in the complete questionnaire (Supplementary File S1).

Table 2. Descriptive statistics and internal consistency of composite scales.

Scale	M	SD	Cronbach's α
Academic/Major/Career Decision-Making Experience	3.100	0.697	0.649
Self-Understanding Support Need	2.844	0.809	0.742
Advisor Relationship Perception	3.705	0.659	0.776
Perceived Need for the AA System	3.765	0.660	0.911
Acceptance of Data-Driven Support	3.789	0.685	0.845

4.3. Grade-Level Differences

One-way ANOVA (2nd–4th year, n = 397) only indicated a statistically significant grade-level difference for Advisor Relationship Perception (Table 3). We note, however, that the associated effect size for this difference was small (η^2 = 0.016), meaning grade level accounted for only a small proportion of variance in advisor-relationship perception; the finding should be read as a modest, statistically detectable pattern rather than as evidence of a practically large or policy-defining difference between grade levels. Given that five omnibus ANOVAs were conducted without a familywise multiple-comparison correction, this isolated finding should also be interpreted cautiously.

Table 3. One-way ANOVA of composite scales by grade level (2nd–4th Year, n = 397).

Scale	F (2, 394)	p	η^2
Academic/Major/Career Decision-Making Experience	2.224	0.110	0.011
Self-Understanding Support Need	1.812	0.165	0.009
Advisor Relationship Perception	3.272	0.039 *	0.016
Perceived Need for the AA System	2.941	0.054	0.015
Acceptance of Data-Driven Support	2.024	0.134	0.010

* $p < 0.05$.

Post hoc Tukey HSD comparisons (Table 4) indicated that 4th-year students reported significantly higher Advisor Relationship Perception than 3rd-year students; no other pairwise grade comparison reached significance.

Table 4. Tukey HSD post hoc comparisons for Advisor Relationship Perception.

Grade Comparison	Mean Difference	p (adj.)	95% CI	Reject H0
2nd vs. 3rd	−0.058	0.745	[−0.246, 0.129]	No
2nd vs. 4th	0.144	0.194	[−0.051, 0.339]	No
3rd vs. 4th	0.202	0.033 *	[0.013, 0.392]	Yes

* $p < 0.05$.

4.4. Endorsement of AA-Related and Data-Driven Support Functions

Table 5 summarizes the proportion of students endorsing ("agree" or "strongly agree") key items related to the AA role and data-driven support functions. Endorsement levels are reported descriptively and should not be interpreted as evidence of a tested association or causal condition.

Table 5. Student endorsement rates for key advising and data-driven support items (N = 407).

Item	% Agree or Strongly Agree	% Disagree or Strongly Disagree
Need for a designated Academic Advisor	55.6	4.1
A single continuous advisor would be more effective than rotating consultation	62.9	6.2
Would consult more often if a trusting relationship formed	64.6	2.0
AA would help with academic planning	60.2	4.1
AA would help with major/career decision-making	63.7	5.4
AA would help with school adjustment	61.2	5.6
AA should help students decide for themselves, not decide for them	69.5	—
Need for attendance/grade-based academic risk alerts	64.8	4.9
Want course/plan recommendations based on completion status	70.0	2.4
Support proactive AA outreach when risk is detected	62.4	3.6

Note. Dashes indicate the specific disagreement percentage was not separately isolated in the reported breakdown. Full item-level response distributions (5-point scale) are available from the corresponding author upon request.

4.5. Qualitative Themes from Open-Ended Student Responses

Thematic coding of open-ended responses on decision-making difficulty identified seven recurring categories: (1) fundamental uncertainty about direction and lack of criteria for choosing among options—students more often reported not knowing what standard to decide by than not knowing what options existed; (2) tension between aptitude/interest and perceived real-world viability; (3) anxiety about employment prospects and the future; (4) ongoing doubt about major fit even after major confirmation; (5) difficulty with concrete academic-planning tasks (course selection, scheduling, graduation-requirement tracking); (6) a perceived lack of accessible, individualized advice; and (7) fear and burden associated with the decision itself, leading some students to avoid or delay decisions altogether.

On perceived limitations of current institutional support, students described existing support as fragmented and episodic rather than structural: lack of an overall roadmap for what to prepare for at each stage, advising that felt procedural rather than individualized, career information that felt abstract rather than concrete, and an absence of continuity ("a different person each time"). On expectations for the AA role, the most frequently cited functions were career-direction exploration and long-term roadmap design (27.3% of the 407 student respondents), followed by course registration and credit-completion management (22.9%), graduation-requirement guidance (13.0%), extracurricular/internship/field-practicum linkage (11.3%), and academic-difficulty prevention and study-strategy advice (10.1%). Because a single open-ended response could be assigned more than one code, these percentages do not sum to 100%.

