



<input type="checkbox"/>	Bachelor's thesis
<input checked="" type="checkbox"/>	Master's thesis
<input type="checkbox"/>	Licentiate's thesis
<input type="checkbox"/>	Doctoral dissertation

Subject	Futures Studies	Date	13.12.2021
Author(s)	Siyada Witoon	Number of pages	88+appendices
Title	Survive to thrive: How Finnish universities make use of futures knowledge in the 2021-2030 strategy		
Supervisors	D.Sc. Ville Lauttamäki		

Abstract

Futures knowledge refers to the understandings of a coming event generated by the change observation and interpretation of multidisciplinary viewpoints. It is a learning capability and cognition of change that influence future actions. In the era of VUCA (volatility, uncertainty, complexity, and ambiguity), the futures knowledge can benefit organizations to prepare and strategize their behaviors to cope with uncertain future.

As the higher education institutions are knowledge producers, communicators, and multipliers, the study of futures knowledge at the university level become an interesting subject. This research selects four Finnish universities as case studies to investigate three important questions: 1) to what extent futures knowledge is used in the development of 2021 to 2030 strategies at the university level, 2) how futures knowledge of Finnish universities can impact Finnish higher education at the end of 2020s, and 3) how the university futures knowledge is related to the higher education strategy of Finnish government in 2021 to 2030.

The research finding shows that the futures knowledge of the Finnish universities refers to the speculation and interpretation of general and educational trends. The institutions gather futures knowledge from different sources including the university proximate and extended communities, academic and non-academic research, and the government recommendation papers. While the university communities are the most exhaustive source of futures knowledge, the government roadmap is the most influential source that determines the future action-taking of the Finnish universities. This means the change and impacts that the Finnish academic institutions will bring by 2030 correspond with the Finnish government that aim to internationalize higher education, increase the impacts of research, create larger networks and partnership in business sectors, and promote digitalization and well-being of the academic community.

To survive, the Finnish universities utilizes the government roadmaps as a frame to shape their futures knowledge and develop a strategy to answer the expectation of the government to access to their financial support. To thrive, the Finnish universities may need to push forward their agenda that reflect the needs and desire of their community, the greatest contributor of the futures knowledge at the university level. This can result in the community empowerment and the better quality of futures knowledge for strategic thinking.

Keywords	Futures knowledge, university strategy, higher education public policy.
----------	---





**UNIVERSITY
OF TURKU**

Turku School of
Economics

SURVIVE TO THRIVE

How Finnish universities make use of futures knowledge in the 2021-2030 strategy

Master's Thesis
in Futures Studies

Author:
Siyada Witoon

Supervisor:
D.Sc. Ville Lauttamäki

14.12.2021
Turku

The originality of this thesis has been checked in accordance with the University of Turku quality assurance system using the Turnitin Originality Check service.

TABLE OF CONTENTS

1	INTRODUCTION	7
	1.1 Background.....	7
	1.2 Universities in the twenty first century	8
	1.3 Case studies of Finnish universities.....	9
	1.4 Research questions.....	11
2	THEORETICAL BACKGROUND.....	13
	2.1 The understanding of futures knowledge.....	13
	2.1.1 The definitions of futures knowledge and foresight knowledge.....	13
	2.1.2 Theories of futures knowledge from individual to institutional level	15
	2.1.3 The practicality of futures knowledge in organizations.....	17
	2.2 The higher education in the era of change	19
	2.3 The relation between Finnish universities and the government.....	22
	2.3.1 The expected roles in higher education policy	22
	2.3.2 Public policy and university management	23
	2.3.3 Development programs for 2021 to 2030 university strategies.....	24
	2.4 Contemplation and contextualization: From literatures to the quest of futures knowledge in the university strategies	27
3	RESEARCH METHODOLOGY.....	30
	3.1 The sample groups	30
	3.1.1 Aalto University.....	31
	3.1.2 Helsinki University	34
	3.1.3 Tampere University	36
	3.1.4 Turku University.....	39
	3.2 The methods of data collection.....	41
	3.3 The method of data analysis	43
	3.4 The research ethics.....	46

4	RESEARCH FINDINGS	48
4.1	Aalto University.....	48
4.1.1	A living process in the living strategy	48
4.1.2	The Aalto articulation of the government roadmap.....	53
4.2	Helsinki University	56
4.2.1	A community-centric process as a center of strategy	56
4.2.2	The Helsinki articulation of the government roadmap	60
4.3	Tampere University	62
4.3.1	A merging process in the synergetic strategy	62
4.3.2	The Tampere articulation of the government roadmap	67
4.4	Turku University.....	69
4.4.1	A futures process in the strategy.....	69
4.4.2	The Turku articulation of the government roadmap.....	73
5	CONCLUSION.....	75
5.1	The futures knowledge of Finnish universities.....	75
5.2	The university futures knowledge and Finnish higher education in 2020s	77
5.3	Potentials and pitfalls of the roadmap in the university futures knowledge.....	78
6	DISCUSSION	80
6.1	Survive to thrive.....	80
6.2	Research limitation and further research	80
	REFERENCES.....	82
	APPENDICES	89
	Appendix 1. The most matching part of Aalto strategy and the government roadmap	89
	Appendix 2. The most matching part of Helsinki strategy and the government roadmap.....	91
	Appendix 3. The most matching part of Tampere strategy and the government roadmap.....	93

Appendix 4. The most matching part of Turku strategy and the government
roadmap..... 96

Appendix 5. The format of an interview inquiry 98

LIST OF FIGURES

Figure 1. The futures pyramid by Dorsser et al.	16
Figure 2. The five-stage model of public policy	23

LIST OF TABLES

Table 1. The government plans of Finnish higher education in 2021 to 2030	25
Table 2. The general information of sample universities.....	30
Table 3. The utilized strategy artifacts.....	41
Table 4. The information of the interview participants	42
Table 5. The key themes for the analysis of the strategic artifacts	45

1 INTRODUCTION

1.1 Background

In the beginning of 2021, online media reported two unexpected situations of higher education community. One was about an abrupt termination of the entire geology department in an American university. The cause was conceived as a financial difficulty brought by the COVID-19. Yet, the head of the department suggested that there could be several reasons. He speculated that many curricular were highly specialized to the extent that they appealed to less than 10 people per year to register, as well as there was no adjustment of outdated material and teaching methods in most of the courses. These put the department in the position of underperformance, regardless of dozens outstanding publications and hundred-thousand dollars of research grants the academic staff could produce each year. (Bierman, 2021.) The other one described an unjustified feeling that a student had after he discovered that his tuition fee of an art history course was fully charged, but he was taught by the records of a deceased professor and graded by his teaching assistants. The story was written to raise an awareness of the possibility to have “the dead perform post-mortem works”. It projects a chance that living faculty members may no longer be needed or universities might have a conflict of interest about intellectual property rights with their professors in the rise of digital tools for education. (Kneese, 2021).

The fact that high academic performance and huge research funds might no longer enhance the existence of academia or digital technologies could completely shift teaching professions, creates the concerns about what knowledge-based economy and digitalization in twenty-first century can bring to the university community after their arrival. Future of higher education can be volatile, uncertain, complex, and ambiguous (VUCA). Without the consideration to utilize various ways to conceive the future, universities or academic scholars might be insufficiently informed and at risk of obsolescing and disappearing. To meaningfully continue existing in the global system, higher education institutions (HIE) may need to readjust their directions. The practice of foresight that provides another way to look at future can be a good asset for the academia to formulate multidimensional thinking and reassess its future operation. Yet, the statement could become only a myth without scientific evidence. Therefore, this thesis intends to study the use of foresight in universities and determine whether it exists, how it

is exhausted, and what impacts it could create to the higher education institutions in the era of changes.

1.2 Universities in the twenty first century

As the motivation of this thesis lies in the curiosity to learn about higher education institutions and their foresight activities, evidence of futures thinking relating to universities can be meaningful signs. In this regard, Nieminen & Kaukonen (2001, 7-9) illustrated a few changes of research universities in the coming years. They believed that the universities would become a key function of the knowledge-based economy that is a new societal system in the twenty-first century, as well as encounter with the complexity of knowledge production and utilization due to the rise of new actors participating in research environment. Meanwhile, Organization for Economic Co-operation and Development (OECD) anticipated six scenarios of universities to describe the possible futures of higher education in the coming years of twenty-first century. (Vincent-Lancrin 2004, 259-261.)

To explain, navigating by demographic and participation trends, governance and funding, the knowledge economy, and new actors in higher education, the OECD scenarios include 1) *Tradition* which universities mainly enhanced young citizens for their job opportunities, lacked involvement of private sectors, ignored profit generating projects, had limited e-learning, and were greatly driven by government influence and funds, 2) *Entrepreneurial Universities* which had talented young people as their core students, became more independent from public regulation and funds by receiving resources from multiple sources, pursued market-oriented approach without the detachment of academic values, promoted life-long learning within the university teaching boundary, and attained the balanced image of teaching, community service, and research institutions, 3) *Free market* which academic knowledge were completely moved by market mechanisms; universities specialized on certain fields to increase corporate growth; degrees were granted by business sectors; research were conducted either by companies or public institutes; technologies paid an important role in teaching; young generations were the majority of participants who were only interested in professional skill boosting for labor market competitiveness, 4) *Lifelong learning and open education* which universities were accessible by everyone resulting in the flourish of knowledge-based economy; lifelong learning was present with the enrollment for professional upskilling as well as non-professional reasons; distant learning and short

courses became more prominent; governments or independent bodies were in charge of quality assurance and accreditation; teaching was the main activity seeing that research was mostly conducted outside higher education system, 5) *Global Network of Institution* which e-learning, modular learning objects, and edutainment or gamification were the greatest drivers enabling students to design their own courses and degrees from global university networks; program and courses were more important than institutions; the strong polarization of academic ‘superstars’ and developers of learning tools were seen, 6) *Diversity of recognized learning and the disappearance of universities* which higher education institutions vanished due to the reasons that learning was openly accessible and non-commercial; people shared their expertise for others; peer-to-peer learning became commonly adopted; the advancement of technology allowed professional training programs to be easily achievable in online platforms under the control of apprenticeship of business industries; and knowledge or experiences gained in all life situations were equally valued though the assessment of credentials done by formal specialized organizations. (Vincent-Lancrin 2004, 259-261.)

The aforementioned studies do not only address the futures thinking in the university community, but also capture multiple possibilities in higher education and the university roles. They indicate the fuzzy premise of higher education system that leave the room for universities to interpret how they perceive themselves in the transformative world. Interestingly, the OECD scenarios that were created and discussed nearly 20 years ago about their implications of e-learning technology are still highly relevant in the present context, where COVID-19 pandemic paralyzed on-campus activities and pushed all universities to adopt online classes as the only teaching method. Needless to say, multiple views of future and scenarios can offer different aspects to comprehend change and allow universities to reevaluate their strategies. However, it is still unclear whether the academia embraces the futures works of non-academic actors, gathers what OECD visualized, utilize foresight and futures thinking to contemplate beyond their current strategies, or adjust their roles and directions to respond with multilayered challenges or opportunities. If higher education will remain important to the world, several enigmas of the university behaviors must be meticulously investigated and explicated.

1.3 Case studies of Finnish universities

Finnish universities are interesting subjects to speculate their adjustments. The academia has been through two major changes in the 50-year timeframe. During 1960s and

1970s, university regionalization occurred as a result of the growing demand of skilled labors, the shift of social structures, the increase of individual desire for higher education, and the negotiation success of localist groups in policy making. This led to the campus expansion of existing universities and the birth of new local universities across Finland. (Saarivirta 2010, 353.) On the other hand, managerialism was introduced by the Finnish government in 2000s as a form of new public management (NPM). It influenced a different direction of the Finnish higher education. Business-oriented behaviors that included the enhancement of efficiency and productivity in university management, university conglomerations, and internationalization of Finnish universities were recognized in this time. (Siekkinen et al. 2020, 539.)

Amidst the recent transformations in Finnish higher education institutions (FHEIs), various research reflected issues of university management paradigm, academic personnel needs, and student support systems. Jauhiainen et al. (2015, 393) pointed out the pain points of the new business-oriented management that it could exploit working hours of academic staff and generate a new bureaucratic work, resulting in culture of fabrication. Tapanila et al. (2018, 125) investigated academic employees after the introduction of managerialism and declared that the volumes of works had increased and jeopardized the research and teaching quality, whereas the university values – namely, collegiality, university democracy, and academic freedom, remained undisrupted in the implementation of new processes and business-like administration at the institutions. Lattu & Cai (2020, 8) speculated that the value of sustainability in Finnish universities would lead to various tensions that demand management solutions. Hoffman (2007, 328) described the challenging situations that migrant academic personnel encountered in Finnish universities as the institutions still struggled to overcome the notion of national culture and homogenous academic setting. Rätty et al. (2019, 757-773) observed how higher educational degree students perceived their employability and found that the discrepancy of the skills demanded by potential employers (entrepreneurship, extroversion, stress tolerance and cooperativeness) and the skills produced by universities (theoreticality and critical thinking) led to pessimistic view of job-seeking success. Siivonen & Filander (2020, 247) addressed different needs that young students who directly continued assuming higher education after the graduation from upper-secondary schools and mature students (from 30 years old) who returned to university education after their engagement in labor market have.

It appears that the changing and static directions of the FHEIs could shape and be shaped by both external and internal influences, whereas certain dynamics have been strongly pushed by the governmental level of decision makers. This indicates that the institutions are required to have a sufficient level of adaptability and the agility to promote their resilience. Up until now, the academic institutions seem to successfully bend with the wind to continuously survive. Yet, to solidify their standing points in constantly mobilizing world, perhaps Finnish universities may need to step up their leadership. This challenge provides a great value to investigate Finnish universities and futures knowledge utilization for strategic making to construct their future.

1.4 Research questions

Albeit multiple academic works in the section 1.3 suggest that Finnish universities should reconsider their roles in coming decades, the studies have been conducted in retrospective viewpoints. They clearly identified what had become problematic and provided recommendations regarding to the old decisions of FHEIs. The analyses of future environment that allows Finnish academic decision-makers to revisit their current plans and acquires ‘on-time’ solutions are needed, but they have rarely been found. Futures research of Finnish higher education remains scarce. Only one research was done by Demos in 2019 to present FHEIs foresight that attempted to grasp the relations of past, present, and future roles of the universities, promote the assessment of university directions, and articulate different dynamics of Finnish higher education in 2020s.

To elaborate, Demos (2019, 4) reported six transition roles of Finnish universities from twentieth century to twenty-first century, i.e., creating a national identity, building the nation state and educating civil servants, accelerating production and regional development, building the welfare state and regional equality, stimulating economic growth, creating innovation. Furthermore, the study visualized four scenarios that Finnish higher education institutions (FHEIs) can potentially become by the year 2030. These are 1) neural innovators of society who introduce scientific solutions, 2) bridges of regional and international gaps, 3) guides of scientific knowledge for critical thinking and 4) places where all ages on every level of society are embraced for learning (Demos 2019, 7-14).

Comparing to the previous OECD scenarios, Demos (2019) contextualized the Finnish academia and provided a clearer future thinking for the institutions. The study pointed out the history of the universities as strong contributors in national develop-

ment, while advice prescriptive and proactive roles to be new facets of the Finnish institutions to take in the coming future. In case that the universities aim to increasingly ascend this path, what knowledge they are using to guide their future directions; where the knowledge comes from; what changes the institutions are likely to bring to the existing environment after their actions are taken. These points remain inarticulate.

To bridge the gap between the unknown and known of the Finnish higher education setting, this study pursues a deep comprehension of futures knowledge and the strategic thinking at the university level. The 2021 to 2030 strategic years will be in attention to speculate the existence, the practices, and the impact of university foresight thinking. Additionally, since the previous evidence demonstrate the connection between Finnish academic institutions and their government, the influence of public policy will also be investigated. The general research questions are 1) to what extent futures knowledge at the university level is used in the development of 2021 to 2030 strategies, 2) how futures knowledge of Finnish universities may impact Finnish higher education at the end of 2020s, and 3) how the university futures knowledge is related to the higher education policy in the year 2021 to 2030 of Finnish government. The findings of these questions may reveal the strategic thinking and behaviors of the Finnish universities that are affected by their future lenses, clarify the environment of Finnish higher education in the coming years, and generate contemporaneous feedbacks of the institutional strategies that may foster a positive change in the future.

2 THEORETICAL BACKGROUND

The theoretical background consists of three main parts: the fundamental understanding of futures knowledge, the higher education in the era of change, and the relation between Finnish universities and the government. The structure will emerge from broad to narrow aspects in order to help establish a systematic understanding toward the research subjects. The significant contributions and connections of literature reviews with the thesis topic will also be reflected at the end of this section.

2.1 The understanding of futures knowledge

2.1.1 The definitions of futures knowledge and foresight knowledge

Humans are intrigued and agent-oriented in determining their futures. They long for conceiving what will happen and are driven by the conceivable futures. (Schutz 1959, 76-77.) The knowledge of future mobilizes human actions. Yet, “there are no future facts” (Bell 1997, 148).

Futures are explorative knowledge generated through an interactive platform where multi-disciplinary knowledge, local know-how, self-efficacious participants, and neutral facilitators are visible (Sayarer et al. 2019, 13). Dufva & Ahlqvist (2015, 251) furthered this view by investigating categories of futures knowledge in participatory workshops. They discovered that futures could be accomplished through cumulative discussions in which implicit thoughts of participants are challenged. Futures knowledge were referred to four groups of collective intelligence, including codified knowledge, articulated knowledge, embodied knowledge, and “out-of-radar” or self-transcending knowledge. To explain, codified knowledge refers to materialized information that can be in a written or visual form such as diagram, research articles, or books. The knowledge is comprehensible to everyone without the need to contextualize how it is formulated. Articulated knowledge demands contextual comprehension since it is created throughout the interaction process. As the word ‘articulated’ describes, the knowledge is a verbal expression of facts or/and realities. Embodied knowledge is the information of know-how that is accumulated through the social experiences of individuals and their expertise. It may or may not be scientifically studied, yet it provides in-

sightful aspects of the studied subjects. Out-of-radar or self-transcending knowledge means the newly discovered knowledge. The knowledge can only be present when diversity and freedom of expressions are respected in discussions. Its occurrence expands the horizontal perspectives of future. Wild cards and Black swans are good examples of this knowledge category. (Dufva & Ahlqvist 2015, 253-254.) Meanwhile, Schomburg et al. (2005, 150) described foresight as a non-empirical, uncertain, complex, cause-and-effect, action-oriented, multidisciplinary, transformable, and interpretative reality that is used in strategic making processes such as “agenda setting, opinion formation, vision development, and problem-solving”. Kuosa (2012, 17) also asserted that foresight knowledge directly connects to two domains of decision-making: anticipation of future and appropriation of organization strategies. He elaborated that foresight fosters the anticipation of what changes and remains through the attentions of tangible and intangible objects of reality such as beliefs, truths, and their multilayers of understanding. Additionally, foresight can be applied to rationalize new or emerging ideas and concretize organizational strategies that eventually reshapes the organizational actions to be more reactive and resilient to the change. (Kuosu 2012, 17.) It seems that futures knowledge and foresight share elements of futures thinking together. Yet, they differ in the focus. The former one emphasizes learning capability and cognition of change that influence future actions; the latter one is a skill to strategize prospective thoughts into actions.

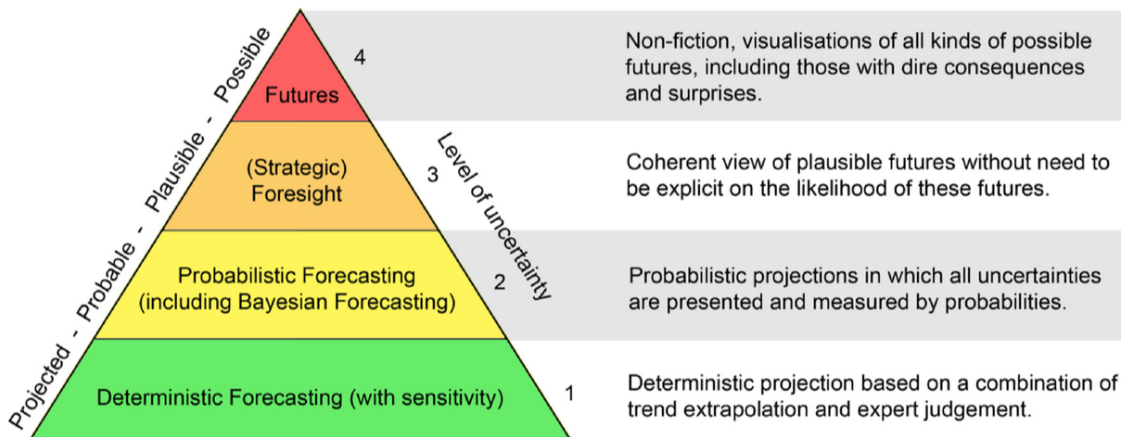
As it is previously stated, individuals can only take actions to influence futures when the futures are comprehended. Since futures are not predetermined, the futures knowledge and foresight knowledge come to play the role in decision-making. Through deliberative interactions or thinking of people, the two terms are essentially indifferent. They refer to the understandings of a coming event generated by the change observation and interpretation of multidisciplinary viewpoints. However, foresight particularly penetrates on the area of strategic-making to sense-make the conceived futures and to make senses the present decisions for action-taking. Therefore, foresight knowledge will be considered as a subset of futures knowledge. Consequently, this thesis opts to observe the futures knowledge in the futures thinking of higher education institutions, as it gives a broader lens to understand how unknown situations are recognized and future behaviors are justified.

2.1.2 Theories of futures knowledge from individual to institutional level

Seeing that there is no empirical evidence of future, contextualization of/about future phenomena is needed. Ahlqvist & Uotila (2020, 1-11) asserted that humans interpret futures by looking at the focal point through certain perspectives accumulated by their existing knowledge and their social position. This suggests that the understanding of a coming event is framed according to where and what ground individuals hold. To bring a salience of crucial agendas, legitimize the knowledge, and enhance the credibility of formulated understanding in an organizational decision-making, Kunseler et al. (2014, 1-12) point out that the diversity of people is needed. Gathering multiple groups of stakeholders is crucial, since various participants represent the key success to generate multidimensional views in future talks or deliberative discussion of futures. (Kunseler et al. 2014, 1-12.)

Meanwhile, Dorsser et al. (2018, 75-84) proposed four levels of uncertainty that influence strategic thinkers to select tools and investigate the unknown situation illustrated in figure 1. When future is seen as mostly static and unchanged, extrapolation tools that provide deterministic information are selected. As a result, a linear future that is a continuation of the present comes to influence the thought and shape one direction of policy design. When plurality of future is recognized; uncertainties exist but are believed to be controllable, the calculation of probabilities is employed. Consequently, the unknown futures are understood in the realm of numbers; the significance of identified futures are prioritized according to the chance of occurrence; strategists build policy from statistic supports. Whereas, when the futures are unclear and uncertain to the extent that mathematics can no longer justify decisions, strategic foresight is utilized to articulate the emerging environment. The discourses based on the observation of past and present are adopted to establish coherence. In case futures are plural; the uncertainty is high; no currently available data completely explicates the change, systemic views and creativity are utilized to reveal hidden relation web of relevant actors. The qualitative and quantitative approaches are exhausted to comprehend various possible futures that could be attached or unattached to the present. (Dorsser et al. 2018, 75-84.)

Figure 1. The futures pyramid by Dorsser et al.



Similarly, Catino (2013, 74 – 76) addressed four methods usually adopted by stakeholders, according to the limitations of their comprehension of uncertainty and management know-how. These include forecasting techniques, analogical reasoning, contingency planning, and scenario-based learning. To elaborate, when the future is less uncertain; the existing know-how seem to effectively respond to the dynamic of change, the classic techniques of forecasting that are based on extrapolative information or statistics in the past are adopted. The anticipation of seasonal sale demands is an example that the time and resources can be optimized from trend forecasting. In cases that the strategic future is identified; there is no clear know-how, an analogical reasoning is utilized to disclose societal norms and other factors that potentially appropriate the direction. An institutional creation that needs a strategy is applicable to this approach. Meanwhile, contingency planning can mitigate the constraints of unclear future in the institutions that possess adequate know-how. National strategic teams responding to terrorist attacks or natural disasters that are relatively unpredictable could tremendously harvest the understanding of futures from this method. Lastly, scenario-based learning is said to deliver useful information in the area where neither the future nor the means to deal with it are (vividly) present. To illustrate, the emergence of disruptive technologies or abrupt political changes can generate the vacuum of knowledge and know-how in which no one can be thorough about the transformation and make use of their previous intelligence. Creative scenarios may navigate the unforeseen viewpoints and innovative ideas to cope with the highly uncertain situations. (Catino 2013, 74 – 76.)

For futures thinking to be embraced, Steen & Twist (2012, 475-486) revealed that it must be compatible with institutional and political cues. To elaborate, futures

knowledge needs to answer institutional limitation by helping reflect on current policy theory, providing new policy theory for existing or emerging issues, offering civil-servants new arguments for policy-advice, allowing reflection on current organizational paths, or reframing existing policy theory and organizational path. At the same time, the useful futures knowledge should also captivate political needs by presenting clear quantitative and/or qualitative evidence to enable political players win political battles, establishing new dimensions of existing problems to resolve present-day political issues, highlighting what are important but unseen on agenda, providing a realization of what can become crucial concerns in the future, or identifying potential political risks that are usually regular analyses are likely to overlook. (Steen & Twist 2012, 475-486.) This means the recognition of futures knowledge is determined by its ability to relate with political players and organization agenda in a decision-making.

The aforementioned theories indicate that futures knowledge can be conceived by both individual decision-makers and institutions. The agents use their lens to observe uncertainty and influence the process, the content, and the utilization of futures knowledge. In this respect, the position and the agenda of the observers dictate how they see uncertainty and make deliberative decision to change or maintain the situation. Regardless to the fact that futures knowledge has its purpose to promote the understanding of change and (re)shape organization paths, only the futures knowledge that fits political and institutional demands are interpreted. This highlights the importance to know the way change is articulated and internalized in the environment of studied subjects. To build a concrete comprehension, the next section describes the practices of futures knowledge that were done in different organizations. It is expected to assist the conceptualization of futures knowledge formulation and incorporation.

2.1.3 The practicality of futures knowledge in organizations

Futures knowledge seems to increasingly become an important asset in various organizations. Rohrbeck & Kum (2017) showed that the practice of foresight empowered corporate to outperform their peer or competitors by increasing 33 percent of profitability and 200 percent of market capitalization growth in seven-year timeframe. Likewise, Dufva et al. (2015, 103) also described the benefits of utilizing futures approaches in three layers: improving the insights about possible futures that subsequently

allow the organizations or users to (re)adjust themselves in a better position in the innovation systems, (re)creating relationship with new or existing networks between or across sectors, and strengthening the learning skills that would eventually elevate future orientation skills or generate new capabilities of the organizations.

To acquire and exhaust futures knowledge, Pouru et al. (2019, 86-90) revealed that Finnish small and medium enterprises (SMEs) followed the steps of the knowledge acquisition, assimilation, transformation, and the exploitation to identify change and adjust corporate behaviors for their sustainability. However, the firms limited their focus on specific trends in too short time with their limited networks to collect data, which may lead to disregarding of important weak signals in knowledge assimilation, self-fulfilling prophecy to simply re-enhance preexisting strategic points, and the failure to challenge against current assumption (Pouru et al. 2019, 86-90). Waal & Linthorst (2020, 11) asserted that the high-performance organizations utilized megatrends and disruptors as threats to trigger managerial changes and enhance agility. Heo & Seo (2021, 4-13) presented an application of futures knowledge in agenda-setting step of public policy making. The knowledge of megatrends and trends were used to articulate potential conflict issues and recognize future conflict agenda of governmental institutions that answer the same policy framework with the different implementation lenses. This was believed to encourage anticipatory knowledge that eventually promoted capacity-based governance and prevented disintegration of policy implementation amongst government agencies. (Heo & Seo 2021, 4-13.) Meanwhile, Ahlqvist & Kohl (2016, 1145-1149) discovered the six layers of futures knowledge mobilization in a think-tank research institution including layer 1: the continuation of weak signal and trends scanning activities, layer 2: the knowledge incorporation in organizational focuses (technology, society or actors in society, strategic planning, visionary thinking) to enhance the accomplishment of organizational goals, layer 3: foresight exercises for external parties or customers, layer 4: the assessment of foresight information to shift the organization competency, layer 5: the adoptions of newly acquired future-oriented information to internally increase knowledge absorptive capacity, and layer 6: feedback loops that helped adjust layer 1 and 2.

The studies illustrates that the futures knowledge is visible and utilized in private, public, and think-tank organizations. All sectors are keen to utilize the knowledge to drive their present directions, since it gives various tangible and intangible benefits to

the practitioners. The process tends to generally circulate from change recognition that is done by collecting futures trends, contextualizing the trends in the institutional environment, and creating or adjusting a strategic direction creation or adjustment. Yet, the practice of change or trend observation may differ. This can be divided into 3 patterns. In pattern 1, change is gathered by relevant trends and interpreted as a disruptor to encouraged organizational adjustment. In pattern 2, the conflictual aspect of change is paid attention to mitigate the potential problems and increase the successful outcomes of the policy implementation. In pattern 3, all possible weak signals and trends that indicate change are collected, elaborated and used to enhance the knowledge absorptive capacity of the organization and the networking partners. In all cases, the key to the futures knowledge is the comprehension changes and trends. To investigate futures knowledge in the university setting, the dynamic of higher education environment should be studied.

2.2 The higher education in the era of change

Several distinguished dynamics in higher education were seen in the twenty first century. Gidley (2010, 1040-1048) reported the shift of human thinking and the transformative trends of higher education disciplines. She located the three threads: post-formal, integral, and planetary consciousness, that incrementally gained their momentum to meta-cohere ways of thinking and researching. Postformal reasoning brought the articulation of complexity, holism, paradox, pluralism, reflexivity, values, and wisdom that were ignored by scientism and its interest of objectivity in a spotlight. Integral thought created the emphases of the connection of non-living and living creatures, instigated inclusivism of all interrelated entities in environments, and strengthened human responsibility for ecological system. Planetary theories counterbalanced globalization discourse that prioritized politico-economic aspect by suggesting cross-disciplinary thinking to look at antho-socio-cultural aspect and increase sensitivity of the complex world. (Gidley 2010, 1040-1048.)

Not only intellectual changes that influence academic directions, seven trends were observed to transform the universities into neoliberal entrepreneurial organizations in the twenty-first century as well. To begin with, state disinvestment was growing in many public institutions. The governments decreased sponsorship of education and instead enacted student loans for those who were in need. Second, competitiveness was encouraged to access governmental funding. Educational budget was allocated based on

productivity and performance assessment of academic staff. To prove their success and acquire financial support, universities were forced to compete at national and global levels. Third, there was also a rise of an audit culture to scrutinize outputs and performance of academic institutions. The process was thought to enhance transparency, risk management, and financialization that would eventually empower academia in the long-term. Fourth, the numbers of administrative officers were proliferated, and the numbers of academic personnel were reduced. This arose due to the internal financial constraint that created the need to reduce highly paid academic posts, as well as the adoption of performance and output assessments that required more administrative work at schools. Fifth, the administrators became powerful decision makers. The adoption of managerialism led to the shift from academic quality to productivity and performance, the ability of non-academic personnel to dictate faculty or university directions, and the decline of researcher authority in institutional decision making. Sixth, more universities sought new income streams and pursued entrepreneurial activities. The change enabled educational communities to be more lucrative, put a greater effort to partner with business industries, recruited more high fee-paying international students, and attempted to build their reputation abroad. Lastly, higher education was seen as an investment of individuals. The role of universities as a contributor of social equality and development turned to a knowledge provider of people who could complete academic tasks, afford tuitions, and want to improve their skills for a better labor market. (Wright & Shore 2017, 3-10.)

In the particular context, three similar trends were also detected in Finnish higher education institutions during the transition period of institutional independency by the enactment of the University Act in 2009. The first one was cooperation and mergers between universities that were driven by the government plans to increase quality, competitiveness, and effectiveness of higher education and research. Secondly, institutional stratification and differentiation were implemented as the means to create the unique expertise areas of each Finnish university, encourage institutional collaborations that could bring appropriation of resource uses, and promote international attractiveness. Lastly, the concept of new public management was introduced to transform the governance and leadership of the Finnish academic institutions. Universities would have more financial autonomy. Decision-making could be swiftly done through internal management. Employee contracts were changed from civil officers to normal laborers, whereas rectors and deans would be expected to perform in corporate-like manner by oversee-

ing financial and profit gains. (Tirronen & Nokkala 2009, 219-226.) Additionally, Koh-tamäki (2020, 6-11) reported strategic changes and the divergences of internal manage-ment of Finnish universities after becoming financially and legally liberated. The new status generated flexibility of decision-making and incentivized the university leaders to take their ownership in institutional competence. This led to the emphasis on the re-source achievement, the competition to academically distinguish from others, and the network acquisition in all universities as crucial strategies to increase organization man-agement capability. However, it appeared that the public universities and the foundation universities pursued different ways to sustain. While the former ones stressed the en-hancement of regional and national growth through the development of specialize fields of studies, the latter ones adopted full scale of corporate management such as establish-ing multiple business spin-off projects to generate revenues, seeking consultancy from in external university board members, and competing for talented academic personnel from international market to direct the organizations in preferable environment. (Koh-tamäki 2020, 6-11.)

The changing trends in academic disciplines and the emergence of managerial-ism in university management systems demonstrate that higher education is a dynamic environment. In case that the society has moved to embrace socio-ecological or plane-tary mindsets, the awareness of outdated curricular and the creation of disciplinary that respond to these academic values could possibly keep the higher education institutions remain relevant. In the embracement of enterprise-oriented thinking, academic opera-tion may be marketized and handled in a business style that could place research publi-cation and ground-breaking discovery in an obscure position in return. Balancing re-sources and academic values to continuously sustain in the community is likely to be a new challenge of the universities. How each institution recognizes and acts toward the change could vary. It may depend on institutional strategies and/or the external drivers. In the Finnish context, Hoffman (2007, 328), Tirronen & Nokkala (2009, 219-226), Saarivirta (2010, 353), Jauhiainen et al. (2015, 393), Demos (2019, 7-14), and Siekkinen et al. (2020, 539) illustrated that the academic communities were part of gov-ernment agencies and have been strongly influenced by public policies. Therefore, the comprehension of public policy and the current higher education policies become highly relevant to gain an understanding of how Finnish universities respond to these dynam-ics.

2.3 The relation between Finnish universities and the government

2.3.1 The expected roles in higher education policy

As of September 2021, there are 13 Finnish universities operated within the Ministry of Education and Culture. Two universities – namely, Aalto university and Tampere Universities, are managed under foundations. Other 11 universities including University of Helsinki, University of Eastern Finland, University of Jyväskylä, University of Lapland, Lappeenranta University of Technology, University of Oulu, Hanken School of Economics, University of the Arts Helsinki, University of Turku, University of Vaasa, and Åbo Akademi University are considered as corporations under public law. The corporation and foundation status allow Finnish higher education institutions to be autonomous entities that can independently decide their internal management. (Ministry of Education and Culture n.d.)

Yet, the official website of the Finnish Ministry of Education and Culture illustrated that “the Ministry of Education and Culture as part of the Government steers and finances the activities of higher education institutions. Targets for development are based on the Government Program and the Government Action Plan as well as other strategic objectives set by the Parliament and Government for higher education institutions.” (Ministry of Education and Culture, n.d.) Therefore, their relations with governmental organizations and public policies are clearly intertwined. The university management is likely to be aligned with government policies, programs, and action plans. This fact is reemphasized in the theory of public policy.

Jann & Wegrich (2017, 44-58) proposed that there are five phases to observe public policy making shown in figure 2. First, agenda setting is needed to address and discuss the necessary and/or urgent issues of public interests. In this process, relevant problems and stakeholders are identified. Thereafter, the policy formulation occurs to establish objectives and solutions. Theories are thoroughly investigated and gathered for multi-dimensional understandings of the issues and clarification of available solution choices. Third, the policy adoption is proceeded to crystalize who should do what, why, and through which resources. Fourth, implementation is conducted by related government agencies. Parameters are set to bridge the gaps of theoretical finding and actual administrations. The alignment can increase the effectiveness of action-taking, seeing that each institution varies in institutional structure, regulation, and resource constraints.

Lastly, the evaluation is the final step. The main purposes are to understand whether intended results are achieved and to comprehend unintended consequences that policies bring. (Jann & Wegrich 2017, 44-58.)

Figure 2. The five-stage model of public policy



Starting from understanding issues, searching available approaches to tackle with the challenges, selecting appropriate methods with the consideration of organizational constraints, and assessing the actions, the five-stage model of public policy strongly emphasizes the need of participatory engagement of stakeholders in each or entire processes. According to designation of the ministry of education and culture, the position of Finnish higher education institutions in government policies can be firmly located in policy implementation. This can be crystallized in the government roadmap of university strategies.

2.3.2 Public policy and university management

The Finnish government clarified that the main responsibilities of universities were to engage in scientific research, provide the highest level of education as the institutional structure would allow, promote lifelong learning, and interact with society to create societal impacts. Additionally, the recent higher education policy addressed that universities should base their strategies on increasing international competition and balancing the contribution to their regional needs. To accomplish these key directions, the government recommended the academic institutions to 1) focus on sustainable development, well-being, Finnish competitiveness, effective process of education and learning, 2) maximize use of digital technologies in central student database to generate more versatile student guidance that can be incorporated with working life, 3) facilitate national and international mobility, 4) pursue internationality for learning and research environment, 5) clarify and deepen cooperation with academic and non-academic actors, and 6) adopt foresight approach for planning their contributions in the society. (Ministry of Education and Culture, n.d.)

On one hand, this means Finnish universities are expected to multitask and simultaneously play many roles to promote national development. On the other hand, higher education institutions can vertically and horizontally face overwhelming challenges without guidelines and support given by the government in the era of change. In any case, it indicates the potential influence of the government and their public policies on the futures thinking and the strategic directions of the universities. This becomes an important reason to study the educational plans of government in the investigation of futures knowledge in the university strategies.

2.3.3 Development programs for 2021 to 2030 univer- sity strategies

The ministry of education and culture developed a roadmap for action-taking as a guideline to navigate higher education institutions in their 2021 to 2030 strategic directions. The document explained current situations of Finnish higher education, megatrends, visions, and development programs respectively.

To begin with, the government recognized that some Finnish universities were internationally well-known. Nonetheless, several challenges remained in the Finnish higher education, including the erosion of local knowledge and skills, the needs to improve quality, productivity and effectiveness of education, as well as the lack of global attraction and competition. At the same time, the university system was influenced by five relevant megatrends: global transformation of work, digitalization, the ability to tackle global challenges together, transparency and cooperation, and global competition for skills. These drove the government to create cohesive 2030 visions – namely, 1) at least 50 percent of young citizens would earn a higher education degree, 2) development of higher education and expertise would relate to different life situations, 3) four percent of GDP would be allocated to research and development to drive new creative power of science, sustainable growth, more wellbeing. To accomplish their desirable future by the end of 2030, five development plans shown in the table 1 were also initiated. (Ministry of Education and Culture, n.d.)

Table 1. The government plans of Finnish higher education in 2021 to 2030

Program	Key directions	Action plan
1. becoming a nation with the most competent labor force	Increasing the share of the labor force with a higher education degree	<ul style="list-style-type: none"> • From 2021, raising the number of degrees in the sectors where demand is high both in education and working life • Diversifying the paths to higher education • Improving the graduation rate, for example by funding model incentives
	Introducing a model and concepts for education provision in continuous learning	<ul style="list-style-type: none"> • Drawn up in 2019 in collaboration between higher education institutions, stakeholders and the Ministry of Education and Culture • Reform based on development and concepts that meet demand in society, business and industry
	Attracting more international talent to Finland	<ul style="list-style-type: none"> • Actions to bring more international talent and students to Finland • Increasing trainee placements and support services to help international students and young researchers integrate in Finland and the Finnish labor market
2. Higher education reform and the environment for digital services	Building a higher education environment for digital services	<ul style="list-style-type: none"> • Leveraging digitalization in higher education calls for new pedagogical thinking. • A service environment will improve accessibility and flexibility of education, the opportunities for continuous learning and global cooperation.
	Making education more digital, increasing modularity and reinventing teaching	<ul style="list-style-type: none"> • In higher education, modularity and availability of digital courses and guidance services will be increased and new pedagogical approaches introduced. • These reforms will serve both degree studies and continuous learning. The volume of digital studies and the number of degrees that can be completed digitally will be increased to improve access to education and boost international student recruitment.
3. A higher education community with the skills to deliver the best learning outcomes and environments in the world	Launching a development program for higher university pedagogies and guidance skills that will receive financial support from the Ministry of Education and Culture	<ul style="list-style-type: none"> • The program will be based on diverse learning environments and guidance; demand- and anticipation-led education; and individual learners, learning methods and environments. • The program will be implemented in 2020–2025. • Teaching will be developed by promoting national and international higher education networks.
4. Higher education institutions will become the best workplaces in Finland	A university leadership program will be launched with international partners to improve change management, employee competences and wellbeing in higher education	<ul style="list-style-type: none"> • The program will be planned with higher education communities and implemented leveraging the best international knowledge in the field. • The courses will run in 2020–2025.
	Strengthening the knowledge base for developing employee wellbeing and leadership	<ul style="list-style-type: none"> • Implementing a survey of employee time management and other measures.

5. Cooperation and transparency driving research and innovation	More coherent RDI policies	<ul style="list-style-type: none"> • In RDI policies, particular emphasis will be put on strengthening the cooperation and measures of these ministries: Ministry of Education and Culture, Ministry of Employment and the Economy, Ministry of Finance and Ministry of Social Affairs and Health. The Research and Innovation Council will have new structure and practices.
	Supporting the building of internationally attractive knowledge clusters and innovation systems	<ul style="list-style-type: none"> • Measures shared across the administrative branches will be used to increase collaboration between universities and universities of applied sciences, research institutes, work and business. • International cooperation of higher education institutions and their involvement in the world's most interesting networks will be strengthened. Leveraging the skills in higher education institutions, measures will be introduced to accelerate RDI that can support and revitalize businesses, SMEs in particular. • The strategy and roadmap for the research infrastructure will be updated in 2019–2021, paying attention to infrastructures that can be used and funded jointly by diverse actors.
	Using shared approaches and legislative means to strengthen open research and innovation	Not mentioned

Table 1 The government plans of Finnish higher education in 2021 to 2030 (continued)

Overall, the government development program articulates the areas of education, research, social impact, and university community management that are the crucial cores of the Finnish universities. Program one expressed the aspiration of Finland to build greater proportion of skilled labor by quantitatively increasing the number of higher education graduates, lifelong learning courses, and degrees. Program two addressed the necessity to adopt digitalization in university operating system for better quality of learning contents and outcomes that would eventually contribute to the academic achievement such as course completion or graduation. Likewise, program three aimed to redesign pedagogies for teaching quality enhancement that can answer the need of individuals and society with the support of digitalization. Program four highlighted the intention to provide multidimensional well-being supports of university personnel that would finally result in the positive change of academic community. Program five stressed the development of quality network and expansive collaboration with multiple stakeholders that could lead to ground-breaking research and innovation, as well as sustainable institutions driven by national and international ecosystems.

The works of the Ministry of Education and Culture reveal the existence of futures knowledge in the public policy level. The megatrends and trends are identified and exhausted to generate the visions and the development programs of the Finnish higher education. This follows the views of Schomburg et al. (2005, 150) and Kuosa (2012, 17) that suggest the futures knowledge to articulate change, rationalize the future, and create the connection of the present and conceived future for strategic path. While the roadmap is empirical evidence of the future knowledge of the government, its specific focuses (of labor force competency, digitalization of the Finnish higher education, globalization of Finnish higher education, transformation of the Finnish universities environment, and collaboration of research and innovation platforms that the government intends to pursue) can be impactful to the future perception of the Finnish universities. This is due to the previous literatures that illustrate the strong connection among Finnish higher education institutions, public policies, and the ministry of Education and Culture. To testify the assumption, the investigation of futures knowledge in Finnish universities is needed.

2.4 Contemplation and contextualization: From literatures to the quest of futures knowledge in the university strategies

Futures knowledge is the understandings of a coming event that is acquired through the observation and interpretation of multidisciplinary viewpoints. Individuals and organizations have many ways to conceive futures and contemplate their present actions. To scan the most-likely-to-occur event, probable futures is paid attention. To newly and differently view present, the study of possible futures is conducted. To explore preferable futures and values behind the thoughts, ethics of futures is focused. To understand values and societal impacts of a future thinking, images of futures is scrutinized. (Bell 1997, 75-88.) As the previous studies point out, future knowledge refers to an understanding of lenses used to observe changes, the articulation of changes, and the preparation to tackle with uncertainties in the pre-mid-post change at individual, department, institution, or broader levels. This put foresight knowledge that is an action-oriented futures thinking to sense-make or/and make sense organization directions under the umbrella of futures knowledge. The multiplicity of thinking and acting toward an unrevealed circumstance gives the futures knowledge an interesting and meaningful subject to study.

Interestingly, private, public, and non-governmental organizations are seen to utilize futures knowledge in a similar way. The processes generally comprise 1) change recognition through collecting futures trends, 2) contextualization of the conceived information in institutional environment, and 3) strategic direction creation or adjustment. The fact that futures knowledge is evidently exploited in many places proves that humans and organizations seek to understand futures for various reasons, as well as suggest that futures knowledge is highly relevant in all contexts. However, very few studies were conducted to investigate the acquisition and utilization of futures knowledge in the university setting, regardless to the fact that higher education is also in a VUCA environment.

Although existing research may reveal several possible scenarios that higher education institutions could be in, they did not disclose how the academia comprehends, interprets, and reacts to these uncertainties. The absence or scarcity of such literatures incentivizes this research to discover a missing part of the futures knowledge and to produce a new facet in the studies of/ about futures.

To gather futures knowledge of the higher education institutions, the Finnish universities are selected to be a sample group. The institutions are interesting subjects due to three reasons. One, the academia has been encountering many changes in a very short period of time, including the reform of academic disciplines, the introduction of managerialism in university management, the shift of relationship with Finnish government, and the engagement of multiple stakeholders in the university system. These pose the question of how they can adjust and successfully survive through the emerging contexts that have multifacets of VUCA. Second, the roadmap shows clear evidence of futures knowledge in the Finnish higher education policy. Nonetheless, how each university incorporates the government roadmap into their directions, to what extent these recommendations and plans guide university strategic thinking, or how the government futures knowledge impacts the internal management of the universities remain under-investigated. Third, the researcher is a student of a Finnish higher education. The findings may also serve a personal curiosity to comprehend the academic environment where she has been in.

In one aspect, the university act (2009, 2) suggests that the important key decision makers who have a power to designate the directions of Finnish higher education institutions are 1) collegiate body that is in charge to regulate the board members, 2) the board members who represent the university professors, teaching and research staff,

other personnel, and 3) the rector of the university. Yet, the same law allows each university to be self-governed by the principle of self-autonomy (Ministry of Education and Culture 2009). As a result, there might be multiple parties engaging in the futures thinking during the development of institutional strategy. This posits the fact that it is important to investigate the process of strategic making. However, as the most recent strategies were already finalized, it can be difficult to reach out each individual and gather their contribution of futures knowledge. Therefore, it is crucial to review strategy documents and further the study through the conversations with the university members who actively engaged in the strategy process. In this regard, the university strategic team members that work as connectors of relevant stakeholders and are responsible for strategic making process are seen as the most suitable groups for collecting an in-depth data. Additionally, to deepen a view of how the Finnish higher education institutions indeed contextualize the challenges in the present time, the most recent strategic making that focus on the year 2021 to 2030 is required attention. The next chapter presents the research methodology of this study in details.

3 RESEARCH METHODOLOGY

3.1 The sample groups

This study focuses on four Finnish universities – namely, Aalto University, the University of Helsinki, the Tampere Universities Community, and the University of Turku. The selection is based on four criteria: 1) the list of 13 academic institutions of Finland that are described as the universities according to the Universities Act 558/2009, 2) the multidisciplinary academic institutions that potentially indicates the utilization of futures knowledge, 3) the ability to access to the research materials, i.e., English document of the universities strategies and the interviewees, and 4) the constraint of time and resource to investigate all Finnish universities. Table 2 illustrates the general information of all sample group.

Table 2. The general information of sample universities

University	Founded year	Types	Supreme decision-making bodies	Visible network groups	finances
Aalto	2010	Foundation	1) 7 members of the foundation board 2) the president 3) 19 members of Academic Affair	1) Companies for research & development 2) Cities where campus areas are located for sustainable growth 3) International universities and academic community for mobility and knowledge exchange	All universities share common character in finance 1) Main income: Government (Ministry of Education and culture) 2) Main expense: Academic personnel
Helsinki	1640	Public	1) the 13 Board members 2) the 50 collegiums 3) the International Advisory Board	1) International academic communities for research and education	
Tampere	2019	Foundation	1) 7 members of the Strategic Board 2) the president 3) 19 members of Academic Board	1) Companies for research and development 2) International academic collaboration and partnerships for mobility	
Turku	1920	Public	1) the 13 Board members 2) the 30 Collegiate Council	1) Local companies for research and development 2) International higher education institutions for mobility and knowledge exchange	

3.1.1 Aalto University

3.1.1.1 *General information*

Aalto university is a foundation university that emerges from the combination of Helsinki University of Technology, Helsinki School of Economics, and the University of Arts, Design and Architecture. The merging process took approximately five years from the first presentation of the idea in 2005 by Yrjö Sotamaa, the rector of the University of Art and Design, to its first operation as Aalto university in January 2010. (Aalto University 2021). The aim of the change is to create an innovative university that can harness multidisciplinary knowledge of science and technology, design and art, and business and economics. (Aarrevaara et al. 2009, 98).

Nowadays the university offers wide variety of courses in bachelor, master, and doctoral degree programs through six schools: the school of Engineering, the school of Business, the school of Chemical Engineering, the school of Science, the school of Electrical Engineering, the School of Arts, Design and Architecture. Additionally, the institution has three special units including Aalto Studios (to support entry and professional level of media production), Language Center (to promote the communication skills of students and university staff) and Learning Center (to enhance learning and researching skills through online and offline library services). It currently has approximately 12,000 full time students in bachelor, master, and doctoral degree programs, as well as 4,000 academic and administrative staff. (Aalto University 2021).

3.1.1.2 *Organization management*

As an organization, Aalto University has three main governance structure: collaboration and joint activities, management, and academic matters. The most relevant part of the strategy making lies in the management teams. The subdivision comprises Aalto university foundation board, the president's management team, Aalto university management team, schools and departments management teams, and services management team. Yet, it can be divided into the executive and operative management groups according to their roles in strategic decision. (Aalto University, 2021.)

To elaborate, the executive group that has a power to direct the strategy of Aalto university are the board, the president, and the academic affairs committee. Specifically, seven members of the university board are appointed by the academic affair

committees in the division of academic matters. Through the consideration of academic or industrial expertise in sciences and arts on both national and international levels, the board is selected to perform management decision-making in strategy, operation, financial concern, and long-term direction of the institution. They choose one president to act as the managing director. He or she oversees the development and implementation of strategy, the resource management, and the university strategic relationship with relevant stakeholders. Meanwhile, the operative group includes the president's management team and the Aalto management team. The former one consists of provost, vice presidents, deans, chief officers, directors, and head of legal who work under the president to support the daily operations and prepares the decision-making motions. The latter one consists of the president's management team, the chair of the professors' council, a student representative from the university student union, a doctoral student from the university doctoral student association, and the university staff representatives to promote open dialogues and institutional transparency in decision making. (Aalto University, 2021.)

Apart from the management members, the steering groups in the division of collaboration and joint activities can also influence the university strategy through the preparation of strategy formulation process, the utilization of strategy making approach, and the monitor of strategy implementation. Additionally, the professors' council in the division of academic matters can shape the university strategy by providing advice on the ground of science and arts academic expertise to the president and vice presidents as well. (Aalto University, 2021.)

3.1.1.3 Networks and collaboration

The Aalto university collaborate with different stakeholders in multiple layers. To begin with, the institution partners with several companies to increase the research competency. The ongoing research projects include Automation Expert platform with Schneider, the Design + Sustainability with UPM, a 10-year antennas, micro-electronics, digital signal processing, artificial intelligence, hydro acoustics and quantum technology research projects with Saab, and fuel cell technology, robust power grid, 5G technology, autonomous ship, digital twins smart and autonomous ship with ABB. Additionally, it reaches out to Helsinki and Espoo that are the campus areas to help determine solutions for sustainable growth and increase the attractiveness of the cities. Third, the university supports the internationalization of research, teaching, and

learning. Aalto networks with 472 institutions in 54 countries on 23 programs to enhance the mobility of students and staff. The university has 15 global networks to empower its global awareness, i.e., CEMS (a global alliance of academic and corporate institutions that jointly provide the CEMS Master's in International Management (MIM) program), CESAER (the Conference of European Schools for Advanced Engineering Education and Research), CLUSTER (Consortium Linking Universities of Sciences and Technology for Education and Research), Cumulus, (the International Association of Universities and Colleges of Art, Design and Media), EARMA (European Association of Research Managers and Administrators), (EUA) the European University Association, IMHE (OECD Program in Institutional Management in Higher Education), INDFICORE (Indian Finnish Consortia for Research and Education), N5T (Nordic Five Tech, a strategic alliance of the five leading technical universities in the Nordic countries), NSCN (Nordic Sustainable Campus Network), NUAS (Det Nordiska Universitetens Administratörs Samarbetet - Nordic network of university administrators), SAR (Scholars at Risk to protect threatened scholars and promote academic freedom around the world), SEFI (the European Society for Engineering Education), UniPID (The Finnish University Partnership for International Development), and Unite! (a network of universities in seven countries that will set a new model for a European virtual and physical inter-university campus). Finally, the Aalto university also has the Career Design Lab that enhances the interaction and the relationship among alumni, current students, and companies. (Aalto University 2021.)

3.1.1.4 Income and expenditure

The Aalto university receives the income over 300 million Euros each year. The Finnish government has been the greatest fund provider of Aalto university since its establishment in 2010. The other important financial supports come from the Academy of Finland, Business Finland, and the European Union. Whereas the majority of expenditure is for the employment of academic personnel. In 2020, Aalto university was given 212 million Euros of the government funding (59 percent of all income sources) and spent 173 million Euros (48 percent of all expenses) on the employment of scholars. (Aalto University 2021.)

3.1.2 Helsinki University

3.1.2.1 *General information*

The university of Helsinki is a public university and the oldest higher educational institution in Finland. It was originally established in 1640 to originally educate male students to serve the Church by the queen Christina of Sweden. In the present time, the university comprises 12 faculties (Agriculture and Forestry, Arts, Biological and Environmental science, Educational Science, Theology, Law, Medicine, Science, Social Science, Swedish School of Social Science, Pharmacy, and Veterinary Medicine) locating in four campuses – namely, City Centre, Kumpula, Meilahti and Viikki. The institution claims to have the widest multidisciplinary programs in Finland. In 2021, there are more than 31,000 students and 10,000 staff in the academic community. (Helsinki University n.d.)

Additionally, the university has various studies centers and research institutes including, Aleksanteri Institute - Finnish Centre for Russian and East European Studies, CEA (Centre for Educational Assessment), CES (Centre for European Studies), HYPE (Centre for University Teaching and Learning), ECI (Erik Castrén Institute of International Law and Human Rights), VERIFIN (Finnish Institute for Verification of the Chemical Weapons Convention), HiDATA (Helsinki Centre for Data Science), HELDIG (Helsinki Centre for Digital Humanities), HCAS (Helsinki Collegium for Advanced Studies), HIIT (Helsinki Institute for Information Technology), HSSH (Helsinki Institute for Social Sciences and Humanities), HiLIFE (Helsinki Institute of Life Science), FIMM (Institute for Molecular Medicine Finland), IB (Institute of Biotechnology), NC (Neuroscience Center), HIP (Helsinki Institute of Physics), HELSUS (Helsinki Institute of Sustainability Science), Urbaria (Helsinki Institute of Urban and Regional Studies), HOH (Helsinki One Health), INAR (Institute for Atmospheric and Earth system Research), Institute of Seismology, Ruralia Institute for the examination of sustainable development and the changing relationship between global and local issues from the perspective of rural areas, Science Education Centre, Veterinary Teaching Hospital, and Viikki research farm. (Helsinki University n.d.)

3.1.2.2 University management

The organizational structure of Helsinki university is mainly composed of 1) the 13 Board members who hold the supreme decision-making of Helsinki University, 2) the management team that include the rector, vice-rectors, and the heads and directors of units, 3) the Chancellor who is in charge of promoting Helsinki academia and overseeing the university's interests and activities, 4) the 50 collegiums who select the Board members and approve financial statements and the annual report of the University, and 5) 12 faculties (including Swedish School of Social Science) led by the deans and their joint operational units, 6) the university services, i.e., human resources services, teaching and learning services, financial services, facilities and properties, operations management, research services, communication and community relations, and administrative services, and 7) nine independent institutes. Furthermore, the university also has an international strategic advisory board appointed by the Board to support the issues related to strategy, research policy, the University's profile, and the assessment of the research quality. (Helsinki University n.d.)

3.1.2.3 Networks and collaboration

Helsinki University mobilizes and expands the community through international research training cooperation, strategic partnerships, mobility partners, international education projects, Global Impact project, Global Campus project, and Research with Global Reach project. Nowadays the university has 450 mobility partners across the world in Africa, Americas, Asia, Europe, Middle east, Oceania, Russia federation through Erasmus+, Erasmus+ International Credit Mobility, Nordplus, Bilateral Agreements, North2North (University of the Arctic), SEMP (Swiss-European Mobility Program). Additionally, the university especially develops strategic partnerships with the University of Edinburgh in United Kingdom, Stockholm University in Sweden, Peking University in China, and the University of Nairobi in Kenya to enhance research and talent development of the University. (Helsinki University n.d.)

In term of community network, Helsinki university is a part of Una Europa to promote in-depth multidisciplinary research cooperation on cultural Heritage, Data Science and AI, European Studies, One Health, Sustainability, LELU (the League of European Research Universities that has members from 23 leading European research-intensive universities), EIT (the European Institute of Innovation and Technology that

supports the long-term European partnerships among leading companies, research labs and higher education), EUA (the European University Association that allows the university to influence European Union policies on higher education, research and innovation), IAU (the International Association of Universities that is the UNESCO-based worldwide association of higher education institutions), UNICA (the Universities in the Capitals of Europe to gather the understanding of the latest developments and demands of strategic change in university research, education and administration), UArctic (the University of the Arctic that creates and enhances collective resources and collaborative infrastructure of the Northern European communities), Euraxess (pan-European initiative to establish scientific collaboration between Europe and other continents), UniPID (Finnish University Partnership for International Development), and SAR (the Scholars at Risk). (Helsinki.) Furthermore, the University utilizes Lahti, Mikkeli, and Seinäjoki consortia shared among Finnish academic institutions to further the practicality of research in regional and national levels. (Helsinki University n.d.)

3.1.2.4 Income and expenditure

The income of Helsinki university includes core funding, external funding and the income from investment activities and fundraising. The Finnish government provides the largest amount of the financial support, while the Academy of Finland is the second top fund provider to the institution. Similar to the Aalto university, the most expensive cost of Helsinki university is the operative and academic personnel. The university acquired 400 million Euros (approximately 60 percent of total income) from the government and utilized 430 million Euros (63 percent of total expenses) for its human resources in 2020. (Helsinki University 2021.)

3.1.3 Tampere University

3.1.3.1 General information

Tampere universities community or Tampere university is a newly created foundation university. The community comes from the merger between the university of Tampere (a public university) and Tampere University of Technology or Tampere University of applied sciences (a foundation university) in 2019. It is a multidisciplinary and the second largest university in Finland. In 2021, there are approximately 21,000 students and 4,000 staff members in the Tampere universities community. The institu-

tion comprises seven faculties – namely, Built Environment, Education and Culture, Engineering and Natural Sciences, Information Technology and Communication Sciences, Management and Business, Medicine and Health Technology, and Social Sciences located in Tampere city center, Hervanta, Kauppi, and Pori areas. Technology, health and society are the keys of the university.

Additionally, Tampere has several supportive services and projects to promote research and continuous learning. These include Juniversity (hands-on learning activities for preschool to secondary school students), FabLab (Digital Fabrication Lab), Working Life Relations and Continuous Learning, Innovation Culture development project, and Innovation Services and Partnerships development project, Campus Development project, and Language Centre.

3.1.3.2 Organization management

The Tampere university follows the university foundation law. The top management divisions are similar to the Aalto university. They are mainly divided into six groups: the seven members of Strategic Board, the president management team, the 19 members of Academic Board, the three councils of science, education, and social interaction, the professor council, and the deans of seven faculties.

Specifically, the Strategic Board is appointed by the academic board as a highest decision maker to decide on the University's strategy, finances, and other far-reaching plans. The president management team refers to the President chosen by the strategic board, the provost (who also acts as the academic president of research and education, the supervisor of deans, and the rapporteur for the Academic Board), and the vice presidents. They are in charge of the strategy development, strategy implementation, and financial matters of the university community. Third, the academic Board is an administrative body that represents the entire university community. The current members are eight professors, four teaching and research staff, two other staff, and five student representatives. The important responsibility of the Academic Board is to supervise the matters relating to education, appoint the Strategic Board, and monitor the impact and quality of the research, education and societal interaction. Forth, the three Councils chaired by vice presidents focus on the matters pertaining to research, education and societal interaction that come before the Academic Board. Fifth, the Professors' Council are consisted of all professors and associate professors at the University. They perform as an advisory function of the President management team and promote the University's

values through the lenses of scientific and artistic community. Lastly, the seven deans oversee the operations of their faculties such as degree structure, personnel, financial management. (Tampere 2021.)

3.1.3.3 Networks and collaboration

Tampere university connects with external partners by three directions including research and development collaboration, international collaboration and partnerships, and alumni services. Specifically, the research and development collaborations are utilized to enhance business networks through education services of the university. Several laboratory services and research infrastructures in Chemistry and Environmental Science, Construction, Mechanics, Paper and Packaging, Physics, Textile, Vehicle Engineering, Materials research, Center for Immersive Visual Technologies, Genomics Facility, and Tampere Unit for Computer-Human Interaction are offered, altogether with measurement and analysis services to support problem solving and innovation creation

In term of the international collaboration and partnerships, Tampere universities community has Finland's research infrastructure consortia such as ERIC (European Research Infrastructure Consortium) and CESSDA (the Consortium of European Social Science Data Archives), as well as Centers of Excellences to deepen the Finnish and non-Finnish academic networks. The university annually receives multiple flagship funding from the Academy of Finland to expand the expertise of technology research. Additionally, it holds agreements with 550 international institutions to promote the global mobility of the Tampere academia. The networks include GISU (Alliance of Guangzhou International Sister-City Universities), ECIU (European Consortium of Innovative Universities), Erasmus+, SEFI (European Society for Engineering Education), European University Association & EUA council for doctoral education, First+ (Finnish–Russian Student and Teacher Exchange Program) Helsinki Institute of Physics, Magna Charta Universitatum, UNIMED (Mediterranean Universities Union), NC Fudan (Nordic Centre at Fudan University), NCI (Nordic Centre in India) NNC (Nordic NIAS Council), NordTek (network of the Rectors and Deans of the Technical Universities in the Nordic and Baltic countries), Nordplus, NUAS (Nordiska Universitetsadministratörs Samarbetet), SAR (Scholars at Risk), SGroup Universities in Europe, SANORD (Southern African-Nordic Centre), SDSN (Sustainable Development Solutions Network, Northern Europe), and UArctic (University of the Arctic).

Finally, the university also gains a very large Alumni network from the predecessor institutions (the University of Tampere and the Tampere University of Applied Sciences). Career monitoring, mentoring, Alumni studies, and services for alumni are functions of reaching out its people that the university is performing. (Tampere 2021.)

3.1.3.4 Income and expenditure

Tampere universities community has the same income and expenditure model as other universities do. The main revenue is greatly given by the government, the Academy of Finland, and the Business Finland, respectively. Whereas the largest spending budget belongs to staff employment. Tampere received 193 million Euros of the Finnish government fund and paid 215 million Euros for the personnel cost in 2020. Yet, the university claims that the merger in 2019 and the COVID pandemic created a unique situation of financial resource. They led to unexpected amount of core operation deficit (16.1 million Euros) in the following year. (Tampere 2021.)

3.1.4 Turku University

3.1.4.1 General information

Turku university is the second oldest university in Finland that began its operation in 1920 to promote the advanced studies of citizens for national development with the donation of 22,040 people. The university is a multidisciplinary institution that consists of eight faculties: Education, Humanities, Law, Medicine, Science, Social Science, School of Economics (became a faculty of Turku university in 2010), and Technology (newly established in 2021). Furthermore, it has five independent research units including Center for Language and Communication Studies, Brahea Center at the University of Turku, Turku PET (Positron Emission Tomography) Center, Finnish Center for Astronomy with ESO (European Southern Observatory), and Turku Bioscience Center. The campus and research areas are in Turku, Rauma, Pori, and Seili with infrastructures and facilities of Turku campus are partially co-utilized by Åbo Akademi University. Currently, there are roughly 20,000 students and 3,400 staff members in the institution. (Turku university n.d.)

3.1.4.2 *Organization management*

Similar to Helsinki university, the university of Turku is operated by 1) the 30 members of University Collegiate Council that is constituted of 10 professors, 10 teaching and research staff, and 10 students of Turku university, 2) the 13 Board members who are the highest decision-making group and appointed by University Collegiate Council, 3) the management team led by the rector and vice-rectors of Educational Affairs, Research Affairs and Library, and Partnerships and Strategic Engagement, 4) the education and research related groups , i.e., eight faculties led by the deans and five independent units, and 5) the university services, i.e., Digital Services, Financial Services and Facility Services, Human Resources and Study and Work Well-being Services, Management Support Services, Strategic Planning, and University Communications. (Turku university n.d.)

3.1.4.3 *Networks and collaboration*

Turku university creates several pathways for networking. First of all, business partners can utilize Bastu network, Laboratory of business disruption research, Corporate Corner, FoodTech Platform Finland, Center for Education and Research on Social and Health Services, Health Campus, and TechCampus to enhance their innovation and business directions. Second, the university collaborates with 52 countries in Africa, Asia, Europe, and the Americas to support the mobility of students, research staff through Erasmus program, Northplus, North2North program, ISEP (the International Student Exchange Program), Coimbra Group Student Exchange Program, Fulbright - University of Turku Graduate Award, and EDUFI (Education Finland). In term of international university networks, Turku university belongs to EUA (the European University Association), IAU (the International Association of Universities), Coimbra Group (the association of long-established European multidisciplinary universities), Education Finland (EDUFI) Nordic Center at Fudan University (the cooperation between the Nordic universities, Fudan University, and other Chinese universities in the Shanghai area), SANORD (the Southern African Nordic Center), BSRUN (the Baltic Sea Region University Network, UArctic (The University of the Arctic), EC2U (The European Campus of City-Universities that aims to promote the virtual and physical mobility of innovative space in Portugal, Romania, Germany, Italy, France, Spain, and Finland

where the member universities are located), SAR (Scholar at Risk), and IIE-SRF (Scholar Rescue Fund). (Turku university n.d.)

3.1.4.4 *Income and Expenditure*

60 percent of Turku university revenues is the basic fund sponsored by the Finnish government. This occupies as the main income of the community, whereas the second and the third sources come from the co-financed operations with business companies and the Academy of Finland. Much of the expenditure (approximately 65 percent) is a personnel cost that includes two-third of research staff and one-third of administrative officers. In the year 2020 financial report, the institution was granted 168,308,000 Euros (63.07 percent of total income) by the government and spent 180,446,258 Euros (65.96 percent of total cost) on its human resources. (Turku university n.d.)

3.2 The methods of data collection

To investigate the most recent strategic making of Aalto university, Helsinki University, Tampere University, and Turku University, the ongoing 2021-2030 university strategies are focused. In this regard, the data is collected in two rounds.

First, the strategy artifacts are gathered through the university's websites and the electronic files directly sent by the personnel of the targeted universities to assure the credibility of the documents. As Bowen (2009, 29-30) mentions, documents are crucial to research since they open the broad understanding of a studied subject, allow to develop important questions needed for the interview, help contextualize data from the interview. Therefore, this research utilizes strategy artifacts as to conceptualize the futures knowledge used in the FHEIs. Table 3 shows the artifacts of the study.

Table 3. The utilized strategy artifacts

University	Artifacts	Notes
Aalto	1. Strategy webpage at Aalto university 2. Aalto University 3.0 (10 pages)	- The university does not have the document file due to its policy of having a living strategy - No.2 is incorporated in the interview analysis
Helsinki	1. Helsinki University 2030 Strategy (24 pages) 2. The university's strategy preparation (4 pages)	- No.1 and 2 are incorporated in the interview analysis
Tampere	1. Tampere University 2030 strategy (16 pages) 2. (Unofficial English translation) The minutes of the Board meeting (3 pages)	- No. 2 is incorporated in the interview analysis
Turku	1. Turku University 2030 Strategy (9 pages) 2. UTU Strategy planning 2021-2030 (10 pages)	- No. 2 is incorporated in the interview analysis

Second, the semi-structured interview is conducted in Zoom, a virtual platform subscribed by Turku university for academic purpose. The interview is needed due to the reason that the documents can only provide a descriptive information of strategies; they do not generate a clear comprehension of the university strategic making process. The participants are the universities members who participated in strategic making process. The conversations allow to accomplish an in-depth understanding of futures knowledge in the 2021-2030 strategic making and connect the missing point of the futures knowledge formulation and articulation at the university level. The data are collected, recorded, and transcribed with their consents. The details are described in the table 4. The semi-structured format enables the researcher to follow the research theme whilst remain open for new questions that may unexpectedly appear during the conversations (Galletta & Cross 2013, 49-50). The main interview questions include 1) what changes and uncertainties in the higher educational environment were recognized in the 2021 to 2030 strategic years, 2) how the trends and futures perspective of the university are gathered, 3) how the strategy happened 4) how the government development plans/roadmap for the Finnish higher education in the year 2021 to 2030 impacted or influenced the university strategies 5) how future-oriented the strategy is and why, 6) what the COVID-19 affected in the 2021 to 2030 university strategic directions. All the conversations are transcribed to prepare for the data analysis.

Table 4. The information of the interview participants

University	Unit (persons)	Pseudonym and relation to the strategy	Note
Aalto	1	Aalto 1: a strategy steering committee	Individual interview
Helsinki	1	Helsinki 1: a strategy steering committee	Individual interview
Tampere	2	Tampere 1: an education strategy committee	Individual interview
		Tampere 2: a coordinator of Tampere university and government	Individual interview
Turku	3	Turku 1: A strategy planning staff	Group interview
		Turku 2: A strategy planning staff	
		Turku 3: A research strategy staff	Individual interview

3.3 The method of data analysis

This study aims to identify what, how, and where the futures knowledge of Finnish universities is utilized, as well as, how it influences the Finnish higher education environment at the end of 2020s. The investigation requires a systematic, reductive, and flexible approach to promote in-depth research findings, seeing that futures knowledge is an interpretative and contextual understanding of the future. In this case, the qualitative content analysis that allows the researcher to structure and grasp the essences of collected data without losing the attentions of local meanings or specific contexts is seen as the most appropriate tool in the data analysis. The method provides clear sequences – namely, examining of all artifacts, identifying critical segments, establishing code labels, grouping the similar labels together, reducing the redundant contents, readjusting the labels, and formulating themes, that are logical and simple to follow. (Schreier 2019, 170–183). These do not only result in the promotion of data reliability and validity, but also a crystalized understanding of a studied subject.

To comprehend futures knowledge of the Finnish universities, the process begins with the document analysis. Firstly, the 2021-2030 education roadmap created by the Ministry of Education and Culture in section 2.3.3. and the strategy of the sample universities are compared to distinguish the futures thinking of the sampled universities and the government policy. The reason of choosing the roadmap can be referred to the empirical evidence in the section 2.3.1 and 2.3.2 in which suggest that the Finnish higher education institutions are positioned to internalize and implement the work of the Ministry of Education and Culture. The important steps in this phase include comprehensive reading of the government documents, developing the labels that reflects the sentences in the lines, combining or deleting the overlapping labels, and formulating the key themes. The result indicates that the roadmap of Ministry of Education and Culture consists of two main themes: the futures thinking and the future actions. The former ones can be divided into three subthemes: [A1] challenges, [A2] the megatrends, and [A3] 2030 visions. Whereas the future actions have four cores: [B1] education, [B2] research and teaching, [B3] social contribution, and [B4] the university community, presented in table 5. Subsequently, the table would be used to map with the strategic texts of each university. The overlapping ideas are identified as the articulations of the government futures; the unmatched contents are classified as the futures thoughts of the universities. This this regard, to establish the reliability and avoid the distortion of stra-

tegic documents and roadmap matching results, the researcher intentionally maintains the contents shown in the two files as much as possible.

After the strategy documents are investigated, the interview transcription is analyzed by the same approach. The process begins with scrutinizing data, inserting the labels in each conversation and formulating the themes. As a result, the data is codified into four themes: the strategic making process, the sources of strategy data, the recognition of the government influences on the strategies, and the evaluation of strategy future orientation. This means each data is separately studied before it is combined to answer all the research questions. In other words, the two sources of data are collected and analyzed in the two rounds are equally important and complement each other in the research findings.

Table 5. The key themes for the analysis of the strategic artifacts

[A] The futures thinking	[A1] The government identified challenges	[A2] The government identified megatrends	[A3] The government 2030 visions	
	<p>[A1.1] Erosion of local knowledge and skills [A1.2] The needs to improve quality, productivity and effectiveness of education [A1.3] The lack of global attraction and competition</p>	<p>[A2.1] Global transformation of work [A2.2] Digitalization [A2.3] Responding to global challenges together [A2.4] Transparency and cooperation, [A2.5] Global competition for skills</p>	<p>[A3.1] At least 50 percent of young citizens would earn a higher education degree [A3.2] Development of higher education and expertise would relate to different life situations [A3.3] Four percent of GDP would be allocated to research and development to drive new creative power of science, sustainable growth, more wellbeing</p>	
[B] The future actions	[B1] Education	[B2] Research and teaching	[B3] Social contribution	[B4] University community
	<p>[B1.1] Diversifying the paths to higher education [B1.2] Improving the graduation rate [B1.3] Accessibility and flexibility of education [B1.4] Continuous learning [B1.5] Diverse learning environments [B1.6] Anticipation-led education [B1.7] Internationalization of education</p>	<p>[B2.1] Support the reform of pedagogical thinking [B2.2] Coherent Research, Development, Innovation policies [B2.3] Building of nationally and internationally attractive knowledge clusters and innovation systems [B2.4] Joint research communities for knowledge and infrastructure sharing among HEI, research institutes, and business</p>	<p>[B3.1] Degrees in the sectors where demand is high [B3.2] Research, Development, Innovation collaboration between higher education institutions, stakeholders and the Ministry of Education and Culture to support and revitalize businesses, SMEs in particular</p>	<p>[B4.1] Increasing support services [B4.2] The environment for digital services [B4.3] Global cooperation [B4.4] Community with the skills: change management, employee competences, time management, leadership and wellbeing [B4.5] The best workplaces in Finland</p>

3.4 The research ethics

In order to establish and maintain the research integrity, this study follows the Research Data Management Plan for Students of the University of Turku. It consists of six checklists that allow researchers to ethically manage the data in its entire life cycle. These include the consideration of data type, personal data protection in research, permission and rights related to the use of data, data storing during the research process, data and metadata documentation, and data storing after the research completion (Turku university, 2021).

To justify the research ethics in detail, the researcher utilized strategy documents that were publicly available on the website of the sampled universities and the interviews as the sources of research data. All the data was gathered and stored by the researcher in the personal computer in the folder of "master thesis at Turku university" that has an encrypted password in offline and online systems. There was no third party involved in the data collection process. However, seeing that the strategy documents of the sample universities have been set to be open for the general public by the universities themselves prior to the beginning of this study, the researcher does not have authority or control over the data privacy of these documents.

For the concern of the interview data, the potential participants were informed the aims of the research, the main questions that would be in the conversation, and the inquiry of a volunteer participation. The interview times were mutually agreed by the researcher and the participants. On the interview dates, the participants were reemphasized the protection of their personal data and asked for the consent to record the conversations. All the participants acknowledged and permitted that 1) their data would be recorded, transcribed, used only for the research purpose, 2) the transcription would be accessible only by the researcher of this thesis, and 3) all the pre-analyzed data would be immediately destroyed after the research is submitted and achieved the final grade. Only the interview data contains some personal details, i.e., names and job positions of the individuals. These are replaced by pseudonyms and general descriptions of their job to prove the relevancy of interviewees in the research. The information is shown in the table 4.

Additionally, the researcher consulted with the thesis advisor regarding to the ethical review process. It appears that this study does not constitute 1) the deviation from the principle of informed consent, 2) the intervention of the physical integrity of re-

search participants, 3) the engagement of minors under the age of fifteen, 4) the situations that expose participants to exceptionally strong stimuli, 5) the risks of causing mental harm that exceeds the limits of normal daily life to the research participants or their family members or others closest to them, 6) the threats to the safety of participants or researchers or their family members or others closest to them, stipulated to by the Finnish National Board on Research Integrity (TENK) (the Finnish National Board on Research Integrity, 2019). Therefore, it is not needed to conduct ethical review by a research committee prior to data collection.

4 RESEARCH FINDINGS

This chapter attempts to systematically tackle the research questions: 1) to what extent futures knowledge at the university level is used in the development of 2021 to 2030 strategies, 2) how futures knowledge of Finnish universities may impact Finnish higher education at the end of 2020s, and 3) how the university futures knowledge is related to the higher education policy in the year 2021 to 2030 of Finnish government. The structure is organized by the alphabetical order of the sample universities: Aalto, Helsinki, Tampere, and Turku. This is to help crystalize how the data of each university answers the three research questions.

The interview analysis is firstly presented to deepen the understanding of strategy making process and the futures knowledge behind the documented strategic decision. Subsequently, the result of document analysis derived from the matching between the Ministry of Education and Culture roadmap and the university strategies are placed to illustrate the influence of government on the futures knowledge of each university and the impacts that the university futures knowledge may have on the Finnish higher education by 2030.

4.1 Aalto University

4.1.1 A living process in the living strategy

Aalto university shows an interesting way to investigate the future and develop its strategy. The university disagrees with visioning a far future on a rapidly changing environment. It believes that visions may lead to inflexibility and fixed strategic mindset, in which eventually results in ineffective operation; the university should instead have a community purpose to serve the needs of a long view. Consequently, the purpose was created as “ultimate objective” of the university to help shaping its future.

“I was thinking maybe in a traditional strategy, you would very much vision the world, like in 2030, or 2035, or something like that. And then you could maybe call it very future-oriented if you were looking at something so far away. But, I don't think that's a very wise way to go forward. Because nobody can say, how the world will be like in 2030, or 2035. So in my opinion, it's good to check yearly, where are the changes and adjust things to that. And we still have the purpose, which is going much further than 2035, of course. But in that sense, I think it might be that somebody has some strategy that is looking at things that they've presumed that the world will be like in very long-

time horizon, but in my personal opinion, I don't I don't think that's a very good way to proceed.”

The university began to develop the current strategy by investigating the most recent strategy-making process with its community experts and formulated its own strategy model called the “living strategy”.

“We actually started first that we wanted to make a strategy, that would be the very latest research, based on the very latest research on strategy.” And as we have professors who studied strategy work, so we contacted our professors, and a couple of them, were helping in the process, but especially one person was very much, one of our professors was very much involved in the process. So, we started by discussing with him, what is a modern way of doing strategy. And that's how we ended up deciding with the University Board, that we will go with this kind of a living strategy approach. So that was the first step we decided to have this living strategy approach.” (Aalto 1)

After the process was crystalized, Aalto utilized its community to raise the questions that the strategy should focus on. Thereafter, the strategy steering committees selected the important questions, reengaged with its people to determine the answers, and gathered the result for analysis.

“Then we started, based on this living strategy concept. We asked our communities so what would be the questions that our strategy is answered to? And I think we got something more than 600 different questions from the, from the community, of which we then formulated in different workshops with different parties in the university. 14 questions that we would want to answer to. And this was the framework we started using then in the work. So, after having the questions, we then move forward to finding the answers to these questions. And we asked our community again, so what would be then possible answers to these questions? [...] Then, we went forward looking at, analyzing all the answers that we got. And based on this living strategy concept, we worked then try to define what kind of the answers would be sort of a selection of those answers that are going to the same direction.” (Aalto 1)

As a result, 1900 answers were collected from multiple surveys and workshops (Pönni 2021, 9). The general and higher education trends were identified. Sustainable crisis, technological disruptions, and the transformation of working life are described as broad trends that affect all environment. Whereas increasing demand of higher education graduates, the emergence of new university competitors, digitalization, and the limitation of funding were seen as specific changes affecting the university community.

“So of course, the sustainability crisis is definitely something that we can't go around. And of course, our purpose was also shaping a sustainable future. So that's in the very center of our strategy, then the technological disruptions that are happening. So, for instance, now there are this artificial intelligence and blockchains. and stuff that can quite quickly change the way things are done. And we are in the technological field, that's very important, and then the transformation of working life, which was recognized already in in 2018-19. But of course, then it changed quite a lot when the pandemic hit us. And then now the working life is of course, changed quite much more. [...] But then specifically for the higher education area, there's increasing demand of higher education graduates, this is very visible in Finland as well. Then also the competition. So, there are also new competitors coming up. So also commercial, universities, sort of, and other commercial bodies that are trying to give some sort of degrees or mini degrees or stuff

like that. And then the pressure of funding, so of course, that's always present.” (Aalto 1)

Not only the Aalto students and staff members, but the university also utilized its extended community to gather the insight to think about the future. This points out that the sources of knowledge that the institution acquired is extensively exhausted by its people.

“We, of course, got a lot of input from our community members, so meaning also our students, but our employees as well. [...] But then what we did specifically in addition to this process (was that) we sent (surveys) to all our partners and alumni, (to have) also possibilities to participate and ask them questions through a survey. And then our top management also interviewed a couple of the most important stakeholders that we have, so some of them, [...] the companies that we have a strategic collaboration with, for instance.” (Aalto 1)

Besides the community knowledge, RAI 2018 (Research, Artistic, Impact assessment in 2018) was utilized to gather some ideas of future (Pönni 2021, 4). Additionally, Aalto strategy team also reinvestigated the values, missions, and visions. In the ongoing strategy, the value was adjusted; the mission and vision were replaced by the long-term purposes to serve better with the nature of the institution. Thereafter, the values were rechecked before the SWOT analysis was conducted to evaluate the university and to understand the change in its environment.

“We also looked at the values that we had from the previous strategy and started to make some modifications to that. And then to look at the purpose of our university. So, we used to have a mission and a vision statement. But then when we looked at those, we really thought that our community is more of a community who is working, because the work has a purpose. So, they're not really mission, and vision driven in that sense. So we decided to call it a purpose and started to phrase sort of the long term purpose of the university, looked at our values, and then did a SWOT analysis to see okay, where are we; where are we at the moment; and on the other hand, how is the world changing? So that was the first part”. (Aalto 1)

Aalto university places the strategy in the core of institutional direction.

“We have a strategy. And then we have the strategic plans. And those strategic plans are made by our schools. So, the dean is responsible in each of our six schools to make the strategic plan. But then we also have joint plan for the joint area.” (Aalto 1)

The concept of living strategy that Aalto proposed creates a uniqueness of the strategy. It does not have a limited timeframe. The strategy work is always an ongoing project that happens annually. In this regard, the university developed three main phases to follow. These include the preview to investigate the change in its environment, the review to check the current situation of the university, and the dialog to develop the one-plus-three-year plan for every unit in the continuation of strategy (re)shaping.

“The first one is the preview, University preview. And there, we look at the assumptions we have made on our operating environment. So it's sort of the SWOT analysis. So, the operating opportunities and threats from the SWOT analysis, so we look at those and say, okay, so these are the major trends that affect us. But if there has been a change in those, we then make changes also to our strategy. [...] And then we make more detailed strategic plans for all our units for one plus three years. So these are for the upcoming year, they will be very precise. All the resourcing and budgeting and stuff are very precise. And then we have a joint decision, sort of where it is going for the following three years. And this is sort of implementation of the living strategy.” (Aalto 1)

To provide a clearer picture, the 2021 strategy has a solid plan to be implemented until the end of the year and 2022-2024 joint programs to look beyond the annual decisions. The latter ones are drafted to be discussed, adjusted, and concretized by the three phases at the end of 2021 to build another solid plan for 2022 and 2023-2025 joint programs. Then, the process reemerges every single year as the strategy is kept alive.

From the preview to the review, the current strategy focuses on four elements: research, education, impact, and enablers. Each core would also emphasize sustainability, creativity, and entrepreneurial mindset as the cross-cutting approaches supported by three values to achieve the long-term goals.

“So, we have for research, education, impact, and then our enablers. Then actually, as part of the answer process, a free cross cutting approaches for our recent from the community answers, and those were sustainability, creativity, and entrepreneurial mindset. So, we also formulated actions for these cross-cutting approaches. So, then we ended up with a matrix where we have the long-term direction as our purpose, we have our values that are also guiding along the long-term progress. And then we have these seven areas, so four core areas and three cross cutting approaches, which all have actions that are based on the on the interest that we got from our community. [...] “So in research, the long-term goal is that we excel and make breakthroughs in and across science, our technology, and business. And in education is that we spark the game changers of tomorrow, and an impact, experience of our society with research-based knowledge, creativity, entrepreneur mindset and we generate innovative solutions to tackle global grand challenges.” (Aalto 1)

To promote the growth of Aalto community, the three long-term goals of enablers are created as the Aalto’s community management plans

“So, there we have three main goals The first one is related to community and people. So there's things related to community, wellbeing, equality, diversity, and these types of issues. Then one of them is related to our infrastructure, so that, and our campus those plans. And then the third part is related to our services and making sure that our resources resourcing in the long term is in a sustainable way.” (Aalto 1)

Meanwhile, the outcomes of Aalto strategy are influenced by two main parties: the University Foundation Board and the Finnish Ministry of Education and Culture.

“There are two bodies who have an influence on our outcome. One is our own board of University, Foundation board, that look at the report on the previous year. And they also give us guidance on the, on planning and budgeting for the coming one-plus-three-year's. So, they're one body who has influence on how we do the planning. But then another body that has an influence is the Ministry of education and Culture”

In the latter case, the government is seen to play a supportive role in helping the university accomplish its goals and only has a loose control over the university strategy.

“Well, the government will ask from us every four years; what is our updated strategy. But they don't say per se that we have to update it every four years. [...] I think the idea's also from the Ministry of Education and Culture is not that they would direct our strategy. It's more that they are looking whether we are going to the direction we want to go ourselves. So, it's not top- down, in that sense, from the, from the Ministry point of view. But of course, they can have some things that they would like us to emphasize. And then we take that into consideration.” (Aalto 1)

Lastly, the COVID-19 pandemic did not significantly affect the strategic direction. It only highlighted the importance of online learning opportunities and international collaboration that were not strongly emphasized in the original plan.

“In education, it means that we need to make sure that there are online opportunities for the students better than earlier. So, these kinds of things, we already have thought in our strategy. But we decided to speed this development a little bit up. But then in research, there's not much change in the research field. Of course, this gives the international collaboration, which is the most important thing for us, of course, that has maybe suffered a little bit during the pandemic. So, then it means that we have to emphasize, give very good care of the international collaboration also in these kinds of times.” (Aalto 1)

In other words, the unexpected circumstance is unlikely to have a negative impact that can powerfully transform the strategy development process, directions, and the implementation of the Aalto's living document.

To summarize, Aalto university illustrates that its community significantly contributes to the lenses and the contents of knowledge of futures in the strategy making. The process to detect changes is built by the strategy expertise who were academic personal of the institution. Whereas articulation of changes is extensively done by proximate and extended group members of Aalto. Through the process, the common trends (sustainable crisis, technological disruptions, and the transformation of working life) as well as the special trends in higher education environment (the incremental demand of high education graduates, the emergence of new university competitors, digitalization, and the limitation of funding) are addressed. These help Aalto to shape its cross-cutting approach that dictates the strategy implementation in the cores of education, research and teaching, social impact, and Aalto community. However, as the interview data reveals, the University Foundation Board and the Finnish Ministry of Education and Culture are the most influential parties that can shape the strategy outcomes. It seems that only the futures knowledge that fits in their agenda would become visible in the strategy

document. This provides the important point to pay attention to the strategy of Aalto university.

4.1.2 The Aalto articulation of the government roadmap

Most of Aalto strategic points are compatible with the futures thinking and the future actions of the government. This section presents the most articulated parts that the university respond to the public policy of the Ministry of Education and Culture.

To begin with, the challenges of A1.2: the needs to improve quality, productivity and effectiveness of education and A1.3: the lack of global attraction and competition receive the most attention in the Aalto strategy thinking. In A1.2, the university reflects the idea through five points: the focus of long-term and high-impact education approach, the talent recruitment based on disciplinary excellence and impact, the opportunity to bring people across seven schools together, the continuation of hands-on teaching co-development and co-teaching, and the elevation of student experience and quality of learning. In A1.3, Aalto projects that its inspiring and engaging campus with creative infrastructure solutions, inclusive and caring culture, visibility of international activities, and achievements in research and education can attract, engage, and retain the excellent talents. (Aalto 2021.)

With these challenges in mind, the university sees the importance to incorporate the megatrend of A2.3: responding to global challenges together in its strategy path. Aalto shows the strong intention to gather global talents and its collaborations to build the sustainable solutions, cherish research ethics, responsibility and impact-generating openness, renew society with research-based knowledge, creativity and entrepreneurial mindset and pioneer sustainable solutions in the university operations. Additionally, Aalto also follows the government vision of A3.3: allocating four percent of GDP to research and development for new creative power of science, sustainable growth, and well-being in the strategy. The university would invest in the cutting-edge research and art infrastructures guided by strategic focus areas and utilize its resources to serve as a glue between disciplines and breakthroughs in multidisciplinary research that enhance the sustainability goals of the United Nations. (Aalto 2021.)

To be more precise in responding with the conceived future, Aalto emphasizes the strategic actions in the area of B1.5: diverse learning environments, B2.1: pedagogi-

cal reforms, B3.2: RDI collaboration to support and revitalize businesses, and B4.2: the environment for digital services. (Aalto 2021.)

Specifically, the university is scheduled to develop digital and engaged learning environment, enhance blended and fully online learning, aim to have all programs and courses follow a blended learning approach by 2025, utilize learning funnel to structure positive learning experience, support student-driven activities and initiatives in the education plan. To promote the pedagogical change, program directors, professors and teachers would be supported and incentivized to integrate multidisciplinary and cross-cutting theme in program learning objectives, program curricula and individual courses. A wide variety of transdisciplinary undergraduate courses, doctoral programs and research initiatives would be generated with the attention of learning centrality to promote evidence-based pedagogical developments, the appreciation of teaching, and holistic wellbeing. All programs and courses would be designed based on the best practices in online and onsite. The cross-cutting themes in teaching that enhance multidisciplinary interaction during studies in degree programs and study path would be supported. Sustainability would be integrated in the study programs. Summer courses, conferences and possibilities for experimental would be developed. In term of social contribution, the collaborations would be in the bottom-up style to select the specific fields that are the best and enhance the quality of the partnership. Lastly, various digital service plans for community such as data-driven wellbeing, digital agility program for innovation and commercialization activities, service portfolio classification for governance and resourcing model, and educational program portfolio that indicate the life cycle of individual programs are expected to be developed, advanced, integrated and implemented in the entire university. (Aalto 2021.)

Aside from the government roadmap, Aalto university has its own attention to the resource management plan in the strategy. The university is aware of the pressure on funding and the necessity to increase the financial resilience. It decided to prioritize the utilization of services and resources based on the compatibility of strategic goals and the needs of its six schools. (Aalto 2021.) This is likely to affect the research and education direction as well.

The document analysis of Aalto university clarifies the fact that the influence of government in Aalto university lies various aspects of the strategy. In more specific, the futures knowledge of the university community is utilized to develop the implementa-

tion of the roadmap. From the bird-eye view, it is likely that the origin of futures knowledge belongs to the Finnish public policy makers. Yet, the articulation of the strategy in which only fit in the Aalto environment and the additional plan in which did not appear in the government policy suggest that the futures knowledge at the university exists; it is simply different from the futures knowledge of the government.

The futures knowledge of Aalto university is sorted in four strategic actions in education, research and teaching, community management, and social impacts. The strong relationship of the university and its network partners, the commercialization of education, knowledge, and research, the collaboration of students and academic researchers, the implementation of digital data technologies in Aalto community are likely to be seen in the coming years. Yet, the most powerful change that Aalto may outstandingly create in Finnish higher education setting at the end of 2020s is the pedagogical reform and digitalized education. The Aalto investment seems to firmly lie in these areas.

4.2 Helsinki University

4.2.1 A community-centric process as a center of strategy

Helsinki university has a similar strategy formulation approach to Aalto university. Its community significantly contributed from building the strategy process to completing the strategy document. Without the external facilitator, the ideas of strategy making process was gathered.

“If you use outside people running the strategy process, the organization doesn't buy into the strategy. So, it was done completely in-house.” (Helsinki 1)

The process was developed under the advice of all leadership teams including the rector, the vice rectors, and three councils that supervise research, education, and community engagement (TINE, ONE, and YNE).

“I actually went through all of these councils and presented the how the process would be run and got the feedback from them to refine the process so that that took about four months. And what I noticed also is that the more I had these discussions, the more people wanted to be involved in the strategy process. [...] People got honesty for the process because it was so long. We had lots of discussions and discussions after discussions.” (Helsinki 1)

After the strategy building steps were shaped, the Helsinki community engaged in the strategy content through the surveys of futures. Two important questions of “what is happening in our environment and what we will do” were asked in two sequential surveys during the 2019 spring and autumn semesters. In this regard, the key challenges, i.e., climate change, biodiversity loss, sustainable consumption of natural resources, safeguard of health and well-being, and the maintenance of social cohesion were identified along with the actions that Helsinki University could potentially take (Helsinki 2020, 5).

The intention of strategy making process was to include everyone in the strategy making as much as possible. (Helsinki 2021, 2-3). This was greatly successful because of the support from the rector and the management team.

“I had full support of the rector and that was extremely important. But I think that was extremely important also because the rector considered that this new strategy is his first priority number one. [...] in this Viima thing, we kind of promote it. It's very actively so in all meetings deans said that. And then we kind of sent people emails etc. So, I'd say that everybody knew about that. And we were post it, was it if I recall correctly, was it 1200 people contributed there actively. And the second thing is that the majority of the content users was from teaching or research staff. It was also very good. Of

course, the students contributed also, but it took place mostly via the Student Union.” (Helsinki 1)

Helsinki university appears to have a highly active community. The strategy survey was extended from a month to longer period due to “so much demand that people really wanted to contribute” (Helsinki 1). Furthermore, the questionnaire was launched in an online and on-campus forms in which “the rectorate went around all the campuses and discussed with people” (Helsinki 1). The strategy was not only seen as an important work of the leaders and the campus members, but it was also drawn by the extended community of Helsinki university.

“The first source was these councils; the second source was this everybody at the university; and the third source was kind of this municipality whatever for that constituency, so kind of this wider university community, alumni network, especially kind of this alumni board. Then there is, our university also have this kind of networks of decision makers, for example, who meet regularly. So, we had roundtables with them. And the fourth one was the international, international aspect. So, we are member, for example, RERU the leading European research universities network, so we asked them for input. And then we asked input also from some other kind of international network, so they were kind of multiple parties who provided input to the strategy.” (Helsinki 1)

The same question was asked; the result was transparently collected and was made available for everyone in the community to be seen.

“Everybody could see what everybody else had done. What we also did is that we fed back to all the results of the analysis.” (Helsinki 1)

Although the strategy knowledge was mainly gained from within, the university shows the thoroughness of thought by benchmarking their strategy ideas with other universities outside Finland, the similar players in the institutional environment.

“All other universities in Finland that are smaller than the University of Helsinki, it would be better to speak somebody from a large university.” (Helsinki 1)

Nonetheless, the most crucial source of the strategy came from the three councils – namely, education, research, and community engagement due to their expertise of the areas.

“I think one major information source, where these councils, for example, the teaching council, research council, etc. Because these are, they meet regularly, they are headed by the vice Rector, and they have Vice Dean and other people as participants. So, they are the experts who know most about their topics.” (Helsinki 1)

Additionally, Helsinki university recognizes multiple degrees of the government influence on its strategy. In the pre-development phase, the government directly affected the strategic timeframe by suggesting that “the strategy should be 10 years (Helsinki 1)” and indirectly regulated the university directions through the public law.

“It's the law, or kind of, set the biggest kind of that the university should do research, teaching, and the community engagement. So, it means that, for example, we couldn't decide that we do only research; we should do also teaching. That's why the first choice is that; it is important that the research and teaching belongs to everybody.”

Yet, when it comes to the implementation, “that is a completely different thing, because then the government allocates money, according to certain rules”, added Helsinki 1. The power of the government grows drastically as it becomes a financial resource provider.

The result of strategy projects a vision "with the power of knowledge for the world" that the university conceives and wants to achieve by 2030 (Helsinki 2020, 4). In this regard, Helsinki university sees the role of strategy as a guideline to accomplish its desirable future.

“If I describe the structure of the strategy, and then connect it to the implementation, so the strategy has four, what we call, choices. [...] So, this is kind of the hierarchy, we have the choices, we have this objectives or targets, and then, we have these actions, implementation actions.[...] At the university level, we have specific actions, and then its units, faculties, and its independent Institutes and then this kind of service organizations, they also take this strategy as a guideline and define their actions based on these targets. So, they, in a way, these faculties and units don't have any actions which do not fall into any of these. So, every action, what everybody is doing has to fit into one of these objectives.” (Helsinki 1)

Meanwhile, a linguistic challenge to articulate its strategy element appeared. In Finnish, the goal and objective are interchangeably used, whereas the two terms in fact indicate different things.

“I think one thing is that the translation of objective and goal in Finnish language is the same. That is, and since this strategy was done in Finnish language, I cannot really say, is it the objective or goal.” (Helsinki 1)

Similarly, the ‘bildung’ in German or ‘sivistys’ in Finnish is one of the university values requires contextualization. There is no an equivalent word in English to represent the meaning. Therefore, the university generates a short description to elaborate the value as “well-rounded individuals who behave well toward others (Helsinki 1)”.

Regardless to a few unclear definitions, it seems that the current strategy becomes more crystalized and specific that better facilitates the implementation.

“So now there is a more emphasis on choices. For example, in, now, it's important that the research and teaching are completely interlinked and that we take students participating in the research from the first year on. [...] it's kind of we have made more choices and thinking what we should emphasize more and what we should not emphasize so much in this strategy than in the previous strategy. The previous strategy was that you could almost say it covered everything without saying anything.” (Helsinki 1)

The strategy is seen as completely future-oriented due to the 10-year timeframe and achievement of the long view thinking. Particularly, the emergence COVID pandemic allowed the university to test the strategy and recognize its resilience.

“Because I think the point was that the strategy was decided that it is 10-year. That was partly, of course, imposed by the Ministry, who had the earlier done this kind of visions for universities for 10 years. But we also got strong input, for example, our international advisory board that universities strategies should be long term. [...] I think what we noticed is that the strategy was extremely good for this COVID-19 situation. And for, especially, that it emphasizes this kind of community and working together and sustainability aspects. So, we, of course, we didn't have any clue that this kind of thing would happen. But for some, somehow it kind of fit very well.” (Helsinki 1)

The strategy helped the university continues smoothly operate during the COVID time. The success in effectively responding to an unexpected situation creates the confident atmosphere to maintain the same strategy direction.

“There was no need to change anything. Of course, it means or meant that we had to emphasize some aspects a little bit more: this community and working together aspect. But I would say that this COVID-19 situation has not hampered or prevented implementing our strategy at all. [...] If in some way, this new strategy helped also in this COVID communication. So that we have to now work even harder to implement this strategy.”

In short, the strategy of Helsinki university is made by multiple sources of information. Yet, the futures knowledge is largely originated by its own community. The university exhaustively utilized the proximate and extended community members to formulate strategy making process and ideate strategy direction. Each stakeholder was asked to identify the important factors that should be incorporated in the strategy. This became the futures knowledge of the university. Due to the fact that Helsinki community is highly active and participatory in decision-making, the process was able include and reflect the views of all stakeholders in Finland and its international networks. As a result, the institution strategy becomes a guideline to navigate the entire community for accomplishing it desirable future in 2030.

Meanwhile, the interview data also indicates that the government can also shape the strategy implementation in various ways. It is highly possible that the futures knowledge of Helsinki community could be arranged to serve the government policy as well. This point can be accessed in the strategy document.

4.2.2 The Helsinki articulation of the government roadmap

Regardless to the fact that the Helsinki councils of education, research, and community engagement are the greatest contributors of the university futures thinking, the strategy of Helsinki strongly shows its relations with the that government 2021-2030 higher education roadmap. To demonstrate where the universities pay the greatest attention in the roadmap, this analysis part will elaborate the most matching themes.

The largest university of Finland mostly illustrates its future thoughts on A1.2: the needs to improve quality, productivity and effectiveness of education and A2.3: responding to global challenges together. The university recognizes that the drivers of change are the advancement of discipline-specific expertise, the investment in top-level multidisciplinary and independent basic research, high-quality infrastructures, the attention to research ethics, strong connection between teaching and research, as well as the support of research communication to the whole society. (Helsinki n.d.)

In the megatrend of A2.3, Helsinki strongly addresses the sustainability and responsibility to be a guidance of the university community. The promotion of circular economy and carbon neutrality, disinvestment in fossil-fuel producing companies, developing responsible knowledge that enhance sustainable future are to be especially encouraged. Furthermore, the university acknowledges A3.2: the higher education and expertise that can relate to different life situations are crucial vision. It aims to support working life skills of the students by offering tailored courses and strengthening the cooperation with relevant partners in the strategic years. (Helsinki n.d.)

To concretize the ideas, Helsinki emphasizes on the increase of B1.3: accessibility and flexibility of education, B2.1: support the reform of pedagogical thinking, B3.2: RDI collaboration of HEI stakeholders and the Ministry of Education and Culture to support and revitalize businesses, and B4.4: community with the skills. (Helsinki n.d.)

In order to respond with B1.3, the institution would retain its status as a public university to make the knowledge and learning for everyone, improve access to learning among groups which currently are underrepresented at universities in order to foster equal opportunities and social mobility, and intensify the long-term development and shared usage of research, learning facilities, and high-quality infrastructures. To im-

plement B2.1, the university would exhaustively integrate the sustainability into all education programs, improve scientific literacy and critical and analytical thinking by widen the scope and content of science communication and education, interlink research and teaching, and enhance virtual mobility. To answer B.3.2, the research-based knowledge would be made to support societal decision-making in 2030. To create B4.4, an inclusive culture of learning with equality, openness, respectful encounters and close teacher-student collaboration would be established. Flexible practices to support staff in various life situations and holistic wellbeing would be advanced. The examination of operating culture would be conducted to decrease work-related exhaustion and its risk among the community members. The career development prospect and career options of various staff groups would be clarified. The proposals of good ideas and methods would be encouraged to adopt and enlarge. (Helsinki n.d.)

The influence of government can be seen in education, research and teaching, social impacts, and Helsinki community strategy. However, the university also demonstrates its unique future-oriented thought through the plan to 1) develop the systematic risk management that would cover all levels of the organization, 2) create long-term and sustainable asset management to generate a good return and incremental values, and 3) enhance financial self-sufficiency by intensifying the efficient use of funds. (Helsinki n.d.) This evidently proves that although the frame of futures knowledge at Helsinki university is built by the public policy, the institution also contextualizes the knowledge and adjusts to serve its specific academic setting. Consequently, it is possible to say that Helsinki university has its own influence to affect the Finnish higher education in 2020s as well. This is particularly true in the education and community development plans since they heavily focused on in the strategy document.

4.3 Tampere University

4.3.1 A merging process in the synergetic strategy

The strategy of Tampere university was created in a unique context due to the merger of the university of Tampere and the Tampere university of technology. The combination was identified as a survival mechanism to secure the limited resource given in Tampere academic communities.

“Tampere was awareness of the competition, which is going to get tougher between universities. And it is about the research funding, we knew that. And it was hoped that if we, if you put these two universities together, it will be easier to compete from the, of the external funding against Finnish, other Finnish universities, and also against other foreign universities. [...] It was the belief that if two universities in Tampere would continue separate, they wouldn't be able to compete against other Finnish universities, at least not for a very long time. They would be not strong enough, like compared to Aalto or compared to university of Eastern Finland” (Tampere 2)

The University of Tampere under the public law and the Tampere University of Technology under the private law were fused through ‘Tampere three process’. The new university was chosen to be the foundation University, seeing that the operation under private law might help “to have more possibilities to enlarge the funding basis of the new university (Tampere 2)” This hope came from the achievement of Aalto University.

“We knew that when Aalto the university was started, and it is a foundation university. And Aalto university got a lot of government money. So, it was probably presumed that if this new university in Tampere would be foundation University, the ministry as one of the founders would see that, well, yes, now that now we have two important foundation universities in Finland. And since the Aalto had received a lot of government money, so actually, there were probably hopes in Tampere that we would also get those”

The large structural change influenced the two universities to firstly prioritize research and education strategies. They were believed to facilitate the fusion process.

“In 2017, the Tampere University of Technology actually organized research assessment process, and it was open to University of Tampere. So, it was the way to find out in well advance what would be the potential research areas to be strengthened in the new university. [...] I would say that was the starting point to build the research strategy, and then, if we talk about the research strategy, the discussions about the faculty structure, like how many faculties, what research areas would be put into the same faculty, that was the next important phase.” (Tampere 2)

Several trends including digitalization in education, open science, open education, and sustainable development goals were incorporated in the strategic design to plan the institutional synergy. The multidisciplinary lenses of “Technology, Health and

Society” became the core education and research areas connecting the two institutions together. Thereafter, the two universities entered to the merging phase. (Tampere 1.)

While the institution was still in an ongoing merger, it started to develop the current strategy.

“Almost during the same time as our faculty structure was getting ready, there was several development plans prepared for the board to decide. [...] So, I would say that between 2018 and until toward the end of the 2019, that was the time when the university strategy was formulated.” (Tampere 2)

The board began to organize the foundation strategy. The values creation was the first and foremost step in Tampere university strategic-making process. This was a participatorily done by everyone in the community.

“It was very important in the beginning to start from the values: what are the values for the new university? (Right) So, that the academics from different faculties could understand each other. [...] It (the value creation process) was very participatory. And the reason was this university merger. So, it is very important that all our staff members and students had to be feeling that they have an opportunity to take part and to influence to the strategy work.” (Tampere 1)

The value identification was followed by multiple workshops run by an external facilitator and the surveys through Viima platform. Approximately 1,000 answers were collected from the community members for making a new strategy (Tampere 2021, 2). The university attempted to create participatory strategy making process and engage many stakeholders as possible.

“It was the first year in our university, there was a process. We had kind of many workshops at our university. We have had an external facilitator, who ran the workshops. There was a lot of survey for our staff members. They were so that it is very important that also the academics, so our teachers and researchers, can participate to the process, because the strategy is for the university. [...] There were surveys addressed to the students also. And some surveys were both to the staff and both to the students.” (Tampere 1)

However, the university board seems to play a key role in strategy making. They did not only shape the emphasis of research, but also provided the international view.

“The University Board had a very important kind of position at the finalizing process. [...] For example, the University Board were very much emphasized the quality of research, that the Tampere University is research university and the top quality of research. And that was the issue that the board wanted that it comes at the, that it has kind of much weight in our strategy, top research and the quality of research.” (Tampere 2)

“In our board, we have two professors. One is from Sweden University of Chalmers, and the other one is from Denmark, University Aalborg. And I think that way we kind of got the international view, perspective, to university strategy.” (Tampere 1)

Regardless to community participation, megatrends or education trends were not studied in the strategy works. The university based its understanding of the futures on the information given by the ministry of education and culture.

I would say about those megatrends (digitalization in education, open science, open education, and sustainable development) that you just mentioned, the Ministry of Education has identified those too. And they are always, they have used those megatrends to, they steer the universities with those megatrends. So, I would say, it would be nice that our university would have found those, likely, like identifying those megatrends by ourselves, but we didn't. We got them from the national policy.” (Tampere 2)

The strategy was argued to be completely internal process with the occasional participation of university stakeholders that came from the city of Tampere and big companies in the local areas. Whereas the strategy benchmarking with other Finnish universities was done to increase the strategy ideas as well.

“It was internal process, but with our stakeholders. So, the University and founding members and other stakeholders, for example, in Myrkamma, but not with the other Universities. [...] I think, of course, we benchmarked the strategies of other Finnish universities and from other international foreign universities. But it was internal work.” (Tampere 1)

The newly found institution that remained in a transition of the merger faced the challenges to shape strategic direction in a short period of time. This affected the ability to answer the needs of the ministry of Education and Culture. Consequently, they could not firmly secure the financial resource from the government.

“It is a very unique situation, that it's totally different when you have new University and University merger happening, and then you create a strategy for the new university. [...] The strategy process inside the university, it was not ready to choose or prioritize our development areas in a way that could be translated into funding, like allocating resources to anything. We had just our new faculties, they had started to work. And the organization structure was only at the beginning. Yeah, so we had several elements, only to be developed into our management system. And at that point, it was really difficult, I would say, for the operative management to define the priorities in the research strategy, or in the education strategy, not to mention the strategy, or how the university would use when allocating money to faculties and operations.” (Tampere 2)

This created the struggle to manage limited resources and a doubt to accomplish its ambitious strategy.

“Our state funding is not bigger than it was before. So, it is actually less. So, our management has to struggle with the fact that we have a very ambitious strategy, but the state funding is going down” (Tampere 2)

To overcome the issue of resource constraint, Tampere university pursues two human capital management solutions: decreasing the administrative staff and creating cross-faculty platforms to allow talent scholars to specifically conduct research. While the former one was seen as unavoidable matter, the latter one was believed to be a risk

prevention of losing good quality of its multidisciplinary research directly managed by the university management team.

“Well, at the moment, the method is that we are about to decrease the staff in service tasks and increase the staff in faculties, but how we are going to do that, well, during this year, and during the next year, we are going to have a negotiation process to identify those tasks or employees in service units that whose employment agreement is going to end. [...] And on the other hand, since that is not enough, so there has to be an extra way of organizing the cross-disciplinary research, also outside the faculty. And that is why we have now the so-called research platforms. They are actually fixed-term research programs inside the university. [...] The objectives are to enhance cross-disciplinary research and to incentivize or strengthen the university's ability to get researchers from abroad. That is our way of internationalizing our research resources, like human resources especially. And then I would say that these platforms since they are chosen by the operative management, it gives the operative management the possibility to choose those, those areas, and even those researchers who are going to work in, in, during in these programs.” (Tampere 2)

Tampere seems to be enormously shaped by the government actions. Starting from the establishment of Tampere foundation university, the ministry of education engaged in process and was a founding member of the institution due to the legislative change of the academic institution.

“Because in order to have this foundation, there have to be changes in the legislation. So since the legislation is formulated in the Ministry of Education, they were actually a very important stakeholder in that phase.” (Tampere 1)

The government power escalates when the Tampere university was in the strategy drafting process. The university expressed the struggle to follow the government intention in deepening and expanding international collaboration from individual to institutional level.

“The ministry steers the Finnish universities to internationalize very quickly, and to choose their, like institutional level partners, and that has always been a very difficult job to Finnish universities. Because we, we usually think that it is important to have connections between researchers and research groups, like for example, the partnerships will be built on the individual level. But at the moment, it seems that the this is not enough.” (Tampere 2)

Not only the internationalization aspect of the strategy, but also the need to develop certain profile areas in research and education strategy recommended by the Ministry of Education and Culture was seen as an uncomfortable situation.

“It was kind of a little bit difficult to identify what are the key issues and for example the new rising research fields because we have the second largest university in Finland. This is multidisciplinary University [...]. A lot of work to identify these research fields. And, of course, then also why these? Why not the others? For the reasoning, why did we choose these?” (Tampere 1)

“I would say that to all Finnish universities, if they had to choose only three or four development areas. So, it is always difficult to choose those development areas and to tell all the researchers and staff inside the university that these are the most important. They might suit very well to the national higher education policy, like as we tell them to the

ministry, but if you look at those from inside the university, they are not so important” (Tampere 2)

There is a fear that it would hinder the multidisciplinary characteristics of the university and contain the choices of the academia to focus only on the research profile. Yet, such a policy control is believed to be unescapable and continue in the future.

“One thing that remains is the Ministry of Education and the way that it steers the universities, and it uses this performance-based steering (tulosohtaus). So that hasn't changed at all during 25 years.” (Tampere 2)

When assessed in future orientation, the current strategy is considered highly future-oriented due to flexibility of the strategy formulation and implementation.

“I think that that our strategy is that kind of future oriented at that it is still in time. we have this kind of rolling strategy process that every year we have strategy week, and it affects to our implementations. [...] we can kind of change the implementations and then maybe focus on some other thing this year and next year, and another thing. So it is also kind of flexible approach” (Tampere 1)

The importance of adjustable strategy is highlighted by the emergence of the COVID pandemic. This unexpected circumstance negatively impacted the strategy implementation of the university. The infrastructure and human resource management plans were the most affected. They had to be postponed.

“It (the pandemic) postponed some of the implementation of the strategy. For example, at the moment, we already had the campuses strategy. The plan was to reduce costs of the campuses, like infrastructure, but it had to be postponed because of the COVID-19. Then, I would think that the plans to reorganize the structure of the human resources, like decreasing the human resources in administration and increasing human resources in research and teaching had to be postponed because of the COVID.” (Tampere 2)

However, the pandemic also brought a positive change to the education strategy. The institution became aware of the necessity to enhance the digital services for the community.

“It has also helped our operative management to see that if we are as a university, if we want to enhance the quality of distance learning and teaching anyway, we need to support our teachers to do that. So, it became clear that the service that we have is not enough and we have to increase the staff that will support teachers to make really good net-courses” (Tampere 2)

In short, Tampere university strategy was created during the great institutional transition. The university developed the institutional strategy simultaneously with the ongoing merging phase. This greatly influenced the lenses of future knowledge to be utilized in building the university strategy. Although Tampere university proximate community actively engaged in surveys and workshops and contributed in the development of futures knowledge to understand the institutional environments, there was no

participation of its extended community that include the international networks and collaboration partners. Additionally, the articulation of trends in the digitalization of education, open science, open education, and sustainable development goals that helped strengthening the research profiles and education transformation were prioritized to answer the strategic directions initiated by the university board and the Ministry of Education and Culture. As a result, not all sources of future knowledge are not exhaustively harnessed, and Tampere community management strategy seems to remain in an ongoing development phase.

4.3.2 The Tampere articulation of the government roadmap

In the strategy document, Tampere university strongly acknowledges A1.2: the needs to improve quality, productivity and effectiveness of education, A2.3: responding to global challenges together, and A3.2: development of higher education and expertise would relate to different life situations as core strategic directions.

To elaborate, Tampere responds to A1.2 through the plan to improve the scientific quality of research by ensuring that all teachers are involved in research and vice versa, strengthen the close relationship between research and teaching, continuously enhance the quality and attractiveness of international degree programs, and increase the quality of research grant proposals by actively seeking the role of coordinator in collaborative projects. In order to serve the A2.3, climate change, the preservation of natural environment, well-being and sustainability of societies are focused on the education. In A3.2, the university would create and utilize alumni lifelong network to promote the higher education and expertise that can relate to different life situations.

The university intends to especially strategize its future by emphasizing B1.3: accessibility and flexibility of education, B1.4: continuous learning and B1.7: internationalization of education, B2.4: joint research communities for knowledge and infrastructure sharing among HEI, research institutes, and business, B3.2: RDI collaboration of HEI stakeholders and the Ministry of Education and Culture to support and revitalize businesses, and B4.1: increasing support services.

To put in details, its education moves in B1.3, B1.4, and B1.7 would be mainly built on the principles of open and responsible science, investment in research infrastructures that are made to be openly available, development of learning methods and instructional strategies to allow adult learners balance their studies with works, the Support for international mobility, and the increase of international bachelor's degree programs. To facilitate teaching and researching B2.4 is strategized in the university plans to integrate research and education in the theme technology, health and society, maintain research environments that facilitate collaboration of the University with private and public sectors, strategize to play active role in selected university networks, expand research opportunities in the international networks, participate in the European Consortium of Innovative Universities (ECIU) in a pilot project to develop an innovative new model of higher education in Europe, and introduce shared information systems for managing research, education and services. To concretize B3.2, the institution would engage companies and stakeholders in the various stages of research processes. In B4.1, the Teaching and Learning Centre would be developed to provide excellent support services that help our researchers expand their competencies at the beginning and throughout their careers and facilitate the integration of foreign researchers and their families into Finnish society. The students would be offered opportunities to steer their learning towards a career in research while pursuing bachelor's and master's degrees, assisted to develop their transferable skills and build connections with potential employers, and supported in the society integration in case they are international students through wide range of Finnish language courses.

The influence of government in Tampere university has already been shown in the section 4.3.1. Yet, it is more concretized in this section. All dimensions that include the futures thinking are mirrored in the strategy document. It is a challenging step to specify the clear impacts that Tampere university may have since the university is in an ongoing change. Nonetheless, as the current strategy direction points out, Tampere is giving the strong emphasis on internationalization of education, research, its academic community, and impacts.

4.4 Turku University

4.4.1 A futures process in the strategy

Turku university has three phases in the strategic formulation: the future and operational environment analysis, strategic goals, and policy programs or actions (Turku 2021, 2). The entire process was internally done and made to be as participatory as possible. The English was encouraged to be another communication language.

“It was told so that the university management wanted the staff to participate in the strategy making. They wanted that it is, it does not come from above [...] I think people were encouraged to use English in the workshop and in the Viima survey. Yes, it was fully possible to participate as a foreigner.” (Turku 3)

The strategic making process started from futures workshop of the university board to collect factors and phenomena that could affect the environment of higher education in the future, as well as to draw the themes or goals needed for the strategy (Turku 2021, 3).

“The university first had this futures workshop where these factors and phenomena were discussed; which ones will have an impact in the future on higher education.” (Turku 1)

The workshop result shows that the institutional internationalization of research community and education became necessary due to the demographic changes and the limited governmental funds (Turku 2021, 4). The open survey of the same question for the university community (staff and students) was also launched.

“So, then we also we had this kind of open survey for the entire university community. We had three surveys, and this first survey was about these future phenomena. And the meaning of the survey was also to engage the entire university community to do this strategic planning process. All the staff and also the students were very engaged into this process. [...] In that survey, everybody could add an idea there; what would be an important factor a factor that influences universities in the future, and then others could comment those ideas or like those ideas” (Turku 1)

The issues of climate change, digitalization, sustainable development challenges, the value of argumentation in liberal arts and social science, and inequality were raised together with the importance of internationality and collaboration in the community surveys (Turku 2021, 5). Subsequently, the workshop of research council on and teaching and learning council were arranged. The participants were firstly presented drafted goals and were asked to identify issues and concrete goals that should be included in the university strategy on the point of view of research or on the point of view of teaching and learning (Turku 3)”. Thereafter, the alumni were included in the process of futures

knowledge gathering through the similar pattern of the community survey (Turku 1). This led to the highlight of digitalization, collaboration and interaction, changes in the surrounding society, sustainable development, internationality, demographic changes, equality and well-being, and changes in educational needs as the future factors that could influence the higher educational setting (strategy making document).

In the finding of the future factors, all phenomena are said to be equally important (Turku 1) However, a few trends appear to be more articulated during the interview conversation.

“So demographic changes came strongly up and based on that the conclusion was that we had to internationalize ourselves. And, also the fact that the government or public sector doesn't invest so much on the unit in the universities in the future, so, more input has to be built in internal collaboration, and also external collaboration answers for new partners, national and international partners.” (Turku 1)

Aside from the community surveys and workshops, Turku university utilized external sources of information to shape the strategy as well. “I added a link here to the SITRA's document of megatrends. So we follow these kind of reports all the time during the process, as the background material.” (Turku 1.)

The second phase of the strategy was the development of strategic goals. The university adopts the cross-cutting approach in goal formulation. The identified phenomena would be articulated and incorporated in four cores: learning, research, social impact, and community, “for example, the internationality which's in learning and research” (Turku 1). Thereafter, the process is moved to the last phase to develop policy programs or actions. Currently, Turku university is drawing the action plans of the 2020s strategy. The creation of policy programs is yearly done. The reason is in the following sentences.

“We have many actions, so we are not doing everything at the same time. [...] We have prioritized that we did some actions this year. We have made a list that we focused on these this year, and then so they are not all going at the same time.” (Turku 1)

Similar to Tampere, Turku university set a 10-year strategy with the flexibility to yearly update the direction.

“This is kind of a living document that we try to keep up to date all the time. And update them if needed. So some of these actions takes longer to accomplish and some, some of them may be accomplished this year. So there are lots of different kinds of actions. But I think the main thing is, is that we try to be up to date all the time” (Turku 1)

The concept of “living document” was brought in to articulate the adjustability of strategy. The university arranged annual meeting to follow the strategy implementation of the previous year through the report of all university units. This also provided a

chance for each unit to receive feedback that help to make change or add a new plan of the following year (Turku 1).

“All the units report what they have accomplished in the next year, February; so how they have accomplished their goals. So, it's in February, and based on that, we kind of present the results to the Board. And then also, our Rector gives feedback to the units about the, their results. So also, units get, get feedback from their actions” (Turku 1)

The current strategy process is said to be different from the previous one. Not only the process was longer, more inclusive, more engaging, the strategy contents such as the 10-year timeframe, the integration of sustainable development, and futures thinking were mentioned to be new changes.

“The policy programs are updated and these future factors and what kind of environmental factors, all this kind of stuff are updated” (Turku 1)

“First of all, what everybody realized this, of course, this, it covers now 10 years period, because the previous one covered only five years, and we have never had a strategy for this long time. [...] There are also new things which were not involved earlier, I think like sustainability and things like that.” (Turku 3)

Additionally, international students, network expansion, and the understanding of cultural difference are also important strategic focuses.

“We really need people abroad and collaboration is important. And then also, understanding differences, I think, it's important that we have to understand differences and take them as a positive point of view.” (Turku 1)

“So the internationalization is important for me. It has always been and I see it as an important part of the university. And I think that should be a quite high priority. I pay attention to that quite a lot” (Turku 3).

To appeal to all talents around the world and to create great impact of the society, the university aimed to transform its community to a “spiritual lighthouse” through joint-education, outstanding research profiles, “the best learning experience” (Turku 1). However, these may generate some future challenges. The focus of specific research profiles that were built based on the past achievement of the university can prevent an academic breakthrough, or radical but necessary change of the academia.

“I think it cannot give completely new ideas because it has to be built on our strengths. And it is the aim is to develop them further and to find the strength of the University of Turku and how they should be formulated in the future. [...] And I think those lines are such that we couldn't break them as in something completely new. No. But we have to continue to develop our best skills further.” (Turku 3)

Another concern of the strategy is the timeframe to investigate the future. Although the ten-year strategy is seen as a highly future-oriented plan, it can be too long to contemplate about the coming events in the era of uncertain and rapidly changing world.

“The entire strategy is looking forward. So, it is meant to be future orientated completely 100% but the problem naturally is because it is now for 10 years. So, we cannot know what is expected exactly from the university after five years, after seven years, after eight years, we cannot imagine that now.” (Turku 3)

In order to be sensitive and responsive to the changes, the long-term strategy is constantly updated.

“We had to be constantly aware of the newest trends and invest in diversity. I suppose that the strategy is fully future-oriented, but I think it shall be updated. It needs to be updated. I think At least two or three times during this 10-year period. At least the policy programs must be updated because we don't know how the situation is developing” (Turku 1)

The outbreak of the COVID-19 is an example of a driving force that influence the education strategy of Turku university. The academic community decided to expedite the digitalization of teaching and learning in order to tackle with the pandemic.

“What we thought that the digital environments have developed a lot, much faster than they would have may be done if there wasn't COVID epidemic.” (Turku 1)

Besides the changing environment, the government appears to (re)shape the strategy implementation on a certain level as well.

“During the strategy planning process, we had to give a report to the ministry. [...] The Ministry of Education allocates the basic funding based on these factors (in the roadmap)”. (Turku 1)

Although the aforementioned statement emphasizes the fact that the institution remains dependent on the government funding, Turku university is inclined to have freedom of developing its strategy. The university does not feel pressure from the government roadmap. It is considered as a guideline that the university pays attention altogether with other background resources.

“We didn't get any instructions that you have to put this and this into your strategy. So it was kind of, the university kind of could freely choose what kind of strategy it makes sense. I think only one only command thing was that we have to make it for 10 years now. [...] This (the government roadmap) document was all the time mirrored through the strategy planning process, but we really have an open process at the university where we collected ideas from the members of the university community, and these were discussed in University Board and research and teaching and learning council and different kinds of groups.” (Turku 1)

In conclusion, Turku university began building the strategy by a futures method called futures workshop and exhausted its community and external sources for the futures knowledge. The university developed and articulated the understanding of futures from several trends including the demographic changes, climate change, digitalization, sustainable development challenges, the value of argumentation in liberal arts and social science, the importance of internationality and collaboration in the community, and

equality and well-being. This led to the development in several focuses in research profiles and multidimensional changes in education, community, and social impact. The crucial parts of strategy directions are illustrated in the next section.

4.4.2 The Turku articulation of the government roadmap

Similar to other universities, the strategy of Turku university largely corresponds to the government roadmap. It greatly recognizes the challenge on A1.2: the needs to improve quality, productivity and effectiveness of education, as well as strongly attempts to tackle A2.3: responding to global challenges together the most on the government roadmap.

In A1.2: the institution aims to transform the learning experience at the University to be the best in Finland, establish close collaboration between students and staff, engage students in research, shift the skills of independent critical thinking that helps to accomplish comprehensive learning goals, increase social impact by excellent research and education, and utilize the strategic profiles to implement and advance multidisciplinary research and education between faculties. In A.2.3, Turku expresses to develop solutions through its research that would dynamically and responsibly create social well-being and a sustainable future, have significant impact, and meet future global challenges. Moreover, the university aims to become a proactive partner in the development of a sustainable future and innovation with research and research-based education in bioenergy, biodiversity, climate change, food, and circular economy, apply the knowledge of sea and maritime studies to the faculties' teaching and sustainable goals, and provides the sustainable services and campuses and with foresight-oriented thinking to answer the global solidarity for planetary responsibility as well.

Specifically, Turku university importantly bases the thoughts on B1.4: continuous learning, B2.3: nationally and internationally attractive knowledge clusters and innovation systems, B3.2: RDI collaboration of HEI stakeholders and the Ministry of Education and Culture to support and revitalize businesses, and B4.1: support services, and develop B4.4: community with the skills.

To be articulate, the institution would visibly draw the attention on flexible opportunities for lifelong learning, supplementing expertise at different points of career development, offer attractive and broad-ranging opportunities for the continuous development of expertise, and become learning organization where everyone can keep up their skills and develop as experts in B.1.4. In research and teaching, B2.3 describes the choices of Turku to build and strengthen the research profiles in a) children, young people and learning, b) health, diagnostics and drug development, c) sea and maritime studies, d) cultural memory and social change, e) future technologies and digital society, f) biodiversity and sustainability.

Additionally, the university would also compete for top international experts and early career researchers to increase its research competitiveness, enhance attractiveness of research environment, strengthen regional partnerships, and engage in long-term and goal-oriented collaborations for better societal impact in B3.2. To solidify the community strategy in B4.1 and B.4.4, Turku essentially aims to increase the effectiveness of career counselling to support work placements of students, respond to the needs of early career researchers, train experts with a capacity for change to build a sustainable future in different sectors of society, ensure the well-functioning and well-being on daily life of individuals and work communities with extensive and accessible services, and enhance the leadership and management that are based on knowledge and open interaction.

The high compatibility of Turku strategy and the roadmap illustrates the importance of the government initiation in Turku university direction. The university seems to have an ambitious strategy and attempts to fit in all recommended points from public policies. This makes the strategic focuses wide and deep in all aspects of education, research and teaching, social impact, and community development. It may create a challenge to complete all goals of the strategy, if the implementation in the unit level is not well structured and crystalized. The situation can particularly be true in the part of community development that is set to expand and bring more diverse players into the system in the coming years. However, if Turku university succeeds, it is likely to elevate the institution position in Finnish and international stage, increase the power of the university, and help expand the reputation of Finnish higher education on global level in the future.

5 CONCLUSION

This thesis investigates the utilization of the futures knowledge in the university strategy making. The key focuses are 1) to what extent futures knowledge at the university level is used in the development of 2021 to 2030 strategies, 2) how futures knowledge of Finnish universities may impact Finnish higher education at the end of 2020s, and 3) how the university futures knowledge is related to the higher education policy in the year 2021 to 2030 of Finnish government. The empirical data are the 2021-2030 university strategies and the transcription of the interviews with the university strategy teams. The qualitative content analysis that promotes the systematic understanding without overlooking local contexts of the dataset is utilized to identify the results.

To eloquently explain the research findings and maximize the research utility for all readers, this part is divided into the three sub-sections. Each sub-section is consisted of a summary of each research answer and a reflective thought on the topic.

5.1 The futures knowledge of Finnish universities

Futures knowledge is a contextualized knowledge that requires deliberative thoughts and interpretation of various viewpoints. In the Finnish higher education setting, the knowledge is visible in public policies and the university strategies.

The case studies of Aalto University, Helsinki University, Tampere University, and Turku University illustrate that futures knowledge is gathered from different sources including the university proximate and extended communities, academic and non-academic research, and the government recommendation papers. Meanwhile, the investigation of the strategy making process highlights the fact that the communities are exhaustively utilized to collect the futures knowledge of the institutions. Through the surveys and workshops, the speculation and interpretation of trends are identified. This presents the evidence of codified, articulated, and embodied futures knowledge. Whereas there is no data showing the recognition of self-transcending knowledge or wildcard. (Dufva & Ahlqvist 2015, 251.) The absence of wildcard identification of the university strategies evidently affects the behaviors of each university during the COVID time. No university foresaw the emergence of pandemic or its effect to the institution direction before the incident occurred. However, the universities survived the crisis by their flexible strategy that allowed them to rapidly respond with the unexpected change.

As Pouru et al. (2019, 86-90), Waal & Linthorst (2020, 11, and Ahlqvist & Kohl (2016, 1145-1149) suggest, the utilization of futures knowledge lies in the comprehension of trends in local contexts, trends are the important lenses of the universities to gather changes and uncertainties in the institutional environment. At the same time, the ability to contextualize and implement the knowledge of trends can be seen as the skill to utilize futures knowledge at the university level. This is because the implementation of university futures knowledge is complex. The knowledge needs to be compromised with the agenda of university management board and the policy makers who are the most influential decision-makers of the university strategies. In this regard, the universities need to articulate their futures knowledge to fit in the policies and institutional agenda. All the universities tackle this challenge by using the government higher education roadmap as a frame to develop their futures knowledge. Being able to leverage the institutional and political cues in the organizational decision-making is an important skill. (Steen & Twist 2012, 475-486.) It can determine how an organization can successfully thrive.

Meanwhile, the strong community seems to be a key of the quality of futures knowledge. Kunseler et al. (2014, 1-12) suggest that the participation of diverse stakeholders can bring new thoughts and strengthen the articulation of existing points when future knowledge is discussed. In this regard, all universities demonstrate this awareness. The participatory strategy process was conducted to encourage the management teams, personnel, students, and alumni to share their insights. Additionally, Aalto and Helsinki especially reached out their international networks to gain more lenses for change observation.

The variety of the community engagement patterns allow some similar and different trends to be recognized and articulated. Overall, the issues pertaining sustainable development, digitalization, social justice, equality, well-being, and demographic changes are the concerns of by Aalto, Helsinki, Tampere, and Turku academia. Meanwhile, Aalto specifically found the emergence of new university competitors and the limitation of funding new challenges; Turku university perceived the importance of internationality unignorable dynamic. These understandings of change drive the institutions to think and behave.

5.2 The university futures knowledge and Finnish higher education in 2020s

As the perception of future leads to certain ways of action taking (Schutz 1959, 76-77), the analysis of futures knowledge in the strategy making of Aalto university, Helsinki university, Tampere university, and Turku university reveal the specific action plans that the universities would mobilize. Consequently, certain images of future that can lead to change especially in the environment of Finnish higher education by 2030, are comprehended.

In this regard, the implementation of digital technologies, the adoption of multidisciplinary courses and international degree programs, the integration of sustainability concept in academic disciplines, and the emphasis of student wellbeing are clearly visible in strategic thinking of education path. In research and teaching aspect, the teacher-student collaboration and the incorporation of research in teaching are expected to be strengthened along with experimental and hand-on works. In social contribution aspect, the promotion of scientific knowledge-based decision making and the impacts through RDI partnerships with more business sectors are planned. In the university community aspect, the management of financial and infrastructure are set to be more efficient and connected with their strategic research profiles. Transparency and democracy would be at the core of operation together with the emphasis of career development and wellbeing of the university personnel.

The aforementioned moves of Finnish universities seem to verify the OECD scenarios that were created nearly 20 years ago. The higher educational institutions in Finland are moving forward to the full pictures of Entrepreneurial Universities and, Lifelong learning and Open Education scenarios, and some part of Global Network of Institutions images of future that e-learning and modular learning are present (Vincent-Lancrin 2004, 259-261). The change in higher education is already on the way. Up until now, learning gradually moves from human-centric and disintegrative approaches to holistic, planetary-focused, inclusive, and integrative (Gidley 2010, 1040-1048). The behaviors of Finnish higher education institutions are becoming more entrepreneurial and competitive due to the resource scarcity and state disinvestment (Wright & Shore 2017, 3-10). Yet, the great aspiration of the Finnish universities depicted in their strategies or “the guideline of implementation plans” may allow us to see the greater shifts of higher education industry by 2030. If succeeded, the Finnish universities will have a globally impactful education and take a leading roles of higher education industry

though the multidimensional networks, internationalized learning environment, interactive and pragmatic learning programs, the ability to produce planetary-and-sustainable-oriented students, and community supportive systems for individual well-being by the end of 2020s.

5.3 Potentials and pitfalls of the roadmap in the university futures knowledge

The reforms in education and education institutions are underway. In Finland, the redefinition of education and educational organizations have been done through legal and policy changes driven by governmental institutions. For the universities to survive and thrive, perhaps there are two points needed to be considered regarding to the utilized futures knowledge.

While university community is the most important source of the futures knowledge at the university level, the interview and document analyses show that the roadmap of Ministry of Education and Cultures has the significant level of power to influence the implementation of futures knowledge. Aalto, Helsinki, Tampere, and Turku greatly share the focuses on the needs to improve quality, productivity and effectiveness of education, the response to global challenges, and the collaboration of RDI (research, development, innovation) with multiple stakeholders including the Ministry of Education and Culture, higher education institutions, and business partners. The four universities also largely follow the guideline of the government and gears their directions toward the public policy in four cores – namely, education, research and teaching, university community management, and social impact or contribution.

To survive, it is a boon that the futures knowledge of academic institutions is utilized to answer the futures knowledge of their largest financial supporter that is the Finnish government. To thrive, it can be a bane to simply follow the government-initiated futures themes. Since futures are conceived through certain perspectives built by the existing knowledge of the world and social position that an agent has (Ahlqvist & Uotila 2020, 1-11), there is a chance that the government is blindsided some important issues by their worldview as well. It is important that the academic institutions can answer how long they should think ahead, who should decide the research and education areas of strength and reinvestigate if the strategy indeed reflect the competence of the university community. Or else, the strategy maybe future-oriented, but may not be futures-oriented. This is particularly a concern the issue of research profiles that are built based on previous success of the academic institutions and the recommendation of the

public policy makers. The risk of not being able to develop groundbreaking ideas, innovate opportunities to change, grow and successfully survive is addressed when universities rely on one aspect from the past that is perceived by external observer.

The academic institutions might need to weigh the futures knowledge created by the university communities in a higher degree for the quest of the institutional directions on the future, since they are the closest stakeholders of the system. To successfully have the community participate and contribute a good quality of futures knowledge, the importance of a strong community is reemphasized. Perhaps, investigating how to empower the community and maximize their contribution is a good step to begin with.

6 DISCUSSION

6.1 Survive to thrive

The existence and practice of futures knowledge in the Finnish higher education institutions are clearly recognized in this research. Trends detection and elaboration are mundane among the four universities. To this points, futures knowledge helps their organizations to become more insightful and discover the way to (re)position themselves in the era of change. However, the way futures knowledge is being utilized by the Finnish academia remains far from its exhaustion. The knowledge can be furthered to determine how the universities can optimize their networks that would help to navigate through their ambitious plans to change for the better future. Additionally, it can be a tool to point out what skills the university needs to be learned, unlearned or relearned to achieve the strategic goals. (Dufva et al. 2015, 103.) These realizations have not been clearly described in the 2021-2030 strategy files.

Perhaps harnessing the existing networks and communities of the universities is a good start. As the information in section 3.1 about university partners reveals, what is missing is not the quantity but the quality of networking. The institutions may ask themselves of which network should collaborate in what way, when, and how. This mean network assessment is required. The power of high-quality network can strongly enhance the quality of futures knowledge. When more groups of people participate in environment analysis and strategy design, the university may be able to see broader horizon, discover more useful ways to interpret the futures knowledge, and become more innovative to implement strategy in education, research and teaching, social impact, and internal management. If this is properly done, the result can be the change from survival mode to success mode.

6.2 Research limitation and further research

This research adopts the qualitative approach to investigate the utilization of futures knowledge at the university level. It pays attention to specific Finnish universities. The research finding can only disclose the realities of limited groups among various Finnish higher education institutions. To establish a broader view, it is important to continue questing the same questions in different schools and expand the target samples such as the universities of applied science or non-Finnish universities. This may bring

the clearer understanding of how futures knowledge is articulated in other academic communities. Similarly, the longitudinal study of the sample groups in the utilization of futures knowledge can be useful to comprehend the change in futures knowledge and how it affects the dynamics of academic institutions. Finally, as the key to futures knowledge creation and implementation lies in the stakeholders of academic community, it is worth to understand how the perception of future in each stakeholder affects the futures knowledge and strategy direction in the future research.

REFERENCES

Aarrevaara, Timo – Dobson, Ian. R., – Elander, Camilla (2009) Brave new world: Higher education reform in Finland. *Higher Education Management and Policy*, Vol.21 (2), 87–104.

Aalto University (2020) How and when should you apply for ethical review of research <<https://act.aalto.fi/en/research-art/how-and-when-should-you-apply-for-ethical-review-of-research>>, retrieved 10.10.2021

Aalto University (2021) Aalto University. <https://www.aalto.fi/en/aalto-university>>, retrieved 10.10.2021

Aalto University (2021) Key figures of 2020 and reports <<https://www.aalto.fi/en/aalto-university/key-figures-of-2020-and-reports>>, retrieved 10.10.2021

Aalto University (2021) Marcela Acosta-Garcia appointed as new Program Manager for UNITE! at Aalto University. <<https://act.aalto.fi/en/news/marcela-acosta-garcia-appointed-as-new-program-manager-for-unite-at-aalto-university>>, retrieved 10.10.2021

Aalto University (2021) Organization. <<https://www.aalto.fi/en/aalto-handbook/organisation>>, retrieved 10.10.2021

Aalto University (2021) Our international networks. <<https://act.aalto.fi/en/aalto-university/our-international-networks>>, retrieved 10.10.2021

Aalto University (2021) Our strategy. <<https://www.aalto.fi/en/strategy>>, retrieved 10.09.2021

Aalto University (2021) Unite! – building a European university of the future <<https://act.aalto.fi/en/collaboration/unite-building-a-european-university-of-the-future>>, retrieved 10.11.2021

Ahlqvist, Toni – Kohl, Johanna (2016). Constructing and mobilizing futures knowledge in an organization: foresight as a catalyst of dynamic strategic practice. *Technology Analysis & Strategic Management*, Vol. 28 (10), 1138–1151.

Ahlqvist, Toni – Uotila, Tuomo (2020) Contextualizing weak signals: Towards a re-lational theory of futures knowledge. *Futures: the journal of policy, planning and futures studies*, Vol. 119, 1–12.

Bell, Wendell (1997). *Foundations of futures studies: Human science for a new era. Vol. 1, History, purposes and knowledge*. Transaction Publishers, New Brunswick.

Bierman, Paul (2021) My university plans to terminate my department. We're trying to save <<https://www.sciencemag.org/careers/2021/01/my-university-plans-terminate-my-department-we-re-trying-save-it>>, retrieved 20.01.2021

Bowen, Glenn (2009) Document Analysis as a Qualitative Research Method. *Qualitative Research Journal*, vol. 9 (2), 27–40.

Catino, Maurizio (2013) Organizational myopia problems of rationality and foresight in organizations. Cambridge: Cambridge University Press.

Demos (2019) The need for scientific knowledge, education, and critical thinking is growing – 4 theses about the role of universities in Finland in the 2020s <<https://demoshelsinki.fi/julkaisut/the-need-for-scientific-knowledge-education-and-critical-thinking-is-growing-%E2%88%92-4-theses-about-the-role-of-universities-in-finland-in-the-2020s/>>, retrieved 20.01.2021

de Waal, André – Linthorst, Julie (2020). Future-proofing the high-performance organization. *Sustainability*. Vol. 12 (20), 1–14.

Dufva, Mikko – Könnölä, Totti – Koivisto, Raija. (2015). Multi-layered foresight: Lessons from regional foresight in Chile. *Futures: The Journal of Policy, Planning and Futures Studies*, Vol. 73 (2015), 100–111.

Dufva, Mikko – Ahlqvist, Toni (2015) Knowledge creation dynamics in foresight: A knowledge typology and exploratory method to analyze foresight workshop. *Technological forecasting & social change*, Vol. 94 (5), 251–268.

Galletta, Anne – Cross, William E. (2013) *Mastering the Semi-Structured Interview and Beyond: From Research Design to Analysis and Publication*. New York University Press, New York.

Gidley, M. Jennifer (2010) Globally scanning for ‘Megatrends of the Mind’: Potential futures of futures thinking. *Futures: the journal of policy, planning and futures studies*. Vol. 42 (10), 1040–1048.

Helsinki University (n.d.) Financial statements. <<https://www.helsinki.fi/en/about-us/strategy-economy-and-quality/finances/financial-statements>>, retrieved 13.10.2021

Helsinki University (n.d.) History. <<https://www.helsinki.fi/en/about-us/basic-information/history>>, retrieved 13.10.2021

Helsinki University (n.d.) Networks and strategic partnerships. <<https://www.helsinki.fi/en/cooperation/international-cooperation/networks-and-strategic-partnerships#section-15752>>, retrieved 13.10.2021

Helsinki University (n.d.) Organization. <<https://www.helsinki.fi/en/about-us/university-helsinki/organisation>>, retrieved 13.10.2021

Helsinki University (n.d.) Strategic plan of the University of Helsinki 2021–2030. <https://www2.helsinki.fi/sites/default/files/atoms/files/hy2030_strategia_en.pdf>, retrieved 19.01.2021.

Helsinki University (n.d.) Strategic plan of the University of Helsinki 2021–2030: With the power of knowledge – for the world. <<https://www.helsinki.fi/en/about-us/strategy-economy-and-quality/strategic-plan-2021-2030/strategic-plan-of-the-university-of-helsinki?cv=1>>, retrieved 19.09.2021.

Helsinki University (2021) Strategy process for 2021-2030 strategy. [PowerPoint slides]. Helsinki University.

Heo, Kyungmoo – Yongseok, Seo. Applying Foresight to Policy Agenda-Setting: A Successful Case in South Korea. *Futures: the journal of policy, planning and futures studies* Vol. 127, 1–15.

Hoffman, David M. (2007) The Career Potential of Migrant Scholars: A Multiple Case Study of Long-Term Academic Mobility in Finnish Universities. *Higher Education in Europe*. Vol. 32 (4).

Jann Werner – Wegrich Kai, (2007) Theories of the Policy Cycle. In: Handbook of Public Policy Analysis: Theory, Politics, and Methods, ed. by Fischer Frank – Miller Gerald J. – Sidney Mara S, 44–58 (Vol. 125). Taylor and Francis Group.

Jauhiainen, Arto – Jauhiainen, Annukka – Laiho, Anne – Lehto Reeta (2015) Fabrications, Time-Consuming Bureaucracy and Moral Dilemmas — Finnish University Employees' Experiences on the Governance of University Work. *Higher Education Policy*, Vol. 28, 393–410.

Jones, Michael D. – Shanahan, Elizabeth. A., – McBeth, Mark. K. (2014). *The science of stories: applications of the narrative policy framework in public policy analysis*. Palgrave Macmillan, New York.

Kneese, Tamara (2021) How a Dead Professor Is Teaching a University Art History Class <https://slate.com/technology/2021/01/dead-professor-teaching-online-class.html>

Kohtamäki, Vuokko (2020) Autonomy driven segmentation for competition among Finnish universities leaders' perceptions. *Studies in higher education* (Dorchester-on-Thames), 1–13.

Kunseler, Eva-Maria – Tuinstra, Willemijn – Vasileiadou, Elftheria – Petersen, Arthur C. (2015) The reflective futures practitioner: Balancing salience, credibility and

legitimacy in generating foresight knowledge with stakeholders. *The journal of policy, planning and futures studies*, Vol. 66 (2), 1–12.

Kuosa, Tuomo (2012) *The evolution of strategic foresight: navigating public policy making*. Gower, Hampshire.

Lattu Annina – Cai, Yuzhuo (2020) Tensions in the sustainability of higher education – The case of Finnish Universities. *Sustainability* Vol.12 (5), 1941.

Lavinto, Suvi (2021) Unite! virtual campus ideated further at the Boot Camp <<https://www.aalto.fi/en/news/unite-virtual-campus-ideated-further-at-the-boot-camp>>, retrieved 10.11.2021

Lavinto, Suvi (2021) Unite! joint programs and flexible study pathways developed at the Boot Camp <<https://www.aalto.fi/en/news/unite-joint-programmes-and-flexible-study-pathways-developed-at-the-boot-camp>>, retrieved 10.11.2021

Ministry of Education and Culture (n.d.) Policy and development in higher education and science. <<https://minedu.fi/en/policy-and-development-in-higher-education-and-science>>, retrieved 1.8.2021

Ministry of Education and Culture (n.d.) Proposal for Finland <<https://minedu.fi/documents/1410845/4177242/Proposal+for+Finland.pdf/08a7cc61-3e66-4c60-af75d44d1877787d/Proposal+for+Finland.pdf>>, retrieved 1.8.2021

Ministry of Education and Culture (n.d.) Roadmap for implementing vision 2030. <<https://minedu.fi/documents/1410845/12021888/Vision+2030+roadmap/6dfddc6f-ab7a-2ca2-32a2-84633828c942/Vision+2030+roadmap.pdf>>, retrieved 1.8.2021

Ministry of Education and Culture (2009) The University Act 558/2009 <<https://www.finlex.fi/en/laki/kaannokset/2009/en20090558.pdf>>, retrieved 20.9.2020

Ministry of Education and Culture (n.d.) Universities in Finland <<https://okm.fi/en/universities>>, retrieved 10.07.2021

Nieminen, M. & Kaukonen, E. (2001) Universities and R&D networking in a knowledge-based economy: a glance at Finnish developments. Helsinki: Sitra.

Pönni Raili (2021) *Aalto University 3.0*. [PowerPoint slides]. Planning and Leadership Support, Aalto university

Pouru, Laura – Dufva, Mikko – Niinisalo, Tarja (2019) Creating organizational futures knowledge in Finnish companies. *Technological forecasting & social change*, Vol. 140, 84–91.

Räty, Hannu – Kozlinska, Inna – Kasanen, Kati – Siivonen, Päivi – Komulainen, Katri – Hytti, Ulla (2019) Being stable and getting along with others: perceived ability

expectations and employability among Finnish university students. *Social Psychology of Education* Vol. 22, 757–773.

Rohrbeck, René. & Kum, Menes Etingue (2018) Corporate foresight and its impact on firm performance: A longitudinal analysis. *Technological forecasting & social change*. Vol.129, 105–116.

Saarivirta, Toni (2010) Finnish Higher Education Expansion and Regional Policy. *Higher education quarterly*, Vol. 64 (4), 353–372.

Sayarar, Isik – Knutsdotter, Eva – Harrod, Tanya – Cranfield, Ben –Sherwin, Skye (2019) Crafting a future of knowledge. *Futures*, Vol. 114 (12), 1–13.

Schreier, Margrit (2019). Content Analysis, Qualitative. In P. Atkinson, S. Delamont, A. Cernat, J.W. Sakshaug, & R.A. Williams (Eds.), *SAGE Research Methods Foundations* 170–183. SAGE Publications.

Schutz, Alfred (1959) TIRESIAS, OR OUR KNOWLEDGE OF FUTURE EVENTS. *Social Research*, Vol. 26 (1), 71–89.

Siekkinen, Taru – Pekkola, Elias – Carvalho, Teresa (2020) Change and continuity in the academic profession: Finnish universities as living labs. *Higher education*, Vol. 79 (3), 533–551.

Siivonen, Päivi & Filander Karin (2020) ‘Non-traditional’ and ‘traditional’ students at a regional Finnish University: demanding customers and school pupils in need of support, *International Journal of Lifelong Education*, Vol. 39 (3), 247–262.

Tampere University (2020) Human Potentials Unlimited. <<https://www.tuni.fi/sites/default/files/media/file/tampereen-yliopisto-strategia-10022020-eng.pdf>>, retrieved 02.11.2020

Tampere University (29.01.2020) *Strengthening the strategy of the University of Tampere*. Retrieved from Record Management team, Kristiina Törmälä

Tampere University (2021) Tampere University’s 2020 financial statement: good results were achieved in terms of research, education and societal impact in the year of the pandemic, but the financial deficit increased. <<https://www.tuni.fi/en/news/tampere-universitys-2020-financial-statement-good-results-were-achieved-terms-research?navref=search--list>>, retrieved 02.11.2021

Tampere University (n.d.) About us. <<https://www.tuni.fi/en/about-us/tampere-university>>, retrieved 02.11.2021

Tampere University (n.d.) Cooperate for new information, innovations and know-how. <<https://www.tuni.fi/en/services-and-collaboration?navref=main>>, retrieved 02.11.2021

Tampere University (n.d.) University management. <<https://www.tuni.fi/en/about-us/tampere-university/universitymanagement?navref=main>>, retrieved 02.11.2021

Tapanila, Katrina – Siivonen, Paivi – Filander Karin (2018) Academics' social positioning towards the restructured management system in Finnish universities. *Studies in higher education* (Dorchester-on-Thames), Vol. 45 (1), 117–128.

Tirronen, Jarkko & Nokkala, Terhi (2009) Structural development of Finnish universities: Achieving competitiveness and academic excellence. *Higher education quarterly*. Vol. 63 (3), 219–236.

The Finnish National Board on Research Integrity (2019) The ethical principles of research with human participants and ethical review in the human science in Finland. <https://tenk.fi/sites/default/files/2021-01/Ethical_review_in_human_sciences_2020.pdf>, retrieved 02.12.2020

Turku University (n.d.) Collaboration Platforms. <<https://www.utu.fi/en/business-collaboration/collaboration-platforms>>, retrieved 10.11.2020

Turku University (2021) Key Facts and Figures. <<https://www.utu.fi/en/university/facts-and-figures>>, retrieved 10.11.2020

Turku University (n.d.) Organization and Management of the University of Turku. <<https://www.utu.fi/en/university/organisation>>, retrieved 10.11.2020

Turku University (30.09.2021) Strategy planning 2021-2030. [PowerPoint Slides]. Turku University.

Turku University (n.d.) Strategy 2030 of the University of Turku. <<https://www.utu.fi/en/university/university-strategy-2030>>, retrieved 10.11.2020

van der Steen, Martijn – van Twist, Mark (2012) Beyond use: Evaluating foresight that fits. *Futures: the journal of policy, planning and futures studies*. Vol. 44 (5), 475–486.

van Dorsser, Cornelis – Walker, Warren E. – Taneja, Poonam – Marchau, Vincent A.W.J (2018) Improving the Link Between the Futures Field and Policymaking. *Futures: the journal of policy, planning and futures studies*. Vol.104, 75–84.

Vincent-Lancrin, S. (2004) Building Futures Scenarios for Universities and Higher Education: An International Approach. *Policy futures in education*. [Online] 2 (2), 245–263.

von Schomberg, René – Pereira, and Ângela Guimarães – Funtowicz, Silvio (2006) ‘Deliberating foresight knowledge for policy and foresight knowledge assessment’, in *Interfaces between science and society*, 1st edition, Routledge, 146–174.

Vuokko Kohtamäki (2020) *Autonomy-driven segmentation for competition among Finnish universities: leaders’ perceptions*. *Studies in Higher Education (Dorchester-on-Thames)*, 1–13

Wright, Susan – Shore, Cris (2017) *Death of the public university?: uncertain futures for higher education in the knowledge economy*. New York: Berghahn Books.

APPENDICES

Appendix 1. The most matching part of Aalto strategy and the government roadmap

<p>[A] The futures thinking</p>	<p>[A1] The government identified challenges</p>		<p>[A2] The government identified megatrends</p>		<p>[A3] The government 2030 visions</p>			
	<p>[A1.2] The needs to improve quality, productivity and effectiveness of education > Advance our discipline-specific expertise > Invest in top-level multidisciplinary and independent basic research > Our research activities will stand on an ethically sound basis in terms of both objectives and implementation > Increase funding for research during the strategy period to safeguard its position > Promote knowledge and opportunities for its utilization in society by relying on open science, new research methods and technologies, and by intensifying the long-term development and shared usage of research and learning facilities as well as high-quality infrastructures > Strong connection between teaching and research (students will be actively involved in all activities of the University community, including research, the development of teaching and community relations) > Support researchers and other staff in their communication about their work to create the understanding and appreciation of science that help ensuring the research-based knowledge to support decision-making in 2030</p>		<p>[A2.3] Responding to global challenges together > promote circular economy > aim to reach carbon neutrality in our operations during the strategy period > divest the investments in companies producing fossil fuels > generate understanding for the benefit of society through responsible and ethical research and teaching – for the world > build a sustainable future by generating knowledge for finding solutions to both local and global issues and thereby benefiting the global community. > Sustainability and responsibility will guide the University community in all procurements, services and reforms.</p>		<p>[A3.2] Development of higher education and expertise would relate to different life situations > Support students’ working life skills (including citizen and entrepreneurial skills) by improving related education and intensifying cooperation with relevant partners > Studies will be increasingly open to tailoring, and learning will be supported at all stages of studies</p>			
<p>[B] The future actions</p>	<p>[B1] Education</p>		<p>[B2] Research and teaching</p>		<p>[B3] Social contribution</p>		<p>[B4] University community</p>	
	<p>[B1.3] Accessibility and flexibility of education</p>		<p>[B2.1] Support the reform of pedagogical thinking</p>		<p>[B3.2] Research, Development, Innovation collaboration between</p>		<p>[B4.4] Community with the skills: change management, employee</p>	

	<ul style="list-style-type: none"> > Retain its status as a public university to make the knowledge and learning for everyone > Promote knowledge and opportunities for its utilization by relying on open science, new research methods and technologies > Intensifying the long-term development and shared usage of research, learning facilities, and high-quality infrastructures > Improve access to learning among groups which currently are underrepresented at universities in order to foster equal opportunities and social mobility 	<ul style="list-style-type: none"> > Consolidate the link between research and teaching > Enhance virtual mobility > The themes of sustainability will be exhaustively integrated into all education programs > Widen the scope and content of science communication and education by improve scientific literacy and critical and analytical thinking 	<p>higher education institutions, stakeholders and the Ministry of Education and Culture to support and revitalize businesses</p> <ul style="list-style-type: none"> > Research-based knowledge will increasingly be used to support societal decision-making in 2030 	<p>competences, time management, leadership and wellbeing</p> <ul style="list-style-type: none"> > Establish an inclusive culture of learning with equality, openness, respectful encounters and close teacher-student collaboration at its core > Promote a culture that invites everyone to put their talent to use in order to transform the University into a genuinely global institution > Provide for future skills demands by promoting staff competence in line with the philosophy of continuous learning > Advance flexible practices to support staff in various life situations to promote holistic well being > Diminish work-related exhaustion and its risk among members of the University community by a critical examination of our operating culture and the advancement of practices that promote coping at work > Clarify the career development prospects and career options of our various staff groups > Furnish opportunities for growth to ambitious researchers, teachers, experts and students as well as encourage proposals of good ideas, methods and practices > Providing courses in the national languages of Finland to support the integration of international students and staff in Finnish society
--	--	--	---	--

Appendix 2. The most matching part of Helsinki strategy and the government roadmap

<p>[A] The futures thinking</p>	<p>[A1] The government identified challenges</p>		<p>[A2] The government identified megatrends</p>		<p>[A3] The government 2030 visions</p>			
	<p>[A1.2] The needs to improve quality, productivity and effectiveness of education</p> <ul style="list-style-type: none"> > Advance our discipline-specific expertise > Invest in top-level multidisciplinary and independent basic research > Our research activities will stand on an ethically sound basis in terms of both objectives and implementation > Increase funding for research during the strategy period to safeguard its position > Promote knowledge and opportunities for its utilization in society by relying on open science, new research methods and technologies, and by intensifying the long-term development and shared usage of research and learning facilities as well as high-quality infrastructures > Strong connection between teaching and research (students will be actively involved in all activities of the University community, including research, the development of teaching and community relations) > Support researchers and other staff in their communication about their work to create the understanding and appreciation of science that help ensuring the research-based knowledge to support decision-making in 2030 		<p>[A2.3] Responding to global challenges together</p> <ul style="list-style-type: none"> > promote circular economy > aim to reach carbon neutrality in our operations during the strategy period > divest the investments in companies producing fossil fuels > generate understanding for the benefit of society through responsible and ethical research and teaching – for the world > build a sustainable future by generating knowledge for finding solutions to both local and global issues and thereby benefiting the global community. > Sustainability and responsibility will guide the University community in all procurements, services and reforms. 		<p>[A3.2] Development of higher education and expertise would relate to different life situations</p> <ul style="list-style-type: none"> > Support students’ working life skills (including citizen and entrepreneurial skills) by improving related education and intensifying cooperation with relevant partners > Studies will be increasingly open to tailoring, and learning will be supported at all stages of studies 			
<p>[B] The future actions</p>	<p>[B1] Education</p>		<p>[B2] Research and teaching</p>		<p>[B3] Social contribution</p>		<p>[B4] University community</p>	
	<p>[B1.3] Accessibility and flexibility of education</p> <ul style="list-style-type: none"> > Retain its status as a public university to make the knowledge and learning for everyone > Promote knowledge and opportunities for its utilization by relying on open science, new research methods and technologies > Intensifying the long-term develop- 		<p>[B2.1] Support the reform of pedagogical thinking</p> <ul style="list-style-type: none"> > Consolidate the link between research and teaching > Enhance virtual mobility > The themes of sustainability will be exhaustively integrated into all education programs > Widen the scope and content of science communication and education by 		<p>[B3.2] Research, Development, Innovation collaboration between higher education institutions, stakeholders and the Ministry of Education and Culture to support and revitalize businesses</p> <ul style="list-style-type: none"> > Research-based knowledge will increasingly be used to support societal decision-making in 2030 		<p>[B4.4] Community with the skills: change management, employee competences, time management, leadership and wellbeing</p> <ul style="list-style-type: none"> > Establish an inclusive culture of learning with equality, openness, respectful encounters and close teacher-student collaboration at its core > Promote a culture that invites everyone to put their talent to use in order to 	

	<p>ment and shared usage of research, learning facilities, and high-quality infrastructures</p> <ul style="list-style-type: none"> > Improve access to learning among groups which currently are underrepresented at universities in order to foster equal opportunities and social mobility 	<p>improve scientific literacy and critical and analytical thinking</p>		<p>transform the University into a genuinely global institution</p> <ul style="list-style-type: none"> > Provide for future skills demands by promoting staff competence in line with the philosophy of continuous learning > Advance flexible practices to support staff in various life situations to promote holistic well being > Diminish work-related exhaustion and its risk among members of the University community by a critical examination of our operating culture and the advancement of practices that promote coping at work > Clarify the career development prospects and career options of our various staff groups > Furnish opportunities for growth to ambitious researchers, teachers, experts and students as well as encourage proposals of good ideas, methods and practices > Support the integration of international students and staff into the University community and Finnish society by providing instruction in the national languages of Finland
--	--	---	--	---

[A] The futures	[A1] The government identified challenges	[A2] The government identified megatrends	[A3] The government 2030 visions
------------------------	--	--	---

Appendix 3. The most matching part of Tampere strategy and the government roadmap

	<p>[A1.2] The needs to improve quality, productivity and effectiveness of education</p> <ul style="list-style-type: none"> > Improve the scientific quality of research > Strengthen the close relationship between research and teaching by ensuring that all our teachers are involved in research and vice versa > Improve the quality of grant proposals and actively seek the role of coordinator in collaborative projects > Continue to improve the quality and attractiveness of international degree programs 	<p>[A2.3] Responding to global challenges together</p> <ul style="list-style-type: none"> > Tackle climate change > Preserve the natural environment > Improve the well-being and sustainability of societies 	<p>[A3.2] Development of higher education and expertise would relate to different life situations</p> <ul style="list-style-type: none"> > Encourage alumni to build lifelong connections with the University 	
[B] The future actions	<p>[B1] Education</p>	<p>[B2] Research and teaching</p>	<p>[B3] Social contribution</p>	<p>[B4] University community</p>
	<p>[B1.3] Accessibility and flexibility of education</p> <ul style="list-style-type: none"> > Integrate the principles of open and responsible science > Invest in research infrastructures and make them openly available 	<p>[B2.4] Joint research communities for knowledge and infrastructure sharing among HEI, research institutes, and business</p> <ul style="list-style-type: none"> > Brings together research and education focusing on technology, health and society > be active in selected university networks > Maintain research environments that facilitate collaboration among the University, private partners and public sectors > Tap into the opportunities offered by international university networks > Participate in a pilot project to develop an innovative new model of higher education in Europe as a member of the European Consortium of Innovative Universities > Introduce shared information systems for managing research, education and services 	<p>[B3.2] RDI collaboration between higher education institutions, stakeholders and the Ministry of Education and Culture to support and revitalize businesses, SMEs in particular</p> <ul style="list-style-type: none"> > Involve companies and stakeholders in the different stages of research processes 	<p>[B4.1] Increasing support services</p> <ul style="list-style-type: none"> > Establish a Teaching and Learning Centre to develop excellent services to support learning and teaching > Help our researchers expand their competencies at the beginning and throughout their careers > Create a support system to facilitate the integration of foreign researchers and their families into Finnish society > Offer our students opportunities to steer their learning towards a career in research while pursuing bachelor's and master's degrees > Help students develop their transferable skills and build connections with potential employers > Support international students' integration into Finnish society by expanding our range of Finnish-language courses
	<p>[B1.4] Continuous learning</p> <ul style="list-style-type: none"> > Develop learning methods and instructional strategies to allow adult learners who are balancing study with work to flexibly pursue continuous learning > Work with our stakeholders to support continuous learning 			
	<p>[B1.7] Internationalization of education</p> <ul style="list-style-type: none"> > Support international mobility and collaboration among the members of our university community > Introduce more international bachelor's degree programs 			

Appendix 4. The most matching part of Turku strategy and the government roadmap

<p>[A] The futures thinking</p>	<p>[A1] The government identified challenges</p>		<p>[A2] The government identified megatrends</p>		<p>[A3] The government 2030 visions</p>			
	<p>[A1.2] The needs to improve quality, productivity and effectiveness of education > The learning experience at Turku University is the best in Finland > Close collaboration between students and staff > Engage our students in research > Encourages students towards independent critical thinking and achieving comprehensive learning goals > Create the basis for our increasing impact by excellent research and education > Utilize the strategic profiles to implement and advance multidisciplinary research and education between faculties</p>		<p>[A2.3] Responding to global challenges together > Dynamically and responsibly build social well-being and a sustainable future in the new decade > Our research has significant impact and meets future global challenges > Carries global responsibility and is a proactive partner in development > Create prerequisites for a sustainable future and innovation with research and research-based education on bioenergy, biodiversity, climate change, food, and circular economy > Services and campuses are developed sustainably and with foresight > Apply the knowledge of sea and maritime studies to the faculties' teaching and sustain-able goals</p>					
<p>[B] The future actions</p>	<p>[B1] Education</p>		<p>[B2] Research and teaching</p>		<p>[B3] Social contribution</p>		<p>[B4] University community</p>	
	<p>[B1.4] Continuous learning > Offers flexible opportunities for lifelong learning > Supplement expertise at different points of career development > Offer attractive and broad-ranging opportunities for the continuous development of expertise > The University is a learning organization where everyone can keep up their skills and develop as experts</p>		<p>[B2.3] Building of nationally and internationally attractive knowledge clusters and innovation systems > Strong and distinct multidisciplinary research profiles (strengthening research profile: Children, young people and learning/Health, diagnostics and drug development/Sea and maritime studies; building research profile on Cultural memory and social change/Future technologies and digital society/Biodiversity and sustainability)</p>		<p>[B3.2] RDI collaboration between higher education institutions, stakeholders and the Ministry of Education and Culture to support and revitalize businesses, SMEs in particular > Create an environment that promotes success together with the surrounding society and regional business life > Our research results are innovatively applied to problem solving and development in different fields</p>		<p>[B4.1] Increasing support services > Strengthen career counselling and our connections to professional life to support students' work placement > Support the needs of early career researchers to promote the success in their career > Ensure the well-functioning of everyday life of individuals and work communities with extensive and accessible services, > Support students with different backgrounds</p>	

		<ul style="list-style-type: none"> > Have an internationally competitive research environment for top experts and early career researchers > Strong regional partnerships to make the University's operational environment unique and internationally attractive > Engage in long-term and goal-oriented partnerships in our strategic collaboration to strengthen our societal impact 	<ul style="list-style-type: none"> > The research we produce is employed in decision-making > Collaborate with business life to create opportunities for new innovations and their commercialization and business development 	<p>[B4.4] Community with the skills: change management, employee competences, time management, leadership and wellbeing</p> <ul style="list-style-type: none"> > Train experts with a capacity for change, who build a sustainable future in different sectors of society > Leadership and management are based on knowledge and open interaction > Well-being is reflected in motivation seamless collaboration, and good results > Well-being is everyone's role in a supportive and active community
--	--	--	---	--

Appendix 5. The format of an interview inquiry

To XXX university management team

My name is Siyada Witoon, a researcher of Futures Studies, Turku School of Economics. I am currently conducting my thesis on "the utilization of futures knowledge in strategic making of the Finnish universities". I focus specifically on the year 2021-2030 strategy and how it came to its existence.

I have done preliminary analysis of XXX university strategic documents that I found on the official website. Yet, as my research also aims to understand the thinking process of future-oriented knowledge that are adopted in the university management for strategic making, I realized that the important data cannot be acquired without having an interview with the university teams who were in charge or have supervised the institutional strategic making. Therefore, I was wondering if it is possible to conduct a semi-structured interview with 3 - 4 individuals who work for the strategic researching and/or planning team of XXX university.

The interview is expected to last 45 to 60 minutes and it can be done in individual or in-group, depending on the preference of interviewees. For the date, I am hoping if it can be any days XXX anytime from XXX. I truly believe that their interviews can tremendously clarify the important questions of my thesis such as:

1. What changes and uncertainties in the higher educational environment were recognized in the 2021 to 2030 strategic years
2. What methods were used to identify as well as assess changes and uncertainties/
How the trends and futures perspective of the university are gathered
3. How the strategy happened
4. What the future-oriented thoughts were used to shape 2021 to 2030 strategic direction/how future-oriented the strategy is and why.
5. How the government development plans/roadmaps for the Finnish higher education in the year 2021 to 2030 impacted or influenced in Aalto university strategies
6. How COVID-19 affected the 2021 to 2030 university strategic directions

At the end of my research, the universities that take part in this study will get to see how futures knowledge is adopted and influenced different Finnish universities and what factors promote or jeopardize institutional resilience.

Your help would be strongly appreciated and greatly promote the learning of foresight practicality in the educational institution setting. Please feel free to forward this email to other XXX university teams whom you believe that they are more suitable interview candidates of this research. Also, please do not hesitate to contact me via siyada.s.witton@utu.fi about the interview time or anything you would like to be clarified about my research work.

Thank you in advance for your time and consideration

Best regards

Siyada Witton