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FACULTY OF EDUCATION AND PSYCHOLOGY



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**ACADEMIC MOTIVATION AND SELF-REGULATED
LEARNING AMONG INTERNATIONAL STUDENTS AT HUNGARIAN
UNIVERSITIES**

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Abstract

This study aims to analyse academic motivation and self-regulated learning among international students who study at Hungarian universities through a mixed-methods design. An explanatory sequential mixed-methods design involves collecting quantitative data first and then explaining the quantitative results with in-depth qualitative data. The merging integration procedure was used for integrating at the results level. The key theories, as Self-Determination Theory (SDT) of motivation (Deci & Ryan, 1985, 2000), and Zimmerman and Pintrich's models of Self-Regulated Learning (SRL) (Pintrich & De Groot, 1990; Zimmerman, 1989), provided perspectives on academic motivation and SRL among international students in Hungary.

The study presents findings on academic motivation and SRL and highlights the gaps in the knowledge of these phenomena among international students, considering the rapid growth of international students worldwide and in Hungary due to the Internationalization of higher education. Emphasizing the importance of intrinsic motivation, satisfaction of basic psychological needs during study, application of self-regulated learning strategies, and self-efficacy.

The results of the mixed-method study explain quantitative results on academic motivation and SRL among international students at Hungarian universities with the help of the qualitative findings based on common domains and developing meta-inferences. This study reveals that international students endorsed more items on intrinsic motivation than on extrinsic motivation. At the same time, students supported more items on cognitive strategies, such as elaboration and organizing strategies, in SRL. Students had beliefs and confidence in their own ability that affected their performance. Students actively applied a time management self-regulated learning strategy. Moreover, there were significant differences in motivation and SRL among international students based on the level of study, such as bachelor's, master's, and doctoral. Master's students demonstrated a higher level of external regulation, bachelor's students showed a higher level of amotivation, and doctoral students demonstrated a lower level of use of the rehearsal cognitive strategy.

Qualitative data on international students' academic motivation to study at Hungarian universities and their views on SRL through the use of self-regulated learning strategies and self-efficacy were collected through semi-structured interviews. The main qualitative findings reveal international students' motivation to study at Hungarian universities, such as motivation to get knowledge, a higher education certificate, and

opportunities for personal and professional development. International students provided their views on basic psychological needs, cognitive strategies, resource management strategies, and efficacy. In the final phase, the merging integration procedure of mixed methods was used to explain quantitative results with the help of the qualitative findings based on common domains and developing meta-inferences. This study offers valuable insights for educators and policymakers to attract and retain talented international students in Hungary, help them to become motivated and self-regulated learners, who can contribute to knowledge development and promotion of Hungarian higher education on the international arena.

Keywords: academic motivation, self-regulated learning, internationalization, Hungary, mixed-methods

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Dedication

I dedicate this work to everyone who is on the way to becoming a researcher. Be strong and stay curious. Your interest and persistence will guide you to the final destination.

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List of abbreviations

AMS – Academic Motivation Scale
ANOVA - One-way Variance Analysis
EHEA - European Higher Education Area
ERA - European Research Area - ERA
EU - European Union
EX – Extrinsic Motivation
F - Female
HEI - High Education Institution
IM – Intrinsic Motivation
IEA – Intrinsic motivation, Extrinsic motivation, Amotivation
M - Male
MSLQ – Motivated Strategies for Learning Questionnaire
SDT – Self-Determination Theory
SHS - Stipendium Hungaricum Scholarship
SHSP - Stipendium Hungaricum Scholarship Program
SRL – Self - Regulated Learning
TPF - Tempus Public Foundation

Chapter 1: Overview

1.1 Introduction

It is certainly known that globalization is driving the internationalization of higher education, raising the number of students who study abroad (Maringe & Gibbs, 2009; de Wit & Altbach, 2021). Considering the growing number of international students, there has been limited research on international students' motivation and self-regulated learning (Pawlak et al., 2020). At the same time, an increasing number of educators are paying attention to the necessity of helping students become motivated and self-regulated learners (Boekaerts & Cascallar, Kim et al., 2019; Pintrich, 2000; Schunk 2005; Winardi, 2024; Yue & Lu, 2022).

The explanatory sequential mixed-methods design aims to provide a comprehensive analysis of academic motivation and self-regulated learning among international students at Hungarian universities, considering the complexity and multidimensional nature of these two phenomena. This study aims to provide a complex understanding of academic motivation and SRL among international students in Hungary.

To achieve this aim, this research adopts a comprehensive view to investigate these phenomena by applying meaningful theoretical frameworks that are widely used in an educational context, such as Self-Determination Theory (SDT) and Self-Regulated Learning. SDT provides a relevant theoretical background as this theory posits that different types of motivation vary as per how much a student engages in an activity for reasons of personal choice (Deci & Ryan, 2008; Ryan & Deci, 2000; Vallerand, 1997). Self-regulated learning represents an extraordinary umbrella under which a considerable number of variables that influence learning (e.g., metacognition, self-efficacy, cognitive strategies) are studied within a comprehensive and holistic approach. For that reason, SRL has become one of the most important areas of research within education (Pintrich, 2000; Zimmerman & Schunk, 2001). These frameworks provide a solid theoretical background for analyzing academic motivation and SRL among international students at Hungarian universities using an explanatory sequential mixed-methods design.

This introductory chapter represents the aim of the study (Section 1.1), outlines the rationale (Section 1.2), declares a research problem and research questions (Section 1.3) followed by the significance of this study (Section 1.4).

1.2 Purpose of the Study

This study aims to analyse academic motivation and self-regulated learning among international students who study at Hungarian universities, applying a mixed-methods design. An explanatory sequential mixed-methods design involves collecting quantitative data first and then explaining the quantitative results with in-depth qualitative data. In the first quantitative phase of the study, two standardized questionnaires were used to collect data from international students on academic motivation and self-regulated learning to generalize the findings to the population (Creswell & Creswell, 2018). The second qualitative phase was conducted as a follow-up to the quantitative results, helping to explain these results in depth. In this exploratory follow-up, the plan was to explore academic motivation and SRL among international students and significant differences between the two phenomena based on the level of study, such as bachelor's, master's, and doctoral.

For integrating at the results level, a merging integration procedure was used to explain quantitative results with the support of qualitative findings based on common domains, developing meta-inferences through joint displays. A mixed-methods design was utilized to obtain a more comprehensive understanding of quantitative results on academic motivation and SRL among international students at Hungarian universities.