4.6. Faculty Narrative Findings

Thematic analysis of the 10 faculty interviews converged on three themes:

Theme 1: Role conflict and professional role-overload. Faculty across career stages described sustained time and psychological conflict between research/administrative obligations and student advising, which was frequently perceived as an "additional duty" rather than core work. Advising demands requiring specialized administrative knowledge (e.g., tracking constantly changing degree requirements across convergence majors and multiple tracks) were described as a distinct source of burnout, separate from the emotional-labor demands of advising itself.

Theme 2: Demand for a proactive intervention system. Multiple faculty described only becoming aware of a student's academic crisis after the fact—for example, after a student had already received an academic warning and decided to leave the university—and identified the absence of a real-time dashboard for attendance and interim performance data as the central structural barrier to earlier intervention.

Theme 3: Demand for functional differentiation between emotional support and professional academic administration. Faculty consistently distinguished between the relational/emotional dimension of advising, which they wished to retain, and the professional academic-administrative dimension (degree-pathway design, risk screening, resource referral), which they wished to see assigned to a differentiated, specialized role.

4.7. Joint Display: Integration of Quantitative and Qualitative Findings

Table 6 presents the revised joint display distinguishes direct convergence or complementarity between the two data strands from broader institutional implications proposed by the authors. This distinction is important because the dual-track, certification, and Early Alert components were not implemented or evaluated in the present study.

Table 6. Joint display of quantitative student findings, qualitative faculty themes, and policy implications.

Student Survey Finding	Faculty Interview Theme	Type of Integration	Preliminary Implication
62.9% endorsed a single, continuous advisor; 64.6% endorsed the statement that they would consult more often if a trusting relationship formed.	Theme 1: Role conflict/professional role-overload.	Complementarity: students emphasize continuity and trust, while faculty describe workload and role constraints.	A stable primary advising contact may need to be supported by an institutional structure that does not rely solely on discretionary faculty workload.
64.8% endorsed attendance/grade-based risk alerts; 70.0% endorsed completion-based course/plan recommendations; 62.4% endorsed proactive AA outreach when risk is detected.	Theme 2: Demand for a proactive intervention system.	Convergence on proactive support, but the survey did not test whether acceptance depended on human-mediated interpretation or outreach.	A hybrid Early Alert process combining data identification with human review is an author-proposed direction for subsequent development and evaluation.
69.5% endorsed an AA role that helps students decide for themselves; commonly coded expected roles included career-roadmap design (27.3%) and course/credit management (22.9%).	Theme 3: Functional differentiation between emotional mentorship and professional academic administration.	Complementarity: student role expectations and faculty role-boundary concerns both support clearer differentiation of advising functions.	A preliminary dual-track structure may distinguish relational faculty mentoring from professional academic advising while maintaining continuity through coordinated roles.

5. Discussion

5.1. Toward a Dual-Track Advising Model

The integrated student and faculty findings inform a preliminary functional differentiation of the current assigned-faculty-mentor role rather than its wholesale replacement. Under the proposed dual-track model, faculty mentors would continue to provide disciplinary guidance, academic mentorship, and socio-emotional continuity—the relational dimension of advising that both groups value—while professional Academic Advisors would assume primary responsibility for structured degree-pathway planning, data-informed risk screening, proactive outreach, and resource referral. The two roles are therefore complementary but institutionally differen-

tiated. This proposed structure is intended to address the role conflict faculty describe (Theme 1) while responding to students' expressed preference for a partner who helps them decide rather than decides for them (69.5% endorsement; Section 4.4). Organizationally, the professional AA is positioned as a connective 'student success hub' linking career-support offices, counseling centers, and teaching-and-learning-support centers rather than as an isolated advising silo. To preserve the continuity valued by students, the two roles would need clearly defined responsibilities, coordinated referral and information-sharing procedures, and a stable primary point of contact rather than parallel, disconnected advising channels.

5.2. AA Competency Certification as a Quality-Assurance System

Students' responses indicate the importance of continuity and trust in the advising relationship; 64.6% endorsed the statement that they would consult more often if a trusting relationship formed (Section 4.4). Role creation alone cannot guarantee such quality. We therefore propose a competency-based professional-development and certification framework for professional Academic Advisors. Importantly, progression should be based on demonstrated advising competence and scope of responsibility rather than faculty seniority or years of academic employment. The framework in Tables 7 and 8 is presented as a conceptual quality-assurance model informed by the integrated findings; specific training hours, renewal periods, and performance thresholds should be established and validated through subsequent implementation research rather than treated as empirically determined by the present study.

Table 7. Proposed competency-development stages for professional academic advisors.

Stage	Advisor Development Stage	Developmental Goal	Core Competencies
1. Foundation	Foundation/entry stage	Building rapport; settling students into university life	Rapport-building and active listening; mastery of academic regulations; support for college-life adjustment
2. Professional	Developing professional stage	Solving students' academic and pathway problems	Convergence-major/multi-track advising; at-risk student screening; advanced coaching techniques
3. Master	Advanced/ supervisory stage	Connecting students to their future	Life mentoring; career-roadmap design; mentoring of junior AAs

Table 8. Proposed AA certification and quality-assurance levels.

Level	Title	Eligibility/Progression Basis	Certification Criteria	Validity
1	Certified AA	Entry to professional advising role	Foundational preparation in academic regulations, ethics, relational advising, and supervised advising practice	Periodic review
2	Professional AA	Demonstrated Level 1 competence and supervised practice	Advanced preparation in coaching, career/pathway advising, Early Alert interpretation, and documented referral/follow-up competence	Periodic renewal
3	Master AA/Coaching Master	Demonstrated advanced competence and supervisory capacity	Advanced specialized preparation; documented complex-case competence; contribution to advisor supervision, case review, or professional development	Periodic advanced-level review

We emphasize that certification is conceived not as a one-time credential but as a quality-assurance mechanism. As a proposed implementation approach, future certification development could draw on multiple sources of evidence, such as scenario-based performance assessment, standardized advising-record review, supervised case practice, student feedback, and documented referral or follow-up processes. Advancement and renewal could likewise be linked to continuing professional development and demonstrated competence. Because the present study did not evaluate a certification program experimentally, the framework specifies competency domains and progression principles rather than fixed universal thresholds.

5.3. A Hybrid Early Alert Model

Consistent with the human-in-the-loop framing in the literature (Section 2.4) and with faculty's explicit demand for a proactive system (Theme 2), we propose a four-stage hybrid Early Alert process: (1) data collection and identification—system-level aggregation of attendance, grades, and completion data with automated flagging of at-risk patterns; (2) professional interpretation—the AA reviews the flagged signal in light of the student's personal and academic context and determines whether the pattern reflects a transient circumstance or a structural academic problem; (3) proactive intervention—the AA initiates contact before the student requests help, calibrating outreach intensity to risk level and connecting the student to appropriate institutional resources; and (4) follow-up and feedback—monitoring of post-intervention status, with advising records fed back into the system to refine future support. In the student survey, 62.4% endorsed proactive AA contact when risk was detected (Section 4.4). However, the survey did not directly test whether acceptance depended on human interpretation or on a particular form of outreach. Human review is therefore presented here as a design principle informed by the literature and the faculty findings, rather than as a condition empirically demonstrated by the student survey. Implementation should additionally incorporate transparent data-governance rules, proportionate data access, privacy protection, procedures for identifying and mitigating algorithmic bias, and clear communication to students about how risk indicators are generated and used.

5.4. Redefining the AA Function: A Plan–Prevent–Refer–Proof Framework

Based on an interpretive synthesis of the integrated quantitative and qualitative findings, we propose reorganizing the AA's institutional function around four verbs rather than a list of tasks: Plan (major/pathway roadmap design), Prevent (learning support and risk screening), Refer (structured referral to other colleges or specialized counselors rather than direct handling of clinical or psychological issues), and Proof (outcome recording and feedback for continuous improvement). This Plan–Prevent–Refer–Proof (PPRP) framework is a conceptual synthesis proposed by the research team rather than a directly measured outcome of the survey or interviews. It is intended to make explicit what the existing assigned-faculty-mentor role leaves implicit: the AA is not expected to resolve every student issue personally, but to plan, identify risk early, connect students with appropriate resources, and document outcomes.

5.5. Institutional Incentive Redesign

Faculty interview findings motivate consideration of institutional incentive redesign: the role conflict and role-overload described in Theme 1 (Section 4.6) center specifically on advising being treated as uncompensated, unrecognized 'additional duty' rather than core work, which suggests that a transition relying on faculty goodwill alone would likely reproduce the same overload pattern under a new name. Potential implementation components for an AA transition may include: a standardized allocation of protected advising

time each semester, explicitly separated from teaching and administrative load; formal recognition of certification level and advising performance (including quality indicators, not only session counts) in faculty evaluation; monetary incentives tied to certification tier; regularized case supervision by counseling and education specialists; and differentiated participation strategies that account for rank and tenure-track status. These components were not tested in the present study and should be treated as institutional design options requiring feasibility and implementation evaluation.

5.6. Integrating Socio-Emotional Considerations Within the AA System

Faculty interview findings (Theme 3, and particularly the emotional-transfer and burnout experiences described in Section 4.6) indicate that student mental-health and socio-emotional issues cannot be fully separated from academic advising, even under a dual-track model. Accordingly, a future AA framework could incorporate a minimal socio-emotional layer (self-management, relationship-management, and help-seeking awareness) while explicitly routing high-risk cases to specialized counseling services through the Refer function above, and, as an implementation consideration, could consider whether academic-persistence and appropriate socio-emotional indicators can be coordinated within an integrated support system rather than maintained as disconnected processes, subject to ethical, privacy, and governance safeguards.

5.7. Limitations

Several limitations qualify these findings. First, data were collected at a single private university using non-probability convenience sampling concentrated in health-science and education-related departments; the sample should not be treated as representative of the university's full student body, and generalization to other disciplinary contexts or institution types should be made cautiously. In particular, the proposed framework may require modification when applied to disciplines not well represented in the present sample. Because participants were recruited through an open online survey distributed via department-managed student communication groups, the total number of students who received or viewed the survey invitation could not be determined. Consequently, a response rate could not be calculated, and the findings may be subject to self-selection bias. Future studies should employ more systematic sampling procedures to improve the generalizability of the findings. The five-day data-collection period (26–30 January 2026) also provides a time-specific cross-section and may not capture advising needs during other periods of academic demand, such as course registration or the end of a semester; future studies should consider multiple data-collection periods. Second, the cross-sectional survey design does not permit causal inference regarding, for example, whether trust in an advisor increases advising uptake or whether students predisposed to seek advising also report higher trust; we have used associative rather than causal language throughout Section 4 accordingly. In addition, five omnibus ANOVAs were conducted without a familywise multiple-comparison correction, increasing the possibility of Type I error; the single statistically significant grade-level result should therefore be interpreted cautiously, particularly given its small effect size ($\eta^2 = 0.016$). Third, the Decision-Making Experience scale showed only marginal internal consistency ($\alpha = 0.649$), and results involving that scale should be interpreted with corresponding caution. Fourth, the survey instrument was developed by the research team for this study rather than adapted from a previously validated measure, and while internal consistency was acceptable to excellent for four of five scales, no external validity evidence is yet available; future work should examine the factor structure of the scales, including confirmatory factor analysis where appropriate, and assess convergent and discriminant validity against established measures. Fifth, the faculty

interview sample (n = 10), while intentionally diverse in discipline and career stage, is not intended to be statistically representative and should be read as an in-depth, illustrative account rather than a generalizable census of faculty experience. Although the coding framework was reviewed and refined through investigator triangulation and consensus among the research team, the interview transcripts were not independently double-coded, and formal inter-coder agreement statistics were not calculated. Future studies could further strengthen methodological rigor by incorporating independent coding procedures and reporting inter-coder reliability measures. Sixth, differences among academic disciplines were not tested quantitatively, despite the concentration of respondents in particular health-science and education-related departments; future studies should recruit sufficiently distributed disciplinary samples to permit such comparisons. Seventh, the present analyses focused primarily on descriptive patterns and grade-level differences and did not examine relationships among student variables, such as career-decision certainty, advising needs, academic burden, and advisor-relationship perceptions. Finally, all data are self-reported, and social-desirability effects cannot be ruled out, particularly for faculty describing their own advising practice.

Most importantly, the proposed dual-track advising, certification/quality-assurance, Early Alert, PPRP, and incentive components were not implemented or evaluated in this study. The study also did not directly measure student persistence, advising effectiveness, faculty workload reduction, burnout reduction, or other sustainability outcomes. These components should therefore be understood as preliminary institutional proposals informed by the needs assessment, and their feasibility, implementation fidelity, and outcomes require prospective evaluation.

6. Conclusions

As Korean higher education continues to expand flexible, self-directed curricular pathways, the institutional infrastructure supporting student decision-making has not kept pace, leaving both students and faculty under-supported within the existing assigned-faculty-mentor system. This single-institution needs assessment indicates that students' central difficulty is establishing criteria for decision-making rather than a lack of information, that they strongly value continuity and trust over episodic contact, and that they showed majority endorsement of data-informed risk alerts and proactive support. However, the study did not directly test whether acceptance depended on human interpretation or outreach.

Faculty, in parallel, described an advising role stretched past sustainable capacity by role conflict, administrative complexity, and inadequate proactive-intervention infrastructure. Taken together, the findings inform a preliminary institutional advising framework in which faculty mentorship and professionalized Academic Advising are functionally differentiated but coordinated. The proposed framework includes competency-based professional development and quality assurance, a hybrid Early Alert process, and institutional support mechanisms intended to reduce reliance on discretionary faculty labor. From a sustainability perspective, the study highlights institutional advising capacity as an important consideration in supporting increasingly flexible academic pathways without overreliance on individual faculty effort. Future research should evaluate this preliminary framework through pilot implementation across multiple institutions and disciplinary contexts, with longitudinal designs capable of testing whether the proposed certification and hybrid Early Alert structures improve advising use, student decision-making and persistence, and faculty workload or burnout outcomes over time.

Supplementary Materials: The following supporting information can be downloaded at: https://www.mdpi.com/article/10.3390/su18189649/s1. Supplementary File S1: Complete Student Questionnaire.

Author Contributions: Conceptualization, J.-E.H. and Y.L.; Methodology, J.-E.H. and Y.L.; Investigation (student survey), J.-E.H., Y.L. and G.L.; Investigation (faculty interviews), J.-E.H.; Formal Analysis, Y.L.; Data Curation (student survey), J.-E.H., Y.L. and G.L.; Data Curation (faculty interviews), J.-E.H.; Writing—Original Draft Preparation, Y.L.; Writing—Review and Editing, Y.L., J.-E.H. and G.L.; Project Administration, Y.L.; Supervision, J.-E.H. All authors have read and agreed to the published version of the manuscript.

Funding: This research received no external funding. The study was conducted as an internal institutional policy research project at Baekseok University.

Institutional Review Board Statement: The study was conducted as an internal institutional policy-evaluation project and did not undergo prospective Institutional Review Board (IRB) review. Following data collection, the authors contacted the Baekseok University IRB, which confirmed that retrospective approval or exemption could not be issued for research whose data collection had already been completed. No personally identifiable information was collected, and all data were analyzed in de-identified form.

Informed Consent Statement: Informed consent was obtained from all participants involved in the study. Prior to participation, students and faculty were informed that data would be used for research purposes, that participation was voluntary, and that responses would be analyzed in anonymized form; no personally identifiable information was collected, and all data were de-identified before analysis (see Section 3.5 for full detail).

Data Availability Statement: The data are not publicly available because they contain information that could compromise participant privacy and confidentiality. De-identified data may be available from the corresponding author upon reasonable request.

Conflicts of Interest: The authors declare no conflicts of interest.

References

1. Ministry of Education, Republic of Korea. *Expanding Students' Choice of Major Through the Major-Autonomous Selection System*; Ministry of Education: Sejong, Republic of Korea, 2024.
2. Woo, S.; Seo, K. An Analysis of the Composition and Characteristics of Academic Advising Programs for Undeclared Students. *Asian J. Educ.* **2025**, *26*, 31–58. [CrossRef]
3. Jeong, G.S. Study on College Students' Academic Advising Counseling Experience and AI Counseling Acceptance: Focusing on Student Perceptions and Needs at H University. *J. Teach. Learn. Res.* **2025**, *18*, 83–107. [CrossRef]
4. Park, A.; Park, E.; Jeon, S. Difficulties in Academic Advising as Perceived by Faculty Advisors. *J. Yeolin Educ.* **2023**, *31*, 161–188. [CrossRef]
5. Park, A.; Lee, J.-I. Professors' Academic Advising Experience in Faculty-only Model. *Korean J. General. Educ.* **2024**, *18*, 291–308. [CrossRef]
6. Choi, B.K.; Park, H. Meta Analysis of Student-Faculty Interaction and College Student-Related Variables. *Asian J. Educ.* **2021**, *22*, 403–429. [CrossRef]
7. Martin, M.; Godonoga, A. *SDG 4—Policies for Flexible Learning Pathways in Higher Education: Taking Stock of Good Practices Internationally*; UNESCO International Institute for Educational Planning: Paris, France, 2020.
8. NACADA: The Global Community for Academic Advising. NACADA Concept of Academic Advising. 2006. Available online: https://www.nacada.ksu.edu/Resources/Pillars/Concept.aspx (accessed on 10 July 2026).
9. Hemwall, M.K.; Trachte, K.C. Academic Advising as Learning: 10 Organizing Principles. *NACADA J.* **2005**, *25*, 74–83. [CrossRef]
10. White, E.R. Keeping the "Academic" in Advising: Where Academic Advising Belongs in the Collegiate Structure. *NACADA Rev.* **2024**, *5*, 2–8. [CrossRef]
11. Rust, M.M.; Willey, A.E. Defining and Institutionalizing Proactive Advising: Insights from a National Survey. *NACADA J.* **2024**, *44*, 83–109. [CrossRef]
12. Crookston, B.B. A Developmental View of Academic Advising as Teaching. *J. Coll. Stud. Pers.* **1972**, *13*, 12–17, Reprint in *NACADA J.* **2009**, *29*, 78–82. https://doi.org/10.12930/0271-9517-29.1.78.
13. Alamuddin, R.; Rossman, D.; Kurzweil, M. *Interim Findings Report: MAAPS Advising Experiment*; Ithaka S+R: New York, NY, USA, 2019. [CrossRef]
14. Rossman, D.; Kurzweil, M.; Lewis, B. *MAAPS Advising Experiment: Evaluation Findings After Six Years*; Ithaka S+R: New York, NY, USA, 2023. [CrossRef]

15. NACADA: The Global Community for Academic Advising. NACADA Academic Advising Core Competencies Model. 2017. Available online: https://www.nacada.ksu.edu/Resources/Pillars/CoreCompetencies.aspx (accessed on 10 July 2026).
16. Charleer, S.; Moere, A.V.; Klerkx, J.; Verbert, K.; De Laet, T. LADA: A Learning Analytics Dashboard for Academic Advising. *Comput. Hum. Behav.* **2020**, *107*, 105826. [CrossRef]
17. de Vreugd, L.; van Leeuwen, A.; Jansen, R.; van der Schaaf, M. Learning Analytics Dashboard Design and Evaluation to Support Student Self-Regulation of Study Behaviour. *J. Learn. Anal.* **2024**, *11*, 249–262. [CrossRef]
18. Hatala, M.; Nazeri, S. Associations between Students' Standing Seen in Learning Analytics Dashboards and Their Following Learning Behaviours: A Study of Three Reference Frames. *J. Learn. Anal.* **2024**, *11*, 41–61. [CrossRef]
19. Patterson, C.R.; York, E.; Maxham, D.; Molina, R.; Mabrey, P., III. Applying a Responsible Innovation Framework in Developing an Equitable Early Alert System: A Case Study. *J. Learn. Anal.* **2023**, *10*, 24–36. [CrossRef]
20. Dumont, K.C. Understanding Academic Advising Practice: Academic Advisors' Perceived Impact of an Academic Analytics Tool on the Practice of Academic Advising. Doctoral Dissertation, Michigan State University, East Lansing, MI, USA, 2021. [CrossRef]
21. Lekan, K.; Pardos, Z.A. AI-Augmented Advising: A Comparative Study of GPT-4 and Advisor-Based Major Recommendations. *J. Learn. Anal.* **2025**, *12*, 110–128. [CrossRef]
22. Soria, K.M.; Kokenge, E.; Heath, C.A.; Standley, E.C.; Wilson, S.J.F.; Connley, J.R.; Agramon, A.I. Factors Associated with Academic Advisors' Burnout. *NACADA J.* **2023**, *43*, 105–120. [CrossRef]
23. Diaz Swearingen, C.; Hayes, J. Faculty Advising in Nursing Education: Necessary Evil or Opportunity for Excellence? *Int. J. Nurs. Educ. Scholarsh.* **2009**, *6*, 29. [CrossRef] [PubMed]
24. Jo, M.H.; Kim, E.J.; Lee, H.W. Exploring a Model for Predicting Academic Warning with Learning Analytics. *J. Educ. Technol.* **2018**, *34*, 877–900. [CrossRef]
25. Creswell, J.W.; Plano Clark, V.L. *Designing and Conducting Mixed Methods Research*, 3rd ed.; SAGE: Thousand Oaks, CA, USA, 2018.

Disclaimer/Publisher's Note: The statements, opinions and data contained in all publications are solely those of the individual author(s) and contributor(s) and not of MDPI and/or the editor(s). MDPI and/or the editor(s) disclaim responsibility for any injury to people or property resulting from any ideas, methods, instructions or products referred to in the content.