



University futures: Insights from a dialectic delphi study

Veli Virmajoki^{*}, Toni Ahlqvist[✉], Kaisa-Maria Suomalainen, Ira Ahokas

Finland Futures Research Centre, University of Turku, Finland

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ABSTRACT

The future of universities is unclear. They face increasing pressures from market forces, political influence and societal expectations, which is challenging their traditional roles and values. Using a novel dialectic Delphi methodology, this study examined how members of a Finnish university conceptualized and analyzed potential futures extending to 2040. Grounded in a comprehensive literature review, we identified 10 dimensions relevant to universities' futures, such as purpose, organisational structure and teaching models. We developed a series of statements presenting opposing future trajectories for each dimension—creating the dialectic nature of our approach. This structure was chosen to provoke reflection on distinct futures and to reveal whether participants saw opposing scenarios as incompatible or complementary. The participants assessed the probability and desirability of these futures and provided arguments to explain their perspectives. The findings identify where participants' assessments of desirability and probability either align, conflict or reveal differing interpretations of the future scenarios and their meanings. This study reveals how university communities can be engaged in reasoning about complex institutional challenges while providing guidance for developing sustainable and balanced university futures.

1. Introduction

Universities face unprecedented challenges in an era of rapid change and uncertainty. The most dramatic voices in the research literature have asserted that universities are at a critical historical juncture, where external pressures, market influences and political interference are challenging their fundamental principles and purposes (e.g. Salmi, 2015; Barnett, 2023; Virmajoki et al., 2024). In this context, understanding how university stakeholders perceive different possible futures is crucial.

Universities are uniquely complex institutions when it comes to foresight because of their fundamental relationship with knowledge. They serve as both subjects of foresight exercises and active producers of the knowledge that shapes futures through research, teaching and societal engagement. This creates a unique reflexive situation in which universities studying their futures are also actively shaping these futures via their knowledge production and management activities. Their role in knowledge management adds layers of complexity, ethics and responsibility to the foresight process because universities must consider how external trends might affect them and how their knowledge production influences or even creates such trends.

The unique reflexive situation also implies that, without understanding how a university community itself perceives different futures, reforms (which always happen when we move towards the future) risk being disconnected from what is feasible or desirable from within the university. Moreover, university members hold situated knowledge that is useful for navigating institutional change.

^{*} Corresponding author.

E-mail addresses: vevirm@utu.fi (V. Virmajoki), toni.ahlqvist@utu.fi (T. Ahlqvist), kaisa-maria.k.suomalainen@utu.fi (K.-M. Suomalainen), irsuah@utu.fi (I. Ahokas).

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This is knowledge that top-down approaches often overlook, to the detriment of both universities and the societies they serve – the two are interconnected in many interesting ways also from the perspective of university members, as we will see.

In this paper, we present a methodologically innovative Delphi study that explored how university community members perceived and reasoned about alternative futures towards 2040. However, to ground the Delphi study firmly in existing research, we first conducted an extensive literature review from which we identified 10 key dimensions shaping university futures ranging from fundamental university purpose to organisational structures, research orientations and campus function (see [Table 1](#)). For each dimension, we developed two contrasting statements about possible futures. The innovation in our approach lies in the dialectic structure; each dimension was investigated via opposing visions concerning the future within that dimension. This dialectic approach encouraged participants to consider radically different alternatives by showing them two alternative futures about the same issue.

Our panel consisted of 54 participants representing different roles and units within the university: researchers, teachers, administrators, other staff members and students. This diversity of perspectives enriched our understanding of how different internal university stakeholders envision their institution's future. While our study was conducted at the, the insights may have broader relevance for understanding how university community members reason about different futures and how to gather such insights. Throughout this paper, we attempt to contextualise the findings with the relevant literature to open future paths for research.

While wide literature on futures of universities (and related to their futures) exist, scenarios and trends have been discussed (see [Section 2](#)), a research gap, mainly in terms of methodology, remains: how can university communities themselves be systematically engaged in reasoning about different future trajectories that might be in mutual tension? In this study, we argue that this gap can be addressed through a *dialectic Delphi approach*. This approach presents side-by-side different future trajectories, and the approach is useful to explicate not only preferences but also the conditional reasoning, trade-offs, and complementarities that the members of a university recognize when a Delphi study explicitly focuses on tensions rather than consensus (see [Section 3.2](#)).

While the Delphi study collected both quantitative assessments and qualitative arguments from the participants, our analysis emphasises the qualitative side. A numerical assessment alone could not capture how the participants interpreted opposing futures as potentially complementary or how they connected different dimensions of university development. The arguments indicate how university members approach implementation challenges and possible solutions. The participants' arguments revealed the complex considerations and tensions they perceive between different possible trajectories. For example, while certain futures might be deemed desirable, the participants often identified significant barriers to their realisations or, conversely, expressed concern about probable futures they viewed as problematic.

In what follows, we first briefly review the research literature that informed our Delphi statements and explain how we developed the 10 dimensions and their contrasting visions. We then describe our methodologically novel approach to the Delphi study. After that, we present the general patterns and more nuanced points of our findings. Via this analysis, we aim to contribute to understanding how university communities reason about their institutions' futures. We also wish to point out how complex the issue of the future of universities is and how to gather insights from university members on such a complex, unique issue.

We proceed as follows. [Section 2](#) reviews the literature and explicates our dimension-based approach. [Section 3](#) describes our dialectic Delphi methodology. [Section 4](#) presents an overview of the Delphi responses. [Sections 5–8](#) examine the findings across key dimensions: purpose, funding and global orientation; organisational and disciplinary structures; research and teaching models; and technology and infrastructure. [Section 9](#) moves from these dimension-specific findings to a cross-dimensional synthesis and discusses broader patterns and tensions. [Section 10](#) concludes by discussing the study's methodological contributions, limitations, and implications for engaging university communities concerning the future.

2. Literature review

2.1. Overview: building a conceptual framework

We reviewed the research literature about universities and their futures to establish a foundation for our Delphi study. This included studies that focused specifically on university futures via scenario development (e.g. [Barth et al., 2011](#); [OECD, 2007](#); [Vincent-Lancrin, 2004](#); [Schüll, 2019](#); [Blass et al., 2010](#)) and broader research about university changes.¹ From this literature review, we identified recurring themes about the possible development of universities.

From the literature, we identified 10 dimensions that are crucial for understanding university futures. These represent different aspects of universities that are central to their operations and development. For each dimension, we developed three models based on different pathways discussed in the literature. While these models were derived from existing research, we constructed them as analytical tools to enable a systematic understanding of different possibilities.

The “triangular” structure – three models per dimension – was a deliberate methodological choice to conceptually organize literature finding in a manner that makes them more communicative to the members of university. Binary continuums or oppositions easily leads to either-or thinking and obscures the nuances and space of possibilities that characterize possible institutional changes. Moreover, a triangle, by contrast, creates a conceptual space for movement – one can move to different directions withing a triangle. This means that, choosing three models for each dimension allows us to construct the simplest area that (i) has idealized models as vertices, but (ii) allows people, units, and institutions, position themselves between the vertices, recognize complementarities within

¹ We analyzed over 200 works and cited 140 in a report where this literature is discussed in depth.

Table 1
Dimensions of university operations and development and the models of the dimensions.

Dimension	Model 1	Model 2	Model 3
Purpose	Market Oriented (economic)	Social Mission (public good)	Curiosity-Based (academic tradition)
Global Orientation	Globally Networked	Locally Focused	Regional Clusters
Organisational Structure	Centralised, Managerial	Decentralised, Democratic	Shared Governance
Funding	Privatised/Corporate	Public Block Funding	Mixed (public and private)
Disciplinary Structure	Interdisciplinary, Problem-Focused	Specialised, Discipline-Focused	Pluralistic with Core Disciplines
Research Orientation	Commercially Driven	Mission Driven (societal impact)	Curiosity Driven (foundational knowledge)
Teaching	Standardised, Efficiency-Based	Personalised, Adaptive	Experiential, Skills-Focused
Technology	Fully Online	Campus-Based, In-Person	Blended/Hybrid
Student Profile	Globally Diverse	Local/Regional Demographics	Deliberate Mix
Infrastructure	Innovation Incubator	Community Anchor	Virtual Hub

the triangle, or identify conditions under which different approaches might coexist (i.e., conditions needed to reach a point within a triangle). This type of structure is useful background for a dialectic Delphi. While we presented to the participants dialectic pairs of statements (see below), participants did not always simply choose one option. Rather, they articulated circumstances, trade-offs, and dependencies, between issues related to university. We return to this issue throughout the paper.

The literature shows that university changes are interconnected; changes in one area often trigger changes in others. For example, changes in research priorities can affect funding needs; this is particularly true when different fields increase collaboration, which has led universities to develop more flexible funding mechanisms to support cross-disciplinary projects (e.g. [Bonaccorsi et al., 2022](#); [Salmela et al., 2021](#)). Similarly, changes in teaching methods, such as blending online and face-to-face learning, have created new requirements for physical and digital infrastructure, which became evident during the rapid shift to remote learning during the pandemic (e.g. [Conrad et al., 2022](#); [Gabel & Morrisroe, 2023](#)).

New technologies, particularly artificial intelligence (AI), are transforming research and teaching while offering possibilities for personalised learning and data-driven research and raising concerns about sustainability and ethical implementation of such technology (e.g. [Brevini, 2020](#); [Cox, 2021](#)). Digital transformation in universities has progressed unevenly, but institutions that have effectively implemented digital methods have demonstrated improved outcomes in research and teaching (e.g. [Mohamed Hashim et al., 2022](#); [Fernández et al., 2023](#)).

Although these areas – research, teaching, infrastructure and technology – are interconnected, examining them as separate dimensions allows a clearer understanding of their roles. Studies on university autonomy have demonstrated the importance of organisational flexibility in response to changing external pressures and missions (e.g. [Estermann & Nokkala, 2009](#)). Similarly, research on the teaching–research nexus has revealed the practical need to balance these areas to achieve university objectives without compromising research outcomes (e.g. [Geschwind & Broström, 2015](#); [Compagnucci & Spigarelli, 2020](#)). Thus, a framework that recognises connections and distinctions between these dimensions can help universities respond effectively to new challenges, from evolving societal expectations to emerging technologies.

2.2. The dimensions framework

[Table 1](#) shows the 10 dimensions and their associated models. These cover different aspects of university operations and development. Each has three models that represent different approaches found in the research literature.²

2.3. Development of dialectic statements

For the Delphi study, we used this framework (i.e., 10 dimensions/30 models) to develop pairs of contrasting statements. While it included three models for each dimension, we constructed two opposing statements per dimension. For example, when the literature indicated a substantial debate between market-oriented thinking and traditional academic values for university purposes, we developed statements that captured this tension. Similarly, for teaching, we identified the contrast between standardised, efficiency-focused methods and personalised, adaptive learning and formulated opposing statements about these for participants to evaluate. This approach ensured that they evaluated futures that had clear foundations in actual developments and trends.

We constructed 22 pairs of statements covering the 10 dimensions. This means that we did not directly ask about every model in our framework. Without this approach, the Delphi study would have been too lengthy to complete. Instead, we selected two models for each dimension to probe what people thought about the desirability and probability of issues inside the dimension. The 22 statements were chosen so that we covered as many aspects of the 30 models as possible.

We need to note that the reduction from 30 models to 22 statement pairs involved judgement, that was based on the literature review but also based on researchers' interpretations, guided by three principles. First, *coverage*: we made sure that all 10 dimensions were represented by at least one dialectic pair – when a dimension is deemed relevant, it is natural to deem a dialectic tension in it

² See more details in [Virmajoki et al. 2024](#).

relevant too. Second, *saliency*: we prioritized tensions that appeared most central in the literature and in the discussion with university members before the Delphi itself was conducted. Two most visible examples of this were the tension between market-oriented thinking and “traditional” academic values, or relationship between disciplinary depth and interdisciplinary breadth. Third, *participant engagement*: we attempted to create a survey short enough to ensure thoughtful responses and avoid fatigue in answering the survey.

The 30 models themselves, as explained above, were based on literature review and interpreting the literature in future-oriented terms. However, the “dimensions-with-three-or-more-models” conceptualization, as such, is not strictly necessary for replicating the dialectic approach. What researchers in other contexts of futures studies can transfer to their own work is the underlying logic: First, identify key dimensions (whether continuums, triangles, or other conceptual structures) through systematic engagement with domain literature, (2) locate salient tensions within those dimensions where genuine debate exists, (3) construct opposing statement pairs that make these tensions explicit and engaging to participants, and (4) present these pairs to relevant group of participants for assessment and argumentation. Other researchers could follow this logic while constructing entirely different statements appropriate to their research questions.³

To be sure, this approach does not follow neat algorithmic-like procedures. Statement construction requires deep engagement with literature to identify which dialectic statements could prove most productive – this requires interpretation (see, about the complications that the interpretative steps may create, in our case in Section 4.2). This is characteristic of certain type interpretive futures research (Ahlqvist, 2022; see below), where the role of a futures researcher includes identifying contrasts that open rather than foreclose thinking. We need to be explicit in acknowledging that this involves researcher judgment. However, such judgment is not arbitrary. It is restricted by the literature, guided by the principles of coverage and saliency, and ultimately evaluated by whether it generates insights – in our case, by the sophistication of views of the participants on university futures.

In this study, we leveraged the overlapping aspects of the different dimensions of universities. We also added one additional pair about AI that emerged not from the dimensional framework but represented a significant emerging theme in recent university futures research. Our analytical framework simplifies complex research discussions into more manageable components for systematic study. For example, although the literature often presents detailed analyses of how market pressures and academic traditions interact, we need to formulate these as distinct alternatives to understand how people evaluate them.

Similarly, while research has shown that universities often simultaneously use multiple approaches to teaching or research, we constructed clear alternatives so that the participants would carefully consider what different trajectories entail. When we translated research findings into opposing statements, we gained insight into how the university community perceives different futures while simultaneously creating a framework that organizes and clarifies the various trajectories discussed in existing research literature.

The following sections present our Delphi study at University of Turku. This study builds on our literature analysis and seeks to understand how the members of the evaluate different futures. The research literature provides evidence and arguments about different university futures, but our knowledge remains limited regarding how university communities perceive these possibilities when examining them systematically. By combining quantitative assessments of probability and desirability with qualitative arguments from participants, our study examines how university members understand, evaluate and reason about different futures emerging from research literature.

3. Methodology: dialectic Delphi

3.1. Delphi method basics

The Delphi method is a structured process for collecting and refining expert opinions. It was developed at the RAND Corporation in the 1950s. The process involves several rounds of anonymous questionnaires in which participants give their opinions and adjust their views based on feedback from earlier rounds. This structure presumably reduces bias and limits how much dominant voices can influence outcomes (Linstone & Turoff, 1975; Rowe & Wright, 2011).

This method works well in areas where knowing exact future trends or forecasts is not possible or in line with the core goals of the research. It has been used in forecasting, policy-making and strategic planning. Its main features— anonymity and feedback—make it useful for exploring complex problems and collecting diverse viewpoints. Applications of the Delphi method include studies on urban planning, healthcare and future technologies (e.g. Tapio et al., 2011; Bañuls & Turoff, 2011). Our study concerning university futures aimed to outline various potential university trajectories to inform those responsible for planning and preparing for different university futures.

Of course, this method is not perfect. Problems can arise from how participants are selected or how responses are summarised. However, when done carefully, the Delphi method is excellent for tackling ambiguous or multifaceted problems, and it helps to develop informed decisions and strategies (Bolger & Wright, 2011; Marchais-Roubelat & Roubelat, 2011). Our problem, as presented above, was of this sort; therefore, this method was chosen to probe what the university community thinks about different future developments and their probability and desirability.

³ We use the terminology of *transferable approach* to, explicitly, avoid using specific terms of *reliability* and *validity* that carry strict technical meanings in other fields of study. When imported from experimental research traditions in their technical meanings, these terms do not apply straightforwardly to futures-oriented work. If we were to attempt to apply these terms loosely, we risk what might be called “smokescreen language” – using familiar scientific terminology in an equivocating way that make more strictly oriented reader suspect of the legitimacy of futures research due to the equivocating. What makes futures research credible and fruitful lies elsewhere.

3.2. Outline of dialectic Delphi

In our study, we developed an approach to Delphi that could be called ‘dialectic Delphi’ to examine how members (i.e., selected *participants* in our study) think about different possible futures for their university. The idea of ‘dialectic’ Delphi is that instead of seeking consensus, as traditional Delphi studies do, we aimed to open a wider futures horizon on a topic by constructing argument continuums via statements that were built, more or less, as counterpoints to each other, such as ‘thesis’ and ‘antithesis’ in classic dialectics (see, e.g., [Ahlqvist, 2022](#)). We deliberately aimed to create an oppositional or antagonistic statement position that would catalyse reactions and arguments from the Delphi panellists when a consensual middle statement was missing. The key idea was to gather as wide a variety as possible of different perspectives within the university community and to locate the rationalisation strategies of panellists on various probable and desired futures. These reactions and arguments were captured in the Delphi questionnaire via commentary text boxes.

A dialectic Delphi shares common ground with Delphi varieties that emphasize dissensus and dispersion of expert positions rather than consensus. Here, we mention two particular variations. The first is the argument-based Delphi developed by [Kuusi \(1999\)](#). According to Kuusi, Delphi aims to build relevant future arguments connected to a selected sociotechnical domain. The process is not oriented towards consensus but rather the analysis of the differences between expert perspectives and their assumptions. Therefore, the most interesting topics are those that catalyse the biggest differences in expert estimates. The generic aim of the argument-based Delphi is to identify what could happen in the future if key actors in a domain act according to their best rational expectations. Thus, argument-based Delphi is a learning process in which experts can learn from other positions and justifications.

The second variation is the disaggregative policy Delphi developed by [Tapio \(2002\)](#). This variation focuses on the analysis of the dissensus of experts by disaggregating the presumption of consensus. It aims to identify alternative future paths in a domain under scrutiny. As in argument-based Delphi, the focus is on expert arguments and especially on how experts justify their arguments. The disaggregative Delphi emphasises dissensus as a creative process that includes Delphi panellists and researchers; the researchers present various counterarguments or questions to experts that aim at in-depth probing of dissensual topics. This creative process aims to deepen the understanding of justifications for certain positions.

There are other such examples, and while we cannot discuss all of them, we can mention that, for example, [Landeta and Barrutia \(2011\)](#) used a modified, dissensus-oriented Delphi in the context of drafting university legislation in the Basque Country. In this process, Delphi was used to consult the university community, which, in the context of the study, constituted a professional bureaucracy with a high degree of autonomy. [van de Linde and van der Duin \(2011\)](#) also employed a dissensus approach when they applied the Delphi method as an early-warning system for future radicalization and terrorism in the Netherlands. In that context, they argue, identifying divergent perspectives was more valuable than reaching agreement. In a more general level, [von der Gracht \(2012\)](#) also analyzes the topic of consensus and its measurement in Delphi studies. Von der Gracht also emphasizes that in policy Delphi, facilitators actually “search for dissent, resulting in a stable bipolar distribution, thus two opposing group perspectives” and that, in the process, “sufficient clarification and definition of the different opinions and viewpoints become the desirable goal” (p. 1528).⁴

To iterate, what the dialectic Delphi shares with these types of variations is the emphasis on dissensual argument positions and the perspective that dissensus can be utilised as a creative process for building novel futures knowledge. However, the dialectic Delphi also differs from these variations. We highlight three differences in particular. First, the entire edifice of the dialectic Delphi is built on argument continuums accentuating oppositions and antagonisms (i.e. the interplay of theses and antitheses). Thus, a dissensus is not merely an analytical outcome but a critical starting point for the Delphi process. Second, argument continuums are based on the idea of opening a futures horizon that is simultaneously wide yet logically coherent: the oppositional structure of arguments aims at ‘teasing’ new insights from panellists through deliberately built juxtapositions.

Third, the analytical approach of dialectic Delphi is based not just on dissensus or justification of dissensus, but the aim is to produce new futures knowledge in three analytical registers: 1) the identification of relevant argument continuums via literature review and horizon scanning (in this study, the 10-dimension framework, 2) the analysis of plausibilities, probabilities and timing of opposing arguments (could be quantitative, qualitative or both) and 3) the scrutiny of new arguments and positions constructed by Delphi panellists, catalysed by the deliberate lack of a ‘soothing middle argument’ that would be the ‘easy target’ of plausibility estimations.

Based on our literature review and the concomitant dimensions framework, we developed 22 pairs of opposing statements (i.e., argument continuums) about possible university futures, organised into 10 main areas that emerged from our analytical framework. The argument continuums for each topic were constructed to highlight a horizon of oppositional, albeit plausible and credible, takes on the topic. We instructed the participants to consider the year 2040 when answering. Each pair presented contrasting views based on the dimensions–model framework.

Here, we present an example of an argument continuum that regards university purposes. One statement argued that:

⁴ Related methodological developments have also explored real-time and dynamic argumentative Delphi approaches. For example, [Gheorghiu et al. \(2014\)](#) describe a *dynamic argumentative (Real-Time) Delphi* implemented via the eLPHI platform. In it, participants’ qualitative arguments are made visible and dynamically ranked during the consultation. In this case, argumentation and dissensus are treated as central analytical resources rather than as obstacles to convergence.

In the future, research universities will focus on fostering **COMMERCIALY ORIENTED INDUSTRY PARTNERSHIPS**,⁵ with incentives aligned to this goal. Success is measured primarily by financial returns and economic impacts, which shifts university **PRIORITIES TOWARDS MARKETPLACE INNOVATIONS AND WORKFORCE DEVELOPMENT**. As a result, traditional academic values like intellectual freedom and the pursuit of fundamental knowledge have diminished in importance.

Another, dialectically opposite, statement argued that:

In the future, research universities will devote themselves to **CULTIVATING ENGAGED CITIZENSHIP**, enriching society through knowledge and providing broad-based education aimed at developing thoughtful leaders. Success is evaluated based on **SO-CIETAL CONTRIBUTIONS** rather than on financial outcomes. However, some individuals and interest groups criticise this approach, viewing it as impractical or elitist.

Both statements are highly plausible and credible in the university context, yet they are built on quite different, even opposing, epistemological assumptions. The statements were deliberately designed to stimulate thinking and reveal potential tensions by juxtaposing them without a middle statement that could operate as a 'soothing synthesis'.

3.3. Implementation process

This study was conducted on the eDelphi.org platform and consisted of two rounds. In the first round, participants indicated how probable and desirable they considered different futures to be. A crucial feature was that they also explained their reasoning; this allowed us to understand which futures they saw as likely or wanted and why. In addition to the 22 statement pairs, we included three open-ended questions about early signals and unexpected factors that might affect university futures.

In the second round, participants could modify their responses or comment on changes (or rather: possible changes) in their views based on other participants' answers. No changes were made by researchers to the statement content between rounds, i.e., participants saw identical statements in both rounds. Very few made alterations; this is potentially because the university members were busy and had already considered their answers carefully during the first round. Another possibility is that university members tend to favour independent thinking. Those participants who modified their answers mainly added new arguments and comments, apparently in response to seeing other participants' responses. These additions were used to underline and strengthen the arguments for their own existing viewpoints (that they presented during Round 1); assessments did not change in their overall direction. This pattern suggests that seeing others' reasoning made some participants feel the need to articulate their own positions more explicitly. While this means that Round 2 did not dramatically shift the overall picture, we may note that the pattern is consistent with the learning-oriented goals of Delphi methodology.

Participants for the Delphi panel were selected using an participant matrix to ensure that the panel included a wide range of perspectives. The matrix covered various university faculties and units, such as the library, administrative services and facility services. It also included four main university roles: researchers, teaching staff, students, support services and decision-making and development.

Our participant selection reflects a specific position: in futures studies oriented toward institutional foresight, the question, in our study, is not about probable and desirable futures, understood as convergence, as such but about how stakeholders reason about future trajectories? Within this position, expertise, in the strict sense, is not required to gain meaningful Delphi answers. Also situated experience constitutes relevant knowledge. For example, may not administer research budgets, but they experience funding's effects daily (which faculty have time for teaching versus grant-chasing, how funding pressures shape curriculum delivery and content, and so on). Different university roles provide different vantage points on how different futures might be experienced, interpreted, and potentially contested. We chose as participants diverse members of the university due to their role as legitimate holders of such situated knowledge. While this creates heterogeneity in "strict" expertise across topics, it aligns with participatory futures approaches.

Most importantly, this approach finds precedent and justification in the sophisticated reasoning that guided [Landeta and Barrutia's \(2011\)](#) Policy Delphi consultation for Basque university legislation. Their study engaged 115 participants in the first round, including 77 academics, 22 union representatives, five student representatives, eight representatives from private universities, and three external societal experts ([Landeta & Barrutia, 2011, 140](#)). Participants were not selected directly by researchers or government. Instead, each collective (faculties, unions, student bodies) selected its own representatives. The paper explicitly describes the study as a Policy Delphi for consultation, not classical exploratory forecasting. It included students, union representatives, and administrative staff exactly because they were the parties affected by possible changes and whose reactions, thereby, mattered. The goal of the study was anticipating behavior and minimizing conflict. Participants were chosen by the collectives because they could provide understanding on how groups would respond to proposed changes.

Like Landeta and Barrutia's Policy Delphi, our goal was to map the reasoning about futures of universities within the university community. Our aim was to understand how different members interpret and evaluate possible future trajectories. From this perspective, diverse participant backgrounds are valuable, as the diversity allows to understand the multiplicity of perspectives through which futures of universities might be experienced and negotiated.

The panel that answered our Delphi study was conducted between February–March 2024, and 54 people participated. In the first round, participants evaluated and commented on the statements anonymously without seeing others' responses. Later, they could

⁵ Capital letters were used as a substitute for bolding.

review all responses and change their own if they wanted. Anonymity and online accessibility were ensured throughout the process using the open-source eDelphi platform.⁶

The qualitative analysis followed an interpretive approach: the authors engaged in close reading of participants' written arguments to identify recurring themes, tensions, and reasoning patterns. Rather than applying a formal coding framework, this approach allowed themes to emerge from the material in the way that made it possible to follow literature analysis and the dialectic Delphi approach's major goals (see 3.2). This aligns with the exploratory aims of the study and preserves the richness of participants' reasoning while constantly reflecting the responses against the literature, as we will see throughout the paper.

During the response analysis, we observed an interesting pattern: although the statements were designed as opposites, the participants did not always perceive them in this way. In some cases, they believed that apparently opposing futures could coexist. Additionally, some statement pairs, such as those about global direction, received mixed responses partly because they encompassed multiple aspects to consider. Participants interpreted different elements of statements differently; this suggests that opposing pairs might oversimplify complex questions about university futures. Throughout this paper, we discuss this issue in depth.

By combining quasi-numerical evaluations with written explanations, we achieved a rich understanding not only of which futures appear likely or desired but also of (i) why they do so and what reasoning was behind the answers and (ii) what challenges participants to anticipate in pursuing different futures. When the university community considered possible futures in this way, it generated a broader discussion about the university's direction and challenges (consisting of multiple different dimensions, as shown above).

4. Delphi responses

4.1. Results overview

Table 2 summarises the results of the Delphi study. *Dimension* concerns which aspect of the university role or function two dialectic statements were about. *Model* is about which model a particular statement was about; *probability* and *desirability* summarise numerical assessments and the main reasons given to assessments.

4.2. Complex probability and desirability relationships

In the Delphi study, significant patterns emerged regarding how university members perceived different futures. A notable finding was the complex relationship between perceived probable futures and desirable futures. For example, this complexity is present in assessments and discussions concerning market-oriented university models and centralised management. While the participants generally viewed increased market orientation as probable due to financial circumstances, there was variety in their perspectives. Some respondents acknowledged potential benefits, such as access to industry resources and opportunities for collaboration, while many expressed concern about the impact of market-oriented universities on academic freedom and the university's fundamental mission. Similar dynamics have been noted in the literature, where market pressures are described as creating both challenges and opportunities for the development of universities (Compagnucci & Spigarelli, 2020).

Our Delphi study revealed strong agreement about certain future developments. There was near-unanimous agreement that AI and ICT (information and communications technology) would become more cost-effective and environmentally friendly over time. However, the respondents expressed practical concerns about cost implementation and energy consumption. Moreover, mission-driven research focused on addressing societal challenges has received widespread support. The respondents viewed it as a complement to, rather than a replacement for, curiosity-driven research. This interplay between mission-driven and curiosity-driven approaches has been explored in interdisciplinary studies, which highlight how both contribute to tackling societal issues (Bonaccorsi et al., 2022).

The relationship between probable and desirable futures varies across different areas. In dimensions such as global orientation and disciplinary organisation, probability and desirability assessments often interact. Arguments largely discuss desirability and probability together. For example, the arguments respondents gave in our Delphi study about interdisciplinarity indicate that people's desires for the future are closely intertwined with what they believe is probable when it comes to interdisciplinarity. This suggests that desirability plays a significant role in shaping expectations. To put this bluntly, at least interdisciplinarity seems to be an issue where people think that choices according to preferences are a strong tool for shaping a path towards the future. People assess interdisciplinarity as desirable and probable and the arguments for desirability and probability are indistinguishable.

This brings up a more general point that requires attention. In some Delphi statements, the participants' arguments for desirability and probability are intertwined. It seems that there are certain issues in the future of the university in which people see more agency than in others. Why this is so would require further research. In general, the responses suggest that the respondents perceived different levels of control over various dimensions of the university.

4.3. Areas of convergence and divergence

Equally interesting is that significant disparities between probable and desirable futures emerged in the three main areas. The first

⁶ Mainly, due to the size of our institution, we cannot, for ethical reasons related to anonymity, be specific on how different groups answered to the statements of the study. Revealing this would enable sophisticated guessing/deduction of individual answers.

Table 2
Participants' views on probability and desirability of the futures presented by the statements.^a

Dimension	Model	Probability	Desirability
Purpose	Market Oriented	High – Driven by financial pressures	Low – Concerns about academic freedom
	Social-Mission Oriented	Mixed – Implementation challenges	High – Valued for societal benefit
Global Orientation	Globally Networked	Mixed – No clear consensus	Mixed – Balancing global vs local relevance
	Locally Focused	Low-Medium – Less likely in the globalised world	Low – Isolation risks
Funding	Privatised/Corporate	Mixed – Varied views in the Finnish context	Low – Risk to academic integrity
	Public Block	Low-Medium – Economic pressures	High – Desired for autonomy
Organisational Structure	Centralised	High – Likely for efficiency needs	Low – Potential disconnection from academics
	Decentralised	Low-Medium – Implementation challenges	High – Preferred for autonomy
Disciplinary Organisation	Interdisciplinary	High – Increasingly necessary	High – Addressing complex problems
	Specialised	Medium – Still important	Medium – Valued for depth
Research Orientation	Curiosity Driven	Low-Medium – Funding challenges	High – Valued for breakthroughs
	Mission Driven	High – Continuing strong trend	High – Addressing societal challenges
Teaching Model	Standardised	Mixed – Split views	Low – Highly undesirable
	Personalised	Mixed – Resource concerns	High – Strong preference
Technology Model	Fully Online	High – Driven by digitalisation	Mixed – Moderately undesirable
	Campus Based	Mixed – Sustainability challenges	High – Valued for community
Student Profile	Global Diversity	Medium-high – Growing importance	High – Desired, with some reservations
	Local Focus	Low – Decreasing likelihood	Low – Undesirable
Infrastructure	Community Anchor	Mixed – Divergent views	High – Desired but resource-intensive
	Innovation Hub	High – Likely trend	Mixed - Divided opinions
AI Future	Resource Intensive	Mixed – Varied views	Low – Generally undesirable
	Beneficial/Efficient	High – Great optimism	High – Widely desirable

^a See Footnote 8 on terminology used in this table and its relationship on the scale we used in the questionnaire and later present the answers.

concerns market-oriented universities. While increased commercial influence was assessed as probable due to declining public funding, the responses showed varied concerns and perspectives. Some worried about commercial interests dictating research priorities, while others saw potential benefits in industry partnerships if properly managed. Prior studies have also highlighted both risks and opportunities in market-driven research agendas (Compagnucci & Spigarelli, 2020).

The second concerns universities' organisational structures. While efficiency demands were seen as driving universities towards centralisation, the participants generally preferred democratic governance. The third concerns teaching approaches. Although standardisation was seen as a probable future due to external drivers, the respondents strongly advocated for individualised learning while recognising resource constraints.

More alignment between probable and desirable futures appeared in certain areas, particularly research orientation and technology use. The participants generally viewed mission-driven research positively while emphasising its complementarity with curiosity-driven research. One respondent noted that intrinsic curiosity and motivation remain essential for successfully achieving externally defined objectives. Similarly, with technology, while its increased role seems inevitable and largely beneficial, respondents emphasised the importance of careful and thoughtful implementation. This is seen as important, particularly when searching for a balance between digital tools and face-to-face teaching. This perspective aligns with the literature emphasising the critical role of in-person interaction in fostering creativity and community within higher education (Valtonen et al., 2021).

As might be expected, the respondents demonstrated a sophisticated understanding of the interconnections between the different dimensions. For example, discussions about infrastructure were frequently linked to teaching methods. COVID-19 experiences revealed both the opportunities and limitations of virtual spaces. Similarly, discussions about how a university is to be managed are connected to freedom of research. Many argued that democratic systems help protect research integrity, although some noted that certain centralised measures might be beneficial for overall institutional effectiveness. These connections between governance models and academic outcomes are also found in the literature on how different organisational structures affect innovation and integrity (Mudrak et al., 2022).

In the Delphi study, the search for balance was a recurring theme. The respondents typically favoured nuanced approaches over extreme positions. This was particularly evident in discussions about global versus local focus where many advocated for what participants call a 'glocal' approach that combines international engagement with local relevance. Respondents emphasised that universities must balance global participation with responsiveness to regional and national priorities. However, it was also acknowledged that this might be easier said than done. Similar strategies for maintaining both global reach and local relevance appear in the literature concerning university futures (Barth et al., 2011).

Open comments revealed additional concerns beyond the structured questions including demographic challenges, declining interest in academic careers and universities' role in addressing misinformation. This perspective is consistent with analyses in the literature (see, e.g. Addie et al., 2015) on how global pressures such as neoliberalisation and societal expectations are reshaping universities' roles and compelling them to address challenges beyond their traditional academic missions.

Overall, patterns indicate that while the university members recognised certain changes as probable, they maintained nuanced views about preserving fundamental academic values while adapting to new circumstances.

5. Purpose, global orientation and funding

The Delphi study raises fundamental issues about universities' basic purposes, world positions and financial situations in the future. Complex patterns emerged in how the university members perceived probable and desirable futures in each of these areas and how they interconnected with other dimensions of the university.

5.1. Market orientation and social mission

Regarding university purposes, the market-oriented model is increasingly being assessed due to financial pressures and the need for external funding. The respondents expressed a variety of views about this trend. While many worried about its effects on academic freedom and research scopes, particularly for less commercially viable disciplines, some acknowledged the potential benefits of increased market engagement. One concern was that market forces could restrict academic independence and pressure universities to favour immediate financial benefits over scholarly freedom. However, others have noted opportunities for productive industry partnerships while maintaining academic integrity. These patterns correspond to those found in the literature where it has been pointed out that universities face profit-driven pressures while striving to uphold their role as centres of independent scholarship. For example, [Jessop \(2018\)](#) highlighted the tension between treating knowledge and education as public goods and their commodification.

Arguments supporting market orientation's likelihood emphasize economic pragmatism and tangible advantages. Respondents noted that technological advancements and societal needs naturally lead to more industry partnerships, especially in tech-driven fields. Some argued that successful market innovations could provide valuable resources for purer academic goals, and access to company data could benefit research. However, others argued that the complete adoption of market-oriented models is unlikely and perhaps undesirable while citing the resilience that stems from academic traditions and the importance of maintaining institutional independence.

While concerns about market orientation were significant, the responses revealed more nuanced perspectives than simple opposition. Respondents worried that commercial interests could limit research freedom and push universities towards short-term economic gains over long-term societal benefits. Some respondents expressed particular concern about research becoming concentrated in commercially viable areas, with one respondent noting that disciplines such as the humanities and fundamental sciences could face challenges.

However, some respondents saw the potential for balanced approaches and suggested that well-managed commercial partnerships could help support curiosity-driven research. These varied perspectives align with findings from [Schüll \(2019\)](#), who identified risks and potential adaptations as universities navigate market-oriented funding models. [Mittelman \(2018\)](#) highlighted this complexity while noting how universities increasingly need to balance market-driven practices with traditional academic values.

The social-mission model of university purpose garners significant support in principle while participants realistically acknowledge practical implementation challenges. Respondents emphasised universities' vital role as trusted knowledge sources and their responsibility to create value through education that serves both national and global needs. While expressing some scepticism about prioritising the societal impact of current economic conditions, they also suggested potential solutions. They argued for maintaining high academic standards and ethical values that benefit society. Academic excellence should not be confused with negative forms of elitism. The social-mission model faces significant practical challenges that the respondents approach thoughtfully. These views align with [Petersen and Kruss \(2021\)](#), who argued that universities must balance their roles as change agents with practical constraints, particularly in challenging economic contexts. The practical concerns also echo [Bolli et al. \(2016\)](#), who examined how institutions might better align efficiency metrics with broader societal goals. [Graph 1](#) shows how the numerical assessments are distributed on the issue of universities' purposes.

5.2. Public and private funding futures

Responses concerning the statements about funding, particularly regarding the possibility that private sources will play a more significant role in the future, generate diverse and nuanced views. Some see private funding necessarily increasing as public funding decreases and partly as a return to historical patterns when universities have more diverse funding sources. Respondents noted that project partnerships with businesses are likely to become increasingly common. This perceived trend towards diverse funding sources seems a long-lasting theme, already noted by [Barth et al. \(2011\)](#), who examined how universities globally are adapting to changing resource landscapes.

However, thoughtful arguments have been presented regarding the limits of private funding models. Finland's size and limited private sector create practical constraints on tuition fees and private investment capacity. The country's strong commitment to free education and welfare principles also affects funding possibilities. While respondents generally opposed excessive private funding influence, their concerns focused on maintaining balance rather than on complete rejection. They particularly emphasise the importance of protecting educational accessibility and supporting fields such as the humanities and social sciences, which may attract less private funding. These considerations align with [Jessop's \(2018\)](#) analysis of how universities might maintain educational equity while adapting to new funding realities.

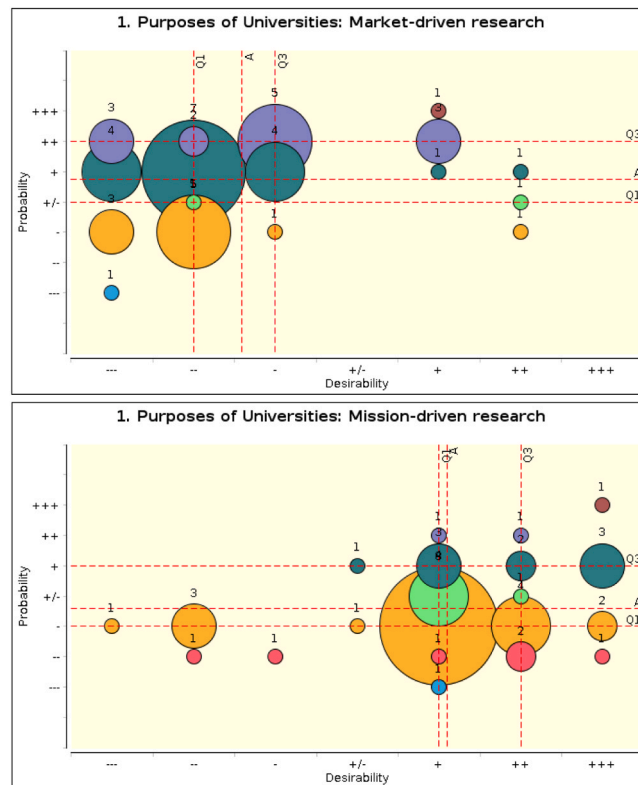
When it comes to public block funding, respondents saw both advantages and challenges in the future that are defined by such funding. While many favoured a model for supporting academic freedom, independence and equal access to education, they also recognised evolving realities when assessing probability. Respondents emphasised that public funding remains crucial for maintaining education as a public good. Some also noted that researchers' existing societal engagement demonstrates the effective use of public

resources. However, they acknowledged the growing pressure away from this model. National budgets face constraints, and funding is increasingly tied to measurable outcomes or outcomes defined by outside stakeholders. Growing competition for limited public resources suggests that future funding may increasingly emphasise efficiency, innovation and demonstrable (national) benefits. These trends align with Bolli et al. (2016), who examined how funding systems are evolving to balance institutional autonomy with strategic priorities and accountability measures.

5.3. Global and local identities

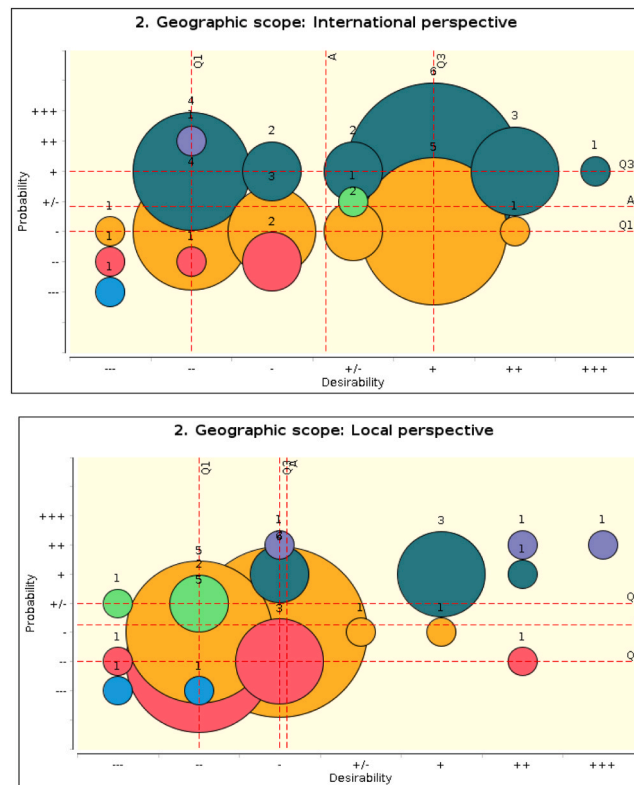
Regarding the issue of universities’ global versus local orientation, this dimension generated the most mixed responses, reflecting more complex considerations than was expected when the study was designed. Some respondents saw a globally networked model emerging naturally from universities’ international character and the omnipresence of digital technology that can connect people globally. However, others identified important practical and philosophical challenges, including resource requirements and maintaining local relevance and field-specific needs. Moreover, increasing global mobility faces various constraints, from financial to personal. These varied perspectives echoed, for example, Giuri et al., (2019) analysis of the complexities of balancing global and local priorities in university operations.

Participants’ views of the benefits of global networking revealed a sophisticated analysis of both opportunities and challenges.



Graph 1. Purpose of universities⁷

⁷ Guide to interpretation of the charts: The x-axis represents desirability, while the y-axis represents probability. The size of a bubble indicates the number of responses at a specific coordinate point, with the exact number displayed above each bubble. The colors are used solely to differentiate between bubbles for easier visual distinction. The graphs are created by the eDelphi.org platform we used. Instead of numerical scales, we used scale ranging from “–” to “+ + +”, which can be translated to “0–6” or “–3–3”. We chose not to use numerical scales as we hoped that uses of “–” and “+” signal more clearly that something is either negative or positive. While probability assessment might be more easily conveyed with numerical scales, the use of “+” and “–” are effective way of conveying desirability issues. Because of this, we unified the scale so that it does not have numerical values as such. However, we can translate the scale that ranges from “–” to “+ + +” into language of “high”, “low”, or “medium” (and so on) as we did in Table 2, based on where the responses were located. Neither terminologies of “+” and “–” or “high”, “low” and so on, are not statistical as such, but provide an overall view of the distribution of responses – whether they clustered at low, medium, or high levels or were more diffusely spread.



Graph 2. Geographical scope.

Proponents valued increased mobility for students and faculty, as they saw it as an extension of academic traditions that could enhance institutional quality and competitiveness. Critics raised concerns about the potential homogenisation of research and teaching, high implementation costs and maintaining community identity. However, it is important to note that these concerns reflect not opposition to internationalisation itself but rather careful consideration of how to pursue it sustainably while preserving institutional strengths and identity. While on the surface level global orientation generates mixed assessments of both probability and desirability, it seems that the answers concerning global versus local orientations are dependent on the exact meanings and practical interpretations of notions such as local, global and international.

Discussions about locally oriented universities revealed productive tensions rather than simple disagreements. Many respondents advocated for a balanced 'glocal' approach that combines local identity with global engagement, as they recognised the role of universities in both training experts for Finnish society and participating in international academic discourses. While some argued forcefully that science requires a global perspective and that excessive localisation is potentially harmful, others emphasised universities' crucial role in regional development, which is related to universities' role in different regions of Finland. Again, the question seems not to be whether to be international but what this means and implies. Graph 2 shows how the numerical assessments were distributed on the issue of geographical scope.

It must be noted that the Finnish context emerged as a crucial factor shaping views across all dimensions. This is mainly because the statements concerned the future of Finnish universities. Still, it is interesting to see how the respondents contextualised their analyses.

The respondents thoughtfully considered how Finland's size, educational traditions and specific societal needs influence both challenges and opportunities. Some highlighted the potential advantages of technology partnerships, while others assessed constraints related to geographic location and funding possibilities. These contextual factors inform expectations and aspirations for university futures.

Moreover, interconnections between different dimensions emerged clearly in the respondents' arguments. Those emphasising social mission often connected this in their arguments with support for public funding and local engagement. Another significant pattern emerged regarding institutional identity amid change: the challenge of preserving distinctive institutional and cultural characteristics while participating in global networks and accessing varied funding sources emerged as a central consideration.

Overall, the dimensions of purpose, funding and global orientation revealed fundamental questions about universities' future development that resist simple solutions. While market-driven approaches and private funding appeared increasingly likely, respondents deeply analysed both the opportunities and challenges these present for academic integrity and societal purposes. Similarly, while increasing global orientation emerged as a trajectory that was assessed as probable, careful attention to maintaining local relevance and identity remains crucial. The central challenge appears not as choosing between extremes but as developing sustainable

approaches that balance competing demands between market forces and academic integrity, global and local engagement and public and private funding.

6. Organisational and disciplinary structures

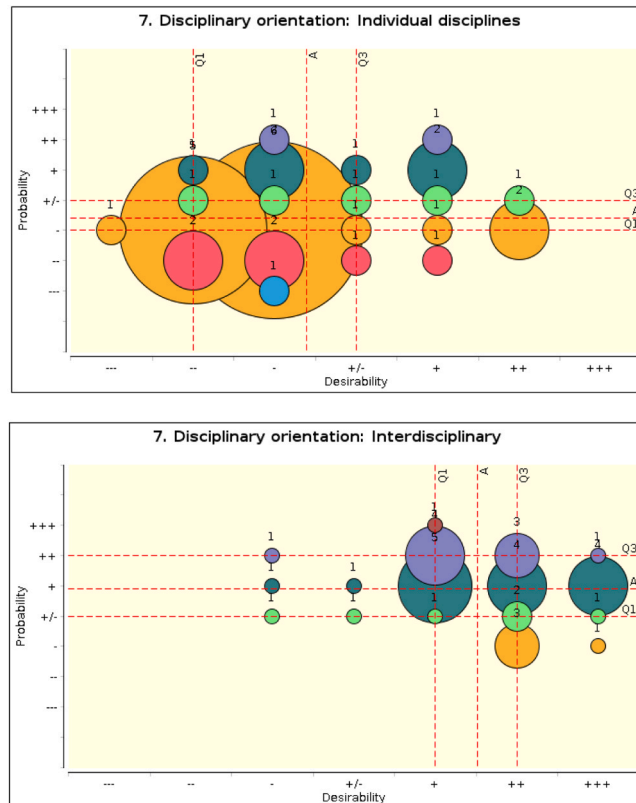
6.1. Organisational governance and management

When it comes to organisational structure, many respondents believed Finnish universities will likely move towards increased centralisation due to the need for large institutions for efficiency, financial stability and consistent management. This trajectory is projected particularly due to the resource-constrained environments in which universities operate. While most preferred more decentralised and democratic approaches, some saw the possible benefits of centralisation or, rather, selective centralisation in specific contexts. However, others argued that universities' inherent complexity and need for academic independence make purely centralised models impractical. These different views and arguments concerning university governance align with those in the literature.

While concerns about centralisation predominated in the axiological dimension of the issue, responses revealed more nuanced views than simple opposition. Many respondents worried that uniform rules may not accommodate field-specific needs, thereby restricting academic freedom and innovation. They expressed particular concern about universities becoming overly bureaucratic if management comes first and research and teaching only second. However, some acknowledged that certain centralised functions might benefit overall institutional operations. These perspectives echo those of Nørreklit et al., (2019), who examined both the risks and potential benefits of different management approaches in academic contexts.

6.2. Disciplinary evolution and integration

When considering the dimension of interdisciplinarity versus individual disciplines, an interesting pattern emerges: probable and desirable futures align more closely than in questions concerning the administrative organisation. Many respondents noted that interdisciplinary collaboration already existed, and they expected it to increase based on both preference and external forces. The view that real-world problems require multidisciplinary approaches, combined with the idea that universities are expected to contribute more to society, led many to assess the trend towards interdisciplinarity as both inevitable and beneficial. Moreover, when we look at the arguments in the section concerning the dimension of interdisciplinarity versus individual disciplines, it is rather impossible to separate arguments concerning probability from those that concern desirability. Here, it seems, people feel agency towards the future



Graph 3. Disciplinary orientation.

of the dimension.

This does not mean that the argumentative space is clear. Far from it. Arguments concerning interdisciplinary collaboration reflect a sophisticated understanding of both opportunities and challenges. For example, respondents cited successful current experiences while acknowledging practical constraints. They recognised implementation challenges including resource requirements and coordination costs. Some expressed concern about maintaining sufficient disciplinary depth. The argument was that without sufficiently deep discipline-centric knowledge, interdisciplinarity cannot work. Moreover, some noted that existing university structures and funding systems might need adaptation to better support interdisciplinary work. These observations align with MacLeod (2018), who examined how various institutional and epistemological factors affect interdisciplinary collaboration success.

Discussions concerning a future in which universities still work based on individual disciplines rather than interdisciplinarity reveal complementary rather than competing perspectives with interdisciplinary approaches. Respondents emphasised that strong disciplinary foundations enable effective interdisciplinary work, which suggests that these approaches strengthen rather than oppose each other. While the respondents recognised that resource constraints and the evolving needs of work-life may be drivers of interdisciplinarity, they thought that it was important to preserve disciplinary expertise for meaningful cross-field collaboration. Graph 3 shows how the numerical assessments were distributed on the issue of interdisciplinarity versus individual disciplines.

6.3. Interconnections between organisational structure and disciplines

The interaction between organisational (centralised versus decentralised management) and disciplinary structures (interdisciplinarity vs. individual disciplines) emerged as a theme that revealed the complex interdependencies between different dimensions. The argument suggests that while departments and faculties may benefit from central support in operational management, purely top-down approaches could miss important field-specific (thereby interdisciplinary) needs and opportunities. Some respondents suggested innovative approaches to achieving this balance but were aware of challenges in the implementation of these approaches. Universities appear to be rather conservative organisations.

Additionally, bottom-up leadership approaches interact in significant ways with how academic disciplines are organized within universities. Many respondents argued that universities function most effectively when organised to support natural patterns of academic collaboration. However, they recognised that different departments have varying needs and circumstances. They suggested that there is a need for flexible approaches rather than uniform policies. This observation aligns with Salmela et al. (2021), who found that rigid organisational structures can sometimes hinder, rather than help, interdisciplinary collaboration, which highlights the importance of context-sensitive approaches.

Despite the intertwined nature of the two organisational issues, a revealing contrast emerged between discussions concerning management and disciplinarity. While organisational futures showed some tension between probable trends towards centralisation and desires for democratic governance, the dimension concerning disciplines showed an optimistic relationship between probability and desirability. What is desirable is also probable and vice versa. This pattern suggests that the respondents saw a greater opportunity to influence the development of disciplinary than organisational structures. This difference appears to stem from the distinct nature of these domains. Organisational changes often happen due to external pressures and financial constraints, which create distance between expected and desired futures. The development of scientific fields and their interconnections, however, remains more directly influenced by academic communities themselves. This allows for closer alignment between desirable and probable futures.

7. Research and teaching models

7.1. Research orientations and their integration

The Delphi study revealed patterns in perceptions of the fundamental aspects of university work, research and teaching. Views of probability and desirability demonstrated meaningful variations across areas. The research respondents saw mission-driven approaches as both likely and largely beneficial while emphasising the continued importance of curiosity-driven research and seeking ways to maintain both. Discussions about teaching revealed more tension between probable trends towards standardisation and a strong preference for personalised approaches, although some suggested potential technological solutions for maintaining personalisation at scale. Student profile assessments reflected the careful consideration of multiple factors, including local needs, global engagement opportunities and practical constraints.

When it comes to research orientation, the respondents recognised a growing emphasis on mission-driven research that addresses societal problems through interdisciplinary collaboration. However, they also maintained strong support for curiosity-driven research. Rather than seeing these approaches as in conflict, respondents viewed them as complementary. However, they expressed concerns about maintaining an appropriate balance given the increasing pressure to demonstrate immediate research utility.

Mission-driven research appeared likely to increase, with respondents noting many successful projects already demonstrating significant societal impact. However, some respondents raised questions about maintaining a genuine societal focus under external financial pressures. Similar concerns are discussed in the literature; for instance, Schüll (2019) highlighted an increasing focus on applied, mission-driven research in a slightly different but relevant context (universities of applied sciences) while emphasising the importance of balancing this with broader academic goals.

Support for mission-driven research reflects sophisticated views of universities' societal roles. The respondents emphasised the importance of universities as trusted knowledge producers and societal contributors and argued for the need to maintain appropriate independence. They advocated for universities to continue to create broad social value through both research and education while

expressing concern about potential over-influence from external directives. Some raised questions about how the appropriate ‘mission’ is supposed to be chosen.

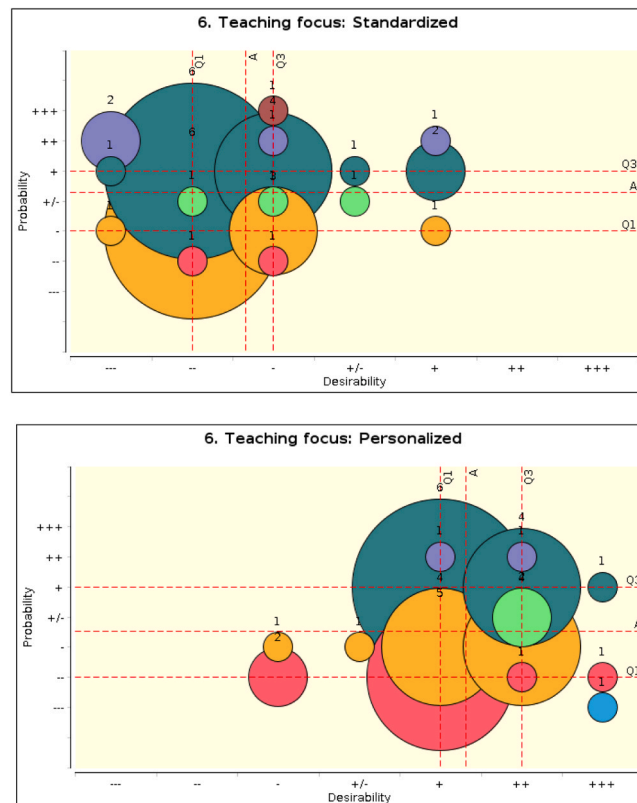
Regarding curiosity-driven research, the respondents recognised both its importance and current challenges. While acknowledging the increasing constraints of regulations and funding competition, they emphasise its fundamental value. The respondents provided arguments about curiosity-driven research’s potential for a significant long-term impact, even when immediate applications were not apparent. Concerns about curiosity-driven research’s future focused on practical constraints rather than desirability. The respondents identified specific challenges from increasing regulations and competitive funding trends, particularly noting the tension between regulatory frameworks and research freedom. They expressed particular concern about trends towards externally ‘purchased’ research outcomes.

The discussion on the research orientation dimension aligned with literature on the 'third mission' of universities. This mission involves engaging in societal and economic development through knowledge transfer, innovation, and collaboration with external stakeholders, while addressing the challenges of balancing traditional academic roles with these broader responsibilities (see [Compagnucci & Spigarelli, 2020](#)).

7.2. Teaching models and educational quality

Discussions on teaching models focus on balancing efficiency with educational quality. Respondents generally opposed purely standardised approaches as potentially neglecting diverse learning needs and diminishing educational depth. Many respondents emphasised maintaining critical thinking and meaningful teacher–student interaction as important for learning. While external pressures for efficiency and cost reduction may encourage standardisation, respondents suggested that there might be innovative solutions to find a balance between large-scale and personalised teaching. Some proposed leveraging AI and digital tools to support personalisation within larger-scale systems. [Rivera-Vargas et al. \(2021\)](#) provided relevant insight into how digital tools might enhance, rather than replace, personal interactions in learning processes.

Personal, adaptive teaching models emerged as highly valued approaches for improving education, although respondents recognised implementation challenges. They emphasised this approach’s effectiveness in addressing diverse learning needs and creating meaningful educational experiences while acknowledging resource constraints. Many asserted that learning’s inherently personal nature requires differentiated instruction and viewed this adaptability as needed for addressing future challenges and maintaining education’s relevance to society’s needs. However, the costs of personalised teaching were seen as an obstacle. The Delphi findings align with [Valtonen et al. \(2021\)](#), who documented an increasing student preference for flexible, personalised learning environments.



Graph 4. Teaching focus.

Graph 4 shows how the numerical assessments are distributed on the issue of teaching focus.

7.3. Student population and demographics

Regarding student profiles, this study revealed nuanced views about future university populations. Many respondents viewed increasing international student recruitment as both probable and necessary given Finland's declining local student population while recognising associated challenges and opportunities. They highlighted Finland's significant advantages, including its safe environment and high-quality universities, which may attract international students. Moreover, respondents noted how emerging technologies, particularly AI and advanced language tools, could facilitate international education and communication. [Mohamed Hashim et al. \(2022\)](#) similarly identified the possible role of technology in reducing barriers for international students while enhancing accessibility and engagement.

Supporters of a highly international student population emphasised the valuable ways diverse global perspectives enrich academic and social environments and viewed cross-cultural understanding and exchange as increasingly important. Given demographic trends, international students appear increasingly necessary to maintain vibrant university communities. However, the respondents also identified significant practical challenges regarding large international student populations.

While Finland's peripheral geographical location and strong emphasis on serving local communities might affect international student growth, as some respondents pointed out, the responses focused more on pragmatic integration challenges. In addition to concerns raised by some about maintaining local cultural identity, respondents emphasised practical questions about integrating international students effectively into both educational systems and broader society. Financial considerations are seen as a particularly significant issue. Respondents argued that managing resources to support internationalisation and integration requires careful planning due to limited budgets.

The principle of 'think global, act local' emerges as a summary of the approach to student recruitment and education. As already seen, many argue for approaches that maintain strong local connections while participating fully in international academic discourse. Again, this argument is related to the literature about effectively combining local responsibilities with global engagement (e.g. [Addie et al., 2015](#)).

7.4. Interconnections and mutual effects

In general, research, teaching and student profiles demonstrate significant interconnections in respondents' thinking. They frequently identify how research quality, teaching methods and student diversity mutually reinforce each other, particularly in fostering creativity and personal development. Interestingly, while research, teaching and student profiles all face similar external pressure towards standardisation and efficiency, respondents identified varying opportunities for maintaining diversity and independence in each area. Research appears to retain more flexibility despite – or, as some argue, due to – funding constraints, whereas teaching faces more immediate resource limitations. Student profiles emerge as strongly shaped by demographic realities and financial considerations.

This study revealed how the respondents saw changes in different areas affecting each other. Respondents identified specific concerns about potential ripple effects—for example, how standardised teaching might affect the development of new researchers or how an emphasis on mission-driven research could influence the teaching scope. They also noted how student demographics create both challenges and opportunities and suggested that international student diversity might require teaching adaptations while simultaneously opening up new research possibilities and perspectives.

8. Technology and infrastructure models

8.1. Digital and physical learning and research environments

This Delphi study revealed interesting points about technology use and infrastructure development in universities. Regarding technology models, respondents acknowledged increasing digitalisation while recognising the need for balanced approaches. While many saw online/virtual elements expanding due to technological trends, opinions about optimal implementation varied widely. The role of physical campuses generated thoughtful discussion, with respondents emphasising their value for interaction and community while considering how they might evolve. In the literature, an interesting discussion can be found in [Valtonen et al. \(2021\)](#) about the role of physical spaces in supporting collaborative learning environments.

The respondents saw online/virtual models as probable due to a combination of technological advancement and efficiency pressures. Some had identified innovative possibilities and suggested that virtual spaces might foster new forms of community engagement. While economic factors drive digital development, respondents emphasised the importance of maintaining meaningful interactions. These perspectives are also discussed in the literature, for example, by [Fernández et al. \(2023\)](#), who examined how emerging technologies like AI and ICT can enhance institutional operations while maintaining educational quality.

However, the respondents identified significant limitations of fully virtual models. Many emphasised the crucial role of face-to-face interactions in fostering creativity and building community—insights strengthened by experiences from the COVID-19 pandemic. Respondents also noted that particular challenges arise in fields such as natural sciences and medicine that require physical presence and specialised equipment. Some anticipated continued resistance to extensive remote learning and cited pandemic-period observations about issues in community and identity maintenance. These concerns echo [Gaebel and Morrisroe's \(2023\)](#) analysis of remote

teaching challenges, particularly regarding community engagement and practical learning.

8.2. Future campus models

When it comes to campus-based infrastructure models, respondents emphasised humans' inherently social nature and physical campuses' role in meeting psychological and community needs. They identified specific benefits of face-to-face campus interaction for creativity and problem solving that digital environments cannot fully replicate. Many viewed the physical campus as essential to a university's functionality and identity. This perspective resonates with [Aithal and Aithal's \(2019\)](#) emphasis on physical infrastructure as a foundational element for institutional excellence and stakeholder comfort. However, the respondents recognised significant challenges facing traditional campus models. Beyond immediate funding concerns for maintaining and developing physical spaces, they identified broader questions about campus evolution.

In general, arguments concerning infrastructure are related to the multiple roles and functions of universities. Respondents saw it possible for institutions to develop functions as community anchors (facilities shared with the public) and innovation hubs (facilities shared with industry partners), but they found challenges in implementing such utilisations of infrastructure to reduce costs. The community anchor model, where broader public access to university facilities is sought, generates varied responses regarding its feasibility. While some cited pandemic-driven changes as demonstrating the potential for more flexible facility use, others raised practical concerns about security and management. These considerations align with [Gaebel and Morrisroe's \(2023\)](#) analysis of balancing institutional priorities with broader community access.

The innovation hub model also generated arguments concerning balancing opportunities with potential challenges. While some respondents expressed concern about industry dependence and the possible tension between business and academic priorities, others identified possibilities for productive collaboration. Although some suggested that this model suits universities of applied sciences, supporters point to growing industry interest in university partnerships and successful existing initiatives in universities themselves. These perspectives align with [Aithal and Aithal's \(2019\)](#) analysis of how university–industry collaborations can foster innovation while maintaining academic integrity. [Graph 5](#) shows how the numerical assessments are distributed on the issue of campus function.

8.3. AI and digital transformation

The implementation of AI in universities is a particularly timely theme. Respondents demonstrated near-unanimous agreement about AI and ICT's potential for improved cost effectiveness and environmental performance over time. However, they identified important practical considerations, such as implementation costs, that might require broader cooperation between Finnish and European institutions. Environmental sustainability concerns, particularly regarding AI's energy demands were also pointed out by the participants. These considerations reflect the issues raised by [Minkinen and AIGA project consortium \(2023\)](#) regarding AI's sustainability challenges, especially energy consumption and environmental impacts.

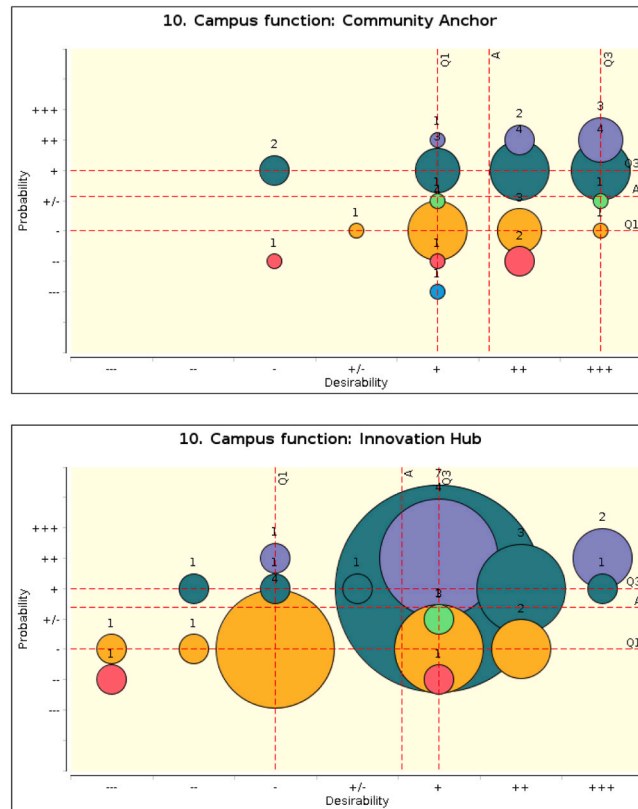
Overall, the responses showed how technology and infrastructure development possibilities are related to other dimensions of the university. However, these two issues strongly highlight how many problems the respondents saw in the actual implementation of any change in the university context. This was also a recurring theme throughout the dimensions. This is not a bad thing in itself. For example, while pointing out the strong trend towards more digitalisation, respondents emphasised thoughtful integration rather than the wholesale replacement of existing practices. This is related to recent studies that emphasise the importance of embedding digital transformation initiatives into institutional ([Gaebel & Morrisroe, 2023](#); [Fernández et al., 2023](#)) and we can see that the respondents were well aware of the wider perspectives on the issues.

9. Multidimensional insights

Analysis of the Delphi study results revealed sophisticated patterns across different areas. A significant finding is the complex relationship between probable and desirable futures. While probable futures often reflect market pressures and resource constraints, it is clear that the respondents had nuanced views on how to maintain core academic values and functions while adapting to these realities. However, the concerns were real and the arguments indicate general pessimism towards the future if no actual solutions to the pressures and constraints are found.

The connection between probable futures with their drivers and the commitment to develop and sustain core values and functions manifests differently across various dimensions. When it comes to university research, while mission-driven approaches appear probable and largely desirable, respondents emphasised the importance of maintaining complementarity with curiosity-driven research rather than seeing them as opposing forces. The teaching models revealed more tension because standardisation was assessed as probable despite a strong preference for personalised approaches. Moreover, in governance, the respondents tried to balance two competing needs: they wanted to centralise some operations to be more efficient, but they also needed to protect academic freedom in its different forms.

The desire to find balanced approaches towards future changes also emerged as a recurring theme. Rather than choosing between extremes, the respondents consistently sought integrative solutions. For example, in arguments concerning a global–local focus, many advocated for what one called the 'glocal' approach that combines international engagement with local relevance. Similarly, in research and academic organisations, respondents emphasised complementarity between different approaches; they saw mission-driven and curiosity-driven research as mutually reinforcing disciplinary expertise as fundamental to effective interdisciplinary collaboration.



Graph 5. Campus function.

Financial and resource constraints emerged as primary factors influencing the future direction of universities. While limited budgets can restrict universities’ options, these constraints push universities to find creative solutions to achieve their most important goals. This impacts many aspects of university life: how courses are taught, how much freedom researchers have in their research, how campus facilities are built and maintained and what services universities can offer to students. While acknowledging the necessity of responding to technological, societal and financial pressures, respondents emphasised the importance of preserving universities’ distinctive characteristics and fundamental purposes.

According to the results, the fundamental challenge is not choosing between competing demands but developing sustainable approaches that preserve core academic values while meeting contemporary needs. Respondents demonstrated a sophisticated understanding of this complexity by recognising practical constraints and the importance of maintaining core values and functions.

10. Conclusion

In this study, we discuss how a dialectic Delphi study can be used to reveal how university communities reason about futures of universities. Across different dimensions our 22 statements captured, participants exhibited what could be best called as *sophisticated conditional thinking*. They identified circumstances under which apparent opposites could, or could not, coexist; articulated necessary trade-offs; and recognized explicitly where probable futures diverge from desirable ones – and where the two may be interconnected, as in the case of interdisciplinarity. Had participants simply chosen sides without nuance, this would indicate methodological failure.

This study contributes to the understanding of how universities might approach their futures. Methodologically, the use of dialectic pairs of statements in a Delphi study proved effective in eliciting nuanced responses. Rather than forcing binary choices, this approach revealed how university community members carefully navigated the obstacles and demands of the future. In general, the dialectic structure proved effective for revealing how people reason when no comfortable middle ground is offered – participants articulated trade-offs, conditions, and complementarities rather than simply choosing sides. More broadly, the study shows that university communities possess sophisticated capacity for reasoning about institutional futures. The community can be viewed as a resource that strategic planning processes would do well to engage, whether using the dialectic Delphi or some other method.

The findings highlight varying relationships between probable and desirable futures across different dimensions. In some areas, such as interdisciplinarity, expectations and preferences aligned, while in others, such as funding and organizational structure, tensions existed between perceived likely outcomes and preferred futures. This suggests that university stakeholders experience different levels of agency and constraints. Perhaps the most valuable insight is the sophisticated understanding within university communities of

their challenges and possibilities. The participants engaged deeply with questions about preserving academic values while adapting to changing conditions, suggesting that the members of universities may be their best source of knowledge concerning the future trajectories of universities.

The findings could inform policy, though that was neither our explicit aim or something we can claim to achieve through the dialectic Delphi. However, university leadership could use the dialectic Delphi to make explicit how members of the university reason before making strategic decisions. This might improve reform acceptance and implementation (see Section 3.3). Moreover, futures researchers themselves can adapt the dialectic Delphi method to other institutions where members and stakeholders hold diverse, legitimate perspectives on different future trajectories. However, we wish to underline that we make no claim that our findings should drive specific policies – that would require additional normative work and context-specific analysis beyond the scope of our study.

This study has several limitations. Conducted at a single Finnish university, its specific findings may not fully generalize; although its methodological approach could be useful elsewhere. Additionally, while this study successfully captured perceptions and reasoning about futures, translating its insights into concrete strategic actions remains a challenge. Nevertheless, this study offers a framework for examining university futures and highlights the importance of involving university communities in their development. Understanding university members' expectations and preferences regarding institutional development can provide the foundation for creating impactful strategies that engage all stakeholders.

CRedit authorship contribution statement

Toni Ahlqvist: Writing – review & editing, Writing – original draft, Project administration, Methodology, Investigation, Conceptualization. **Veli Virmajoki:** Writing – review & editing, Writing – original draft, Methodology, Investigation, Conceptualization. **Ira Ahokas:** Writing – review & editing, Methodology, Conceptualization. **Kaisa-Maria Suomalainen:** Writing – original draft, Software, Methodology.

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Declaration of Competing Interest

All authors work or have worked and work in the university that the Delphi study focused on. The Delphi study was conducted within the university where authors work or have worked.

Data Availability

The data that has been used is confidential.

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