1.3 Rationale of the Study

Many studies on academic motivation and self-regulated learning among domestic students have used quantitative and qualitative approaches (Schraw et al., 2006; Schunk & Ertmer, 2010; Pintrich, 2010; Zimmerman, 2010; Zimmerman & Schunk, 2004). Considering the growing number of international students worldwide and in Hungary, it is significantly important to analyse the motivation to study and SRL among international students; these findings can be used in the study program development to help students become motivated and self-regulated learners for higher academic performance (Schunk, 2005; Schraw et al., 2006).

Based on previous studies, international students usually choose to study abroad for better career prospects and economic benefits (Eder et al., 2010; Li & Bray, 2007). Where career prospects and economic benefits can be associated with extrinsic motivation, and to be more precise, with external regulation. Similar results were discovered in the qualitative study among international scholarship holder students at the University of Debrecen, where the participants also believed that one great advantage of studying abroad is the ability to

develop their English language proficiency (Casas Trujillo et al., 2020). Quite similar results were received in the study about the motivation of Kurdish students to study in Hungary (Khudur, 2019). The study aimed to investigate what affects the students' decision-making when choosing a country to study, and how they are motivated. Kurdish students' motivation to study in Hungary was represented by motivation to improve language proficiency, experience another culture, and way of life, and get better study opportunities. Despite these studies, there is still a limited amount of research on academic motivation among international students in Hungary. This is really curious, as knowledge about international students' motivation can be used in program development that better fits the students' motivational characteristics.

Concerning self-regulated learning, many studies have been performed at various levels of education (secondary and higher education), several areas (second language learning, online learning, etc.) in a qualitative or quantitative perspective among domestic students (Bouffard-Bouchard, 1990; Carmichael & Taylor, 2005; Lane et al., 2004; Pajares, 1996, 2003; Pajares & Miller, 1994; Relich et al., 1986; Schunk, 2003). Based on the literature review, research on self-regulated learning among international students remains limited.

Previous studies displayed the relationship between motivation and self-regulated learning (Anderman & Freeman, 2004; Mahmoodi et al., 2014; Schraw et al., 2006; Schunk & Ertmer, 2010; Pintrich, 2010; Zimmerman, 2010; Zimmerman & Schunk, 2004). Hence, this significant relationship between motivation and self-regulated learning was proven in many studies. I decided to focus on the differences in academic motivation and self-regulated learning among international students to provide an overview of the phenomena from a different perspective. Moreover, the current study can contribute to a comprehensive understanding of academic motivation and SRL among international students within Hungary and globally by applying a mixed-methods design.

The selection of Hungary as a research context is based on the number of international students; there was a double rise in the percentage of international students between 2010 and 2017 (OECD, 2019). According to Statista, the number of international students reached approximately 37,000 in the academic year 2020/21 (statista.com). The number of Stipendium Scholarship students reached almost 12,000 in 2022 (studyinhungary.hu). Considering the growing number of international students, there is a growing need to understand academic motivation and SRL among international students at Hungarian universities.

Regarding my location as a researcher in Hungary, it is more comfortable and convenient to collect data and conduct the study here. At the same time, being a Stipendium Hungaricum Scholarship holder and an international student in Hungary gives an insider's perspective on motivation and self-regulated learning. Moreover, as a researcher, I have been interested in academic motivation and self-regulated learning since my bachelor's studies. Initially, my main focus was on motivation and self-efficacy among domestic students in Russia. I conducted a significant study at Chelyabinsk State University on this topic, and after that, I shifted my research focus to international students and their academic motivation and self-regulated learning at Hungarian universities. Considering my background, research experience, and professional interest, I have decided to continue working in mixed-methods design to provide a more comprehensive understanding of these two phenomena.

1.4 Problem Statement

The existing empirical literature on international education, specifically on study abroad, mostly focuses on the skills and benefits students gain during international experiences. Still, there has been limited research on international student motivation and self-regulated learning (Pawlak et al., 2020; Csizér et al., 2021; Csizér et al., 2024). This is curious as at the same time an increasing number of educators pay attention to the necessity to help students become motivated and self-regulated learners (Boekaerts & Cascallar, 2006; Kim et al., 2019; Pintrich 2000; Schunk 2005; Winardi, 2024; Yue & Lu, 2022). Hence, it is no surprise that a lot of empirical studies were conducted about academic motivation and self-regulated learning (SRL) in the case of domestic students from a quantitative or qualitative perspective (Alivernini et al., 2014; Bénabou & Tirole, 2003; Harackiewicz et al., 2002; Pajares &Valiante, 2002; Rovers et al., 2020; Zimmerman & Martinez-Pons, 1990).

Meanwhile, concerning self-regulated learning, many studies have been performed at various levels of education (secondary and higher education), several areas (second language learning, online learning, etc.), from a qualitative or quantitative perspective. These studies (Bouffard-Bouchard, 1990; Carmichael & Taylor, 2005; Lane et al., 2004; Pajares, 1996, 2003; Pajares & Miller, 1994; Relich et al., 1986; Schunk, 2003) shown various results on SRL among students (Chitra et al. 2022; Hutagalung et al., 2023; Jin et al., 2023; Khizar et al., 2023; Li et al., 2018; Refika, 2023; Wang et al., 2013; Yhya Alhafidh & Marcelo, 2020; Yu, 2023). However, studies of self-regulated learning among

international students and in the higher education context are still limited (Huang et al., 1999).

Considering the number of quantitative and qualitative studies on academic motivation and self-regulated learning, there is still a lack of mixed-methods research studies. This fact is important because mixed-methods research can provide a more comprehensive understanding of academic motivation and SRL. As a result, this study analysed international students' academic motivation and self-regulated learning among international students, and significant differences in two main constructs of pedagogy in a mixed-method design, including quantitative and qualitative phases. The research inquiry was based on the assumption that collecting diverse types of data best provides a more complete and complex understanding of academic motivation and self-regulated learning than either quantitative or qualitative data alone. The study began with a broad survey to generalize results to a population and then, in a second phase, focuses on qualitative, semi-structured interviews to collect detailed views from international students to help explain the initial quantitative survey (Guetterman & Manojlovich, 2024).

Academic motivation as an inner desire and drive for study with self-regulated learning, where the student becomes a competent and independent learner, who can plan, monitor, control, and reflect on the studying process, are part of successful international students' performance (Pintrich & Schunk, 2002). Self-regulated learners monitor their behaviour in terms of goals and self-reflect on increasing effectiveness. This enhances their self-satisfaction and motivation to continue the improvement of the learning methods (Kryshko et al., 2023; Pintrich & Schunk, 2002; 2022; Steinmayr et al., 2019; Trautner, M., Grunsel et al., 2025).

1.5 Significance of the Study

Since Hungary joined the European Union (EU) in 2004, Hungarian higher education has participated in more academic cooperation with other European countries. This transformation and development of higher education in Hungary has a close connection with politics and policy. The European programmes and policies initiated by the European Commission have been influential in the transformation of higher education and the internationalisation of higher education institutions. The major initiative is the Bologna process, which aims to create a more coherent, comparable, and compatible area for the European higher education system. European integration and the Bologna process

gave a framework in which the Hungarian higher education institutions can define their strategic goals for internationalization and international mobility (Bergan & Matei, 2020).

International student mobility is the most visible indicator of internationalisation of higher education (Ternai & Szabó 2016). Considering a double rise in the percentage of international students between 2010 and 2017 in Hungary (OECD, 2019). A number of international students reached approximately 37,000 according to Statista in the academic year of 2020/21 (statista.com). Students' mobility has been intensively growing over the last two decades and represents a quantitative external internationalization of higher education.

Regarding the rising number of international students, there is a growing need to understand not only the skills and benefits that students gain during their studies abroad, but also to understand academic motivation to study at a Hungarian university and self-regulated learning among international students. An increasing number of educators pay attention to the necessity to help students become motivated and self-regulated learners (Boekaerts & Cascallar, 2006; Kim et al., 2019; Pintrich 2000; Schunk 2005; Winardi, 2024; Yue & Lu, 2022). Motivated and self-regulated learners demonstrate higher academic performance by taking an active role in their learning process (Schunk, 2005; Schraw et al., 2006; Schunk & Ertmer, 2010; Pintrich, 2010; Zimmerman, 2010; Zimmerman & Schunk, 2004).

This study contributes to self-determination and SRL theories in international students' settings. Firstly, a core insight is that these two theoretical frameworks work well in higher education and international students' contexts. This study addresses the academic motivation and self-regulated learning phenomena in Hungary. It brings theoretical references to the country-specific context. Secondly, the research design of this study is unique in its combination of diverse data sources and their analysis and integration. Based on the methodology, this study provides a more comprehensive understanding of academic motivation and self-regulated learning through a mixed-methods design.

This study also brings benefits to university teachers, professors, leadership, policy makers, and international students. First, the study benefits university teachers, professors, and leadership in Hungary working with international students. Knowledge on international students' motivation can be used in the learning process and program development that better fits students' motivational characteristics. Knowledge about self-regulated learning among international students can be applied to the organization of the learning process to support students in becoming motivated and self-regulated learners

during their studies in Hungary. At the same time, this study informs policy-makers about international students' academic motivation and self-regulated learning, which contribute to higher academic performance, and highlights the importance of considering these factors in the development and implementation of internationalisation policies in higher education. Finally, the study suggests future research opportunities on academic motivation and self-regulated learning among international students in different countries. This study can provide a comparative view of two or more countries.

Moreover, further exploration of disparities in academic motivation and SRL can be conducted among domestic and international students, highlighting differences that can be used in the program development, which better fit students' characteristics for higher academic performance.

1.6 The Structure of the Dissertation

The structure of the dissertation is designed to guide the reader through the mixed-method study's aim, context, and results. Chapter 1 introduces an overview of the purpose, rationale, and significance of the study. Chapter 2 demonstrates the theoretical framework for the study, capturing internationalisation of higher education and internationalisation of higher education in Hungary, self-determination theory (Deci & Ryan, 1985, 2000), and Zimmerman and Pintrich's models of Self-Regulated Learning (Zimmerman, 1989; Pintrich & De Groot, 1990).

Chapter 3 presents research context and methodology on the explanatory sequential mixed-methods design, population, sampling, instruments, data collection, analysis, integration, and ethical considerations. Chapter 4 provides the findings, integration of mixed-methods, and explanation of quantitative results by qualitative findings based on developing meta-inferences on academic motivation and self-regulated learning, and significant differences in two phenomena based on the students' level of study, such as bachelor's, master's, and doctoral. Finally, Chapter 5 presents the implications of these findings to methodology, theory, policy, and education. This chapter also discusses the limitations of this study and suggestions for future research.

Chapter 2: Literature Review

2.1 Introduction

This chapter is structured around four main objectives. The first objective is to situate this study within the field of academic motivation and self-regulated learning, and the internationalisation of higher education. Specifically, this chapter focuses on the internationalisation of higher education and internationalisation in Hungary, SDT as the major theory in higher education, and an overview of SRL. The second objective is to demonstrate a research gap by reviewing and analysing previous studies on academic motivation and self-regulated learning in the context of international students, with the main focus on a limited amount of the conducted research. The third objective of this chapter is to illustrate the complexity of the topic and phenomena. Ultimately, the fourth objective is to provide the foundation for the analysis of academic motivation and self-regulated learning among international students for Chapter 3 Methodology.

The chapter provides the theoretical background on the internationalisation of higher education (Section 2.2.1), which synthesises internationalisation as a process, shifting from the exchange and cooperation to the competitive internationalization, national priorities, indicators, and main trends. Following the internationalisation of higher education in Hungary (Section 2.2.1), describing local context, the Bologna process, Tempus Public Foundation (TPF), the government's Higher Education Strategy, Stipendium Hungaricum Scholarship Program (SHSP), international students' mobility, and the four stages of internationalisation in Hungary.

Defining motivation and academic motivation (Section 2.3.1), an overview of self-determination theory – intrinsic and extrinsic motivation (Section 2.3.2), and describing basic psychological needs and the importance of their satisfaction (Section 2.3.3). Following an overview on self-regulated learning (Section 2.4.1), representing general features of self-regulated learning, such as learners are active, constructive meaning makers, who can set standards or goals to strive for in their learning, self-regulatory activities are directly linked to achievement and performance. Describing self-regulated learning phases of self-regulated learning - forethought, performance, and self-reflection (Section 2.4.3), self-regulated learning strategies (Section 2.4.4), such as cognitive, metacognitive, and resource management strategies. Following a review of self-efficacy as belief in capabilities (Section 2.4.5) and its role in self-regulated learning. Providing an overview of empirical studies on motivation and self-regulated learning and the research gap (Section 2.4.6).

2.2 Theoretical background

First, an overview of the internationalisation of higher education is provided, as the most common way for nations to address globalisation challenges, where a rapidly growing number of international students represents the most visible indicator of successful internationalisation, with a shift in paradigm from cooperation to competition. This overview illustrates trends in internationalisation over the past 30 years (Altbach & Knight, 2007; de Wit, 2011; Knight, 2004). Following a review of the internationalisation in Hungary as a member of the European Union and the Bologna Process, the main objective of the Bologna Process is to create a more coherent, comparable, and compatible area for the European higher education system. Bologna has provided significant changes to the higher education system in Hungary and promoted the internationalisation of higher education institutions (Kelo, Teichler, & Wächter, 2006; Teichler, 2009). Following the roles of Tempus Public Foundation and SHSP in internationalisation in Hungary, a growing number of international students, and stages of internationalisation (Tempus Public Foundation, 2021; Hungarian Ministry of Foreign Affairs and Trade, 2022).

Secondly, the key theories are introduced – the Self-Determination theory of motivation and Self-Regulated Learning. Self-determination theory represents an empirically based motivational construct that is recommended to explain motivation among students (Chirkov et al., 2007). Zimmerman and Pintrich's models of self-regulated learning were applied to provide a foundation for self-regulated learning among international students because both models are grounded in socio-cognitive theory (Bandura, 1986) and have a higher impact when a framework is provided for students and teachers (Dignath et al., 2008). Theory plays the generative and receptive role in the sequential explanatory mixed-methods design (Bingham & Witkowsky, 2021; Bitekine, 2008; Crabtree & Miller, 1999; Fereday & Muir-Cochrane, 2006; Pearse, 2019). A deductive qualitative approach is suited to theory application, testing, and refinement (Gilgun, 2005, 2019). This approach allows to utilize existing theories of SDT and SRL to examine academic motivation and self-regulated learning among international students at Hungarian universities.

Thirdly, a summary of previous studies on academic motivation and self-regulation is presented, highlighting their strengths and limitations. Moreover, the analysis of existing studies revealed a research gap concerning academic motivation and self-regulated learning among international students. Most of the studies have been conducted using either

qualitative or quantitative approaches; however, research employing a mixed-method design remains limited.

2.2.1 Internationalisation of Higher Education

Globalization is driving the internationalization of higher education, and the most common way for nations to respond to the fundamental challenges of globalization is to use the internationalization of higher education (Altbach & Knight, 2007; Altbach, & de Wit, 2018; Altbach et al., 2010; de Wit & Altbach, 2021; de Wit & Knight, 1996). Globalisation refers to “the reality shaped by an increasingly integrated world economy, new information and communications technology, the emergence of an international knowledge network, the role of the English language, and other forces beyond the control of academic institutions” (Altbach et al., 2010, p. 7). This is seen as a key force and a context that is fundamentally reshaping the role and institutional structure of higher education (Beck, 2012; Maringe & Foskett, 2010). As a result, higher education institutions (HEIs) are prompted to reinvent themselves and respond to globalization demands. HEIs face the significant impact of internationalisation with a defined focus on content, methods, people, and international structures (Barbosa & Baeta Neves, 2020).

The internationalisation of HEIs is a deliberate process rather than just a passive experience (de Wit et al., 2015). There are considerable expectations around the internationalised university, its contribution to the globalization process in the 21st century and its increasingly cross-border ability to compete for talents, financial resources, transfer of knowledge, and innovative technologies. Internationalisation of Higher Education (Craciun, 2015) has become a critical research question – not only for managers, but also for the social sciences generally – since the internationalisation process can bring potential political, socio-cultural, and academic benefits. Internationalisation has been perceived as one of the essential drivers of change in higher education systems (Craciun, 2015).

Internationalisation of higher education has been classically defined by Knight (2003, p. 2) as “the process of integrating an international, intercultural, or global dimension into the purpose, functions, or delivery of post-secondary education”. The concept has often been contextually driven by broader globalisation (Jones & de Wit, 2021). To prompt the future agenda of internationalization, the updated definition of de Wit et al. (2015) reflects broader and deeper understandings of the nature and purpose of internationalization:

“The intentional process of integrating an international, intercultural or global dimension into the purpose, functions and delivery of post-secondary education, to enhance the quality of education and research for all students and staff and to make a meaningful contribution to society”. Compared to the initial definition of internationalisation, the broader definition includes attention to the quality and contribution to society (de Wit et al., 2015, p. 29).

The emphasis on internationalisation has traditionally been on exchange and cooperation, with an opportunity to understand different languages and cultures through these two aspects (de Wit, 2019). Internationalisation with an emphasis on international cooperation – primarily in research projects, doctorate scholarships, and academic mobility of teachers and students – starts to encompass new perspectives. Since the second half of the 1990's an increasingly visible shift has been obvious towards a more competitive internationalisation. Van der Wende (2001) calls this a shift in paradigm from cooperation to competition. Competition among scholars, students, and talents for the knowledge economy, funding and grants for complex research, access to the top 500 universities in global rankings, and access to high-impact publications. Reputation, recruitment, and excellence in research have been driving the agenda of institutions of higher education, national governments, and their internationalization policies, at the same time consideration of these factors makes hard for large majority of higher education institutions to receive a high number of international students, to become top research centres, to be the top of regional or global rankings (de Wit, 2019).

Higher education scholars emphasise several reasons why HEIs must expand and deepen their international engagement, including increased revenue, enhanced prestige, and improved student learning (Knight, 2004). Additionally, at the national level, internationalisation has been charted onto various national priorities. One of the most common perspectives on internationalisation benefits within a knowledge economy discourse is that university graduates have to acquire a variety of intercultural competencies to be competitive in global labour markets (Buckner, 2019). A 2012 OECD report illustrates that in today's world of interconnected labour markets, university graduates inevitably have to “have in a foreign language, international, and intercultural skills to be able to interact in a global setting” (Hénard et al., 2012, p. 7). In this setting, internationalisation aims to help countries maintain the necessary number of skilled and competitive labour. A second framing discourse emphasises internationalisation for revenue potential in a global market for credentials. International students are often viewed

as a source of revenue for universities and countries (Cantwell 2015; Shields 2019). Simultaneously, internationalisation is linked to many possible benefits at the institutional and national levels, with two main benefits to increase students' international awareness and revenue generation (Altbach & Knight 2007; Waldow 2018).

The level of internationalisation is often examined and judged by referring to indicators such as the number of international students, the use of English as the language of instruction, and international reputation (de Wit, 2011). The mobility of international students is a highlighted factor in the evaluation of the quality of internationalisation of higher education (de Wit & Knight, 1999). Students' mobility refers to the transition of the students themselves from one country to another for educational reasons, among others (e.g., networking, employment, professional experience) (Shkoler & Rabenu, 2020). For example, students at master's or doctoral levels can contribute to research and development in the host country, initially as students and potentially as researchers or highly qualified professionals in the future. In the long term, they are likely to integrate into domestic labour markets, contributing to knowledge creation, development of innovation, and economic performance (OECD, 2016, 2017). Also, international students enhance the establishment of business, academic, and research networks with their home countries (Docquier & Lodigiani, 2010; Flisi & Murat, 2011).

Within the broad definition of internationalisation, the number of international students represents the main indicator of internationalisation, and this number has exponentially grown in recent decades. Over five million international students currently study outside their home country, which has nearly tripled in twenty years (OECD, 2021). Compared with the total enrolment of international students in the whole world in 1950, which was only 0.11 million. This number increased from 1.35 million to 2.75 million from 1995 to 2010. According to UNESCO, the global student mobility expanded from 2 to 6.36 million from 2000 to 2020. The total Outbound student mobility for all countries was 6.36 million in 2020 (UNESCO Institute for Statistics, 2020). The increased number of students reflects the rapidly expanding scale of involved institutions and higher education systems on the global level.

In the global higher education arena, more and more countries and universities would like to attract foreign students. This competition is driven partly by changes in national educational markets. In some countries, the local higher education system is unable to meet the students' needs, in terms of both quantity and quality. Therefore, some of the students have recourse to pursuing educational services in other countries, which can meet their

needs. Another group of countries reaches out to foreign students because their local student numbers have been decreasing or driven by the need to increase the revenue of higher educational institutions. Some countries make an effort to improve the quality of education, and they have an interest in attracting and retaining talented international students (Lannert & Derényi, 2021).

In the research of de Wit and Deca (2020) the main trends in internationalisation in the past 30 years have been highlighted:

1. The main focus is on internationalisation abroad compared to internationalisation at home;
2. Internationalisation is more fragmented, ad hoc, and marginal than strategic, comprehensive, and central in policies;
3. The main interest is represented by a small, elite subset of students and faculty who focus on global and intercultural outcomes for all with attention to inclusiveness and equity;
4. Internationalisation is directed by a constantly changing range of political, economic, social/cultural, and educational rationales, with increasing focus on economic aspirations, such as revenue;
5. Internationalisation is increasingly driven by national, regional, and global rankings, and priorities to be at the top;
6. There is little agreement between the international dimensions of the three core functions of higher education: education, research, and service to society;
7. Primarily a strategic choice and focus of institutions of higher education, but increasingly also a priority of national governments (soft power, or revenue or reputation driven) and regions (European Union, Bologna signatory countries, ASEAN);
8. Following already entrenched models - mainly promoted by “big players” with enough economic clout and tradition in higher education promotion: the UK, USA, Germany, France, etc. (de Wit & Deca, 2020).

A stronger reaction to these trends can be observed in the past decade. Despite the increasing attention being paid to internationalisation of the curriculum at home, there is also a shift from physical mobility to virtual mobility and exchange, promotion of collaborative online international learning (de Wit & Deca, 2020). While mobility is still the most dominant factor in internationalisation of higher education worldwide, many

countries would like to attract and retain more international students, who can contribute to the social and economic development, and Hungary is not an exception.

2.2.2 Internationalization of Higher Education in Hungary

Hungary joined the European Union (EU) in 2004, and since then, Hungarian higher education has participated in more academic cooperation with other European countries as well as in the formulation of new academic networks among higher educational institutions. This transformation of higher education in Hungary is closely connected with politics and policy. The European programmes and policies initiated by the European Commission have been influential in the transformation of higher education and the internationalisation of higher education institutions. The major initiative is the Bologna process. The main objective of the Bologna Process is to create a more coherent, comparable, and compatible area for the European higher education system. The Bologna process, which started in 1999, has brought unprecedented changes in the European higher education scene and played a fundamental role in the emergence of the European Higher Education Area (EHEA), the European Research Area (ERA), as well as the growth of student, staff, and research mobility across Europe (education.ec.europa.eu). Hungary signed the Bologna Declaration with 28 other EU countries and transformed the Hungarian higher education system based on the objectives set in the Bologna process (Pusztai & Szabó, 2008). In the last two decades, European integration and the Bologna process gave a framework in which the Hungarian higher education institutions can define their strategic goals and internationalising activities (Bergan & Matei, 2020).

Bologna has provided significant changes to the higher education system in Hungary; the first change was the introduction of three-cycle degree programmes (bachelor, master, doctorate) through legislative measures, which were prepared and implemented in 2003, and thus the complete structure would come into existence in 2010 (Pusztai & Szabó, 2008). Other changes related to the Bologna tools implementation for mobility and recognition, such as the diploma supplement, credit transfer, and the accumulation system, were also introduced to promote both inward and outward mobility.

Since the beginning of the Bologna process in 1999, the Hungarian Government has consistently highlighted the promotion of the internationalisation of higher education institutions, as one of the ultimate goals of the Bologna process is to promote international mobility. This is indicated in the government's actions in establishing the national agency in 1996 Tempus Public Foundation (TPF), and the government's new Higher Education

Strategy (2014) that set the internationalisation goals of higher education (Aye & Bocsi, 2023). TPF also serves as a knowledge centre providing information on education and training policies, supporting guidelines for local and international teachers, students, and researchers through digital platforms, organizing training courses, thematic conferences, and joint actions with partner organizations, and implementing EU 2020-related projects. This agency strives to promote cooperation between Hungarian partners and foreign institutions to enhance the international visibility of Hungarian Higher Education through active participation in international activities (Kovacs & Tweneboah, 2020).

TPF has been a main player in promoting international mobility and cooperation, modernizing, and enriching the quality of education, training, and human resource development while strengthening the European features of these areas in Hungary. One of the significant responsibilities of the foundation is supervising several international grants and mobility; these international mobility programmes include Erasmus+, CEEPUS, Bilateral scholarship programmes, and Stipendium Hungaricum Scholarship Program (SHSP).

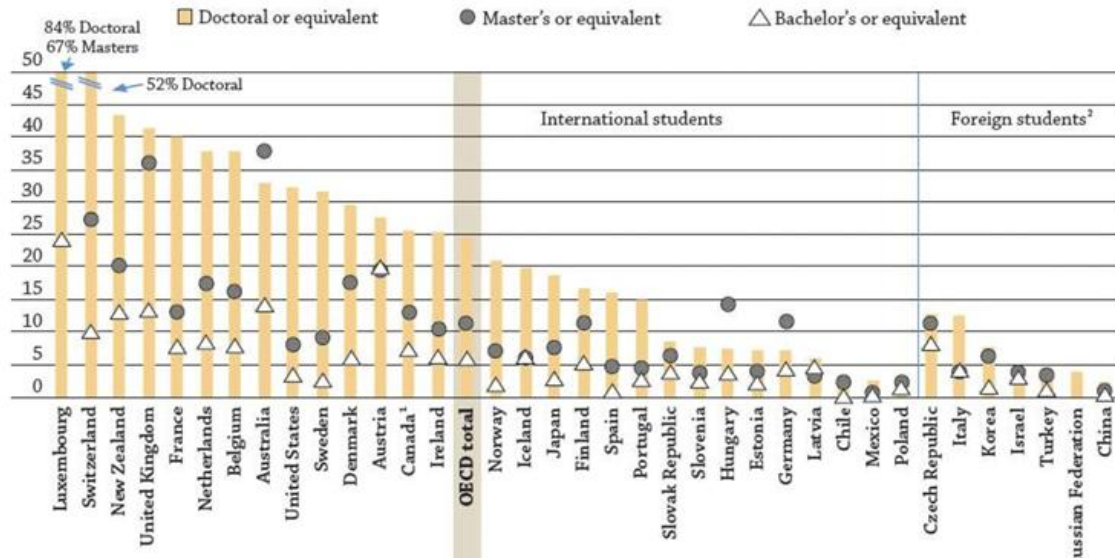
International student mobility is the most visible indicator of internationalisation of higher education around the world, including Europe, and the same is true for the internationalisation of higher education in Hungary (Ternai & Szabó, 2016). The main evidence that demonstrates the attractiveness of Hungarian higher education institutions is the double rise in the percentage of international students between 2010 and 2017 (OECD, 2019). The European Union and its mobility programmes have played a crucial role in stimulating international mobility on an exceptional scale across Europe and Hungary. International students in Hungary can be divided into four categories: the first category is degree-seeking students from neighbouring countries whose nationality is Hungarian; the second category is degree-seeking international students studying medical and health sciences; the third category is degree-seeking international students; and the fourth category is credit-seeking international students in short-term (credit or exchange) programmes (Kovács & Kasza, 2018).

The number of international students in the academic year of 2020/21 was approximately 37,000, as it was mentioned by Kovacs and Tweneboah (2020). The percentage of international students in Hungary is higher than the OECD average. Interestingly, the majority of international students are enrolled in BA/BSc or MA/MSc courses, and a relatively low number of students take part in PhD programmes in Hungary.

It is surprising that all over the world, the rate of mobility in doctoral schools is higher than at the BA/MA level (OECD, 2017a). Figure 1 shows international students' mobility in 2012/2013.

Figure 1

International Students' Mobility, 2012/13 (%)



Note. From OECD (2017a).

Among international mobility programmes, including Erasmus+, CEEPUS, Bilateral scholarship programmes under the Tempus Public Foundation to attract international students to pursue higher education in Hungary, the Stipendium Hungaricum (SH) is the most successful (Aye & Bocsi, 2023; tka.hu). The SH program represents a government-sponsored scholarship program, where the Hungarian government provides comprehensive financial support for international students to study in Hungary. The program was established in 2013 with the announced mission of attracting talented international students to study in Hungarian higher education institutions and is executed under the framework of intergovernmental bilateral cooperation (Tong, 2021). This program aims to support the internationalisation of Hungarian higher education and its continued development, strengthen the international academic and research community relations, and stimulate the promotion of the good reputation and competitiveness of Hungarian higher education in the global arena. The initiative provides tuition-free education and supports inbound diploma and credit-seeking international students, offers a monthly stipend, accommodation contribution, and medical insurance during the study period. According to SHSP (2023), the geographical scale of the program has been growing

year after year; it expanded from 35 sending countries in 2015 to nearly 90 countries and territories from five continents by 2023.

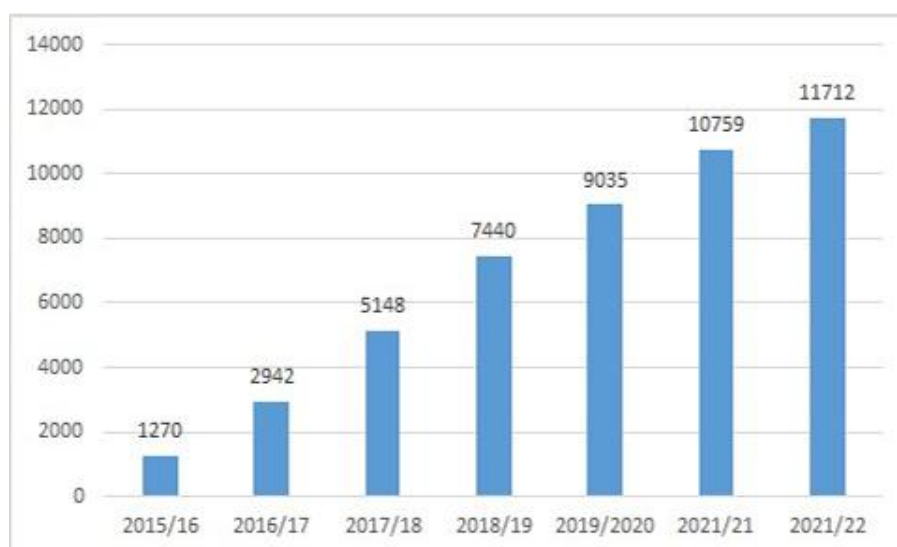
Applicants can apply and be admitted to 28 highly prestigious Hungarian higher education institutions. The top three universities to host the largest number of SH scholarship international students are the University of Debrecen (UD), the Eötvös Loránd University (ELTE), and the Budapest University of Technology and Economics (BME). In total, Hungarian higher education institutions offer over 600 full-time and non-degree English programmes in different higher education fields and at all degree levels. Currently, there are five main types of scholarships:

1. Full degree bachelor's studies;
2. Full degree master's studies;
3. Full degree one-tier master studies;
4. Full degree doctoral studies
5. Partial studies.

The University of Debrecen hosts the majority of international students - 20% of the SH Scholarship holders, followed by the Eötvös Loránd University (14%) and the Budapest University of Technology and Economics (13%). Figure 2 represents the number SH scholarship holders from 2012 to 2022.

Figure 2

Number of Stipendium Hungaricum Scholarship Students From 2015 to 2022



Note. Aye & Bocsi, 2023.

The distribution of SH scholarship students in terms of educational level remained consistent between 2015 and 2022. The share of bachelor's and master's students is higher than the share of doctoral students and those who are taking part in an undivided training programme (Aye & Bocsi, 2023). In the 2021/2022 Academic year, SH scholarship bachelor students represented 38%, master students (34%), doctoral students only (18%), students in undivided training programmes (7%), and other types of training programmes (3%). Most students (95%) are studying in programmes taught in English, and the rest 5% are studying in Hungarian, German, Russian, Italian, Portuguese, Spanish, and Swedish (Aye & Bocsi, 2023).

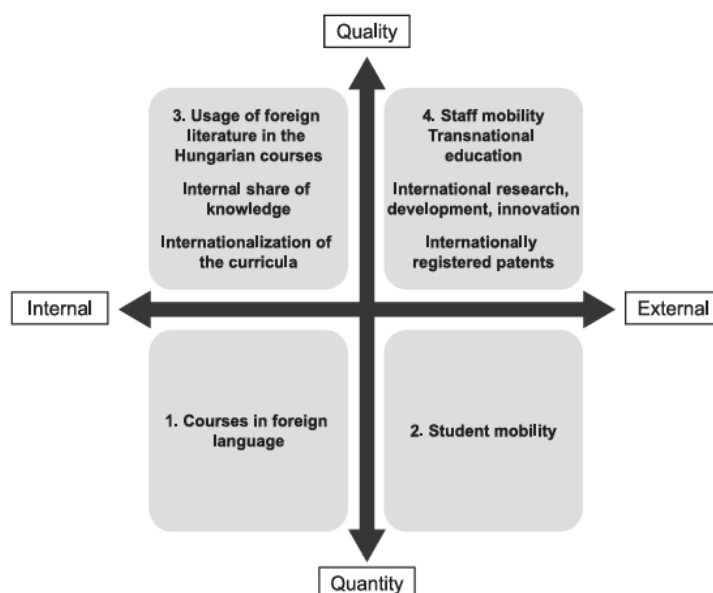
Currently, institutions that have developed in the areas of student mobility and course expansion are already facing capacity problems, and increasingly perceive that quantitative expansion needs to be replaced by qualitative change in internationalisation. Considering the relatively low number of international doctoral students compared to bachelor's and master's students in Hungary, the internationalisation of doctoral education can be a key to quality. Doctoral schools perform better in internal internationalization than bachelor's and master's levels of higher education, according to the research. The internationalisation of curricula, the use of international literature in courses, and the sharing of foreign experience are more characteristic of doctoral schools (Aye & Bocsi, 2023).

Four stages of internationalisation can be established based on the research of Lannert and Derényi in 2020, considering internal-external and quantitative-qualitative dimensions of analysis, which are interlaced, from the first box to the second and third to the fourth. Hungarian higher education institutions are mostly located in the quantitative dimension of internationalisation, with the focus on the quantity of programs in the English language and the number of international students enrolled in study programs. These dimensions can be seen in Figure 3.

Figure 3

A Limited Set of Dimensions and the Main Phases of Internationalization in Higher Education

Source: Lannert & Derényi, (2021, p. 366)



Note. Aye & Bocsi, 2023

1. Quantitative internal internationalisation is well-developed in Hungary, as most universities already have courses, as well as degree programmes offered in English and other languages. At the same time, there are institutions only with Hungarian language as a medium of instruction, because of the nature of training or because the university is still very new and there has not been enough time to develop such courses and programs in a foreign language. There are universities where no courses are offered in a foreign language at all, but still, there are foreign students who study fine arts and music. Another group of universities teaches all the courses in English (Lannert & Derényi, 2020).

2. Quantitative external internationalization is represented by student mobility, which has been intensively growing in the last two decades. As a coincidence, some institutions have already reached or are close to the limit where the increase in the proportion of foreign students is no longer possible without decreasing the level of quality. A possible solution for expanding quality could be the increased mobility of doctoral students. But at the same time, high-quality students can be enrolled only with high-quality university staff (foreign professor, research-centred training) or with an appropriate amount of scholarship (Lannert & Derényi, 2020).

3. Quality internal internationalization can be guaranteed by appropriate language proficiency and openness. Where teacher training is an important intermediate in the internationalisation of higher education. Teachers and professors' appropriate communication, language skills, and growth mindset can fundamentally influence the attitudes of current and future students (Lannert & Derényi, 2020).

4. Staff mobility plays the main role in the external quality internationalisation of higher education. This internationalization demands more resources, such as time and finances; at the same time, it requires a shift in the view of national education policy and in the organizations of HEIs. Staff mobility provides the establishment of contacts with students and professors from foreign universities in order to gain experience in knowledge exchange, learning and teaching methods, and research (Lannert & Derényi, 2020).

Hungarian higher education has reached the point where a one-sided quantitative approach for internationalisation should be changed to a direction of quality dimension, besides focusing only on mobility. To attract more self-paying students, the universities involved in internationalisation need to be more innovative by offering high-quality education. The proportion of foreign students in institutions with a higher degree of mobility and internationalisation is 20–25 percent, with a focus on quality, content, and cultural elements. With the emphasis not only on the income-generating import side of internationalisation, but also on new knowledge-producing outcomes (Lannert & Derényi, 2020).

The Hungarian Government has consistently pointed to promoting the internationalisation of higher education institutions since Hungary joined the Bologna process, as one of the ultimate goals of the Bologna process is to promote international mobility. Consequently, the number of international students in the academic year of 2020/21 reached approximately 37,000 (statista.com). The number of Stipendium Scholarship students reached almost 12,000 in 2022; as a result, the SHSP can be considered the most successful in attracting international students to pursue higher education in Hungary. The program aims to support the internationalisation of Hungarian higher education and its constant development, building the international relations between the academic and research community, and promoting the competitiveness of Hungarian higher education on a global scale. The main stage of internationalisation of higher education in Hungary is based on the quantitative approach that focuses mostly on the mobility of international students. According to the rapid growth of the quantitative dimension, significant changes are required in the direction of the quality dimension.

Considering the relatively low number of international doctoral students (18%) in Hungary compared to bachelor's 38%, master's students (34%), attracting and retaining more international doctoral students can be one possible key to quality. The internationalisation of curricula, the use of international literature in courses, and the sharing of foreign experience are more characteristic of the doctoral schools (compared to the bachelor's and master's levels).

Another possible solution is to increase attention to academic motivation and self-regulated learning among international students, as a rising number of educators focus on the necessity to help students become motivated and self-regulated learners (Boekaerts & Cascallar, 2006; Pintrich, 2000; Schunk, 2005). Motivated and self-regulated learners demonstrate higher academic performance, as another indicator of quality (Schraw et al., 2006; Schunk, 2005; Schunk & Ertmer, 2010; Pintrich, 2010; Zimmerman, 2010; Zimmerman & Schunk, 2004).

2.3.1 The Definition of Motivation and Academic Motivation

Motivation can be perceived as one of the most popular psychological constructs in education (Koenka, 2020). Motivation has several definitions, ranging from “an individual's desire to act in particular ways” (Walter & Hart, 2009, p. 163) to more complex interpretations such as “a potential to direct behaviours that is built into the system that controls emotion,” a potential that “may be manifested in cognition, emotion, and behaviour” (Hannula, 2006, p. 166). Freedheim et al. (2003) indicate that motivation is the capacity to generate behaviour or performance. Motivation refers to any force that energises and directs behaviours in different types of activity (Reeve, 2009). Motivation as an inner desire and a drive is required for successful performance among international students. A complete definition of motivation should include its relationship with concepts such as behaviour, attitudes, learning, and choice. Dörnyei and Ottó (1998) stated that:

In a general sense, motivation can be defined as the dynamically changing cumulative arousal in a person that initiates, directs, coordinates, amplifies, terminates, and evaluates the cognitive and motor processes whereby initial wishes and desires are selected, prioritised, operationalised, and (successfully or unsuccessfully) acted out” (p. 65).

Motivation “is operationalized as the underlying “why” of behaviour” (Vallerand et al., 1992, p. 1008). At the same time, academic motivation represents the question “Why does a student go to college?” (Vallerand et al., 1992, p. 1008). Thus, academic motivation is the driving force influencing a person to attend university and obtain a degree (Clark,

et.al., 2014). In other words, academic motivation refers to the cause of behaviours that are in some way related to academic functioning and success, how much effort students put in, how effectively they regulate their work, which endeavours they choose to pursue, and how insistent they are when faced with barriers (Schunk et al., 2008). This definition of academic motivation was applied in the study, as the cause of international students' behaviours that are in some way related to academic functioning and success at Hungarian universities. According to the literature review, there is a high number of motivation theories in educational sciences, but I only concentrate on the self-determination theory that is directly relevant to this study in order to establish the construct validity of the research here.

2.3.2 Self-Determination Theory

The self-determination theory (SDT) represents a broad motivational framework. This theory poses that all students, no matter what their age, gender, level of study, socioeconomic background, country of origin, or cultural context are possess inherent growth tendencies (e.g., intrinsic motivation, basic psychological needs) that provide a motivational foundation for their high-quality classroom engagement and better educational outcome (Deci & Ryan, 1985, 2000; Vansteenkiste, 2006).

Self-determination theory attempts to explore students' motivation and explain to what extent students internalize their motivation. Motivation can be categorized into distinct types along a self-determinant continuum. In the middle band lies extrinsic motivation (EM). At the other extreme end lies amotivation, which represents a complete lack of motivation (Ryan & Deci, 2000). Table 1 represents the Self-Determination Continuum from Amotivation to Intrinsic motivation.

Table 1

The Self-Determination Continuum

Amotivation	Extrinsic motivation			Intrinsic motivation
Non-regulation	External regulation	Introjected regulation	Identified regulation	Intrinsic regulation – knowledge, accomplishment, and stimulation

Note. Ryan & Deci, 2000.

Based on Deci and Ryan (1985) intrinsic (IM) and extrinsic motivation (EM), SDT has been developed into a motivation continuum to assess the degree to which an individual's behaviour is performed autonomously versus being controlled externally (Deci & Ryan, 2008). Autonomous motivation has two sub-categories: intrinsic motivation and internalized extrinsic motivation or identified motivation. IM represents a prototype of autonomous motivation, characterized by an individual engaging in a specific task simply because of personal interest in it. Internalized extrinsic motivation or identified motivation is the type of extrinsic motivation in nature but has been internalized or regulated into a self-willing belief. Identified motivation can be demonstrated when students are willing to study overseas because they believe that it might lead to better career development or future perspectives (Chirkov et al., 2007). Controlled motivation also has two sub-categories: extrinsic and introjected regulation. Extrinsic regulation represents the individual's behaviour, which is motivated by external rewards or avoiding punishment. In the case of introjected regulation, the person is apt to implement the behaviour to avoid feelings of shame or guilt or meet the expectations of others. When a student executes an activity with controlled regulation, he or she is motivated by external factors or is under pressure caused by these external factors, such as family or other environmental factors.

In contrast, IM refers to engaging in an activity because that activity is satisfying and enjoyable to do. Intrinsic motivation does not depend on one's desire to engage in activities because of expectations and societal values. According to Deci and Ryan (1985), IM is founded upon innate needs for competence and self-determination. Further, Vallerand and his colleagues (Vallerand, 1997; Vallerand et al., 1989; Vallerand et al., 1992) proposed a three-part taxonomy of IM. The first type of IM is knowledge, which refers to the motivation for doing an activity for the feelings associated with developing knowledge and exploring new ideas. In this situation, students experience the pleasure of studying at Hungarian universities and getting knowledge in their particular field of study. The second type is accomplishment, which refers to the sensations related to attempting to achieve a goal or master a task. Students feel the satisfaction of passing examinations, publishing articles, and participating in research projects. The third type is stimulation, which relates to motivation based simply on the sensations stimulated by performing the task, such as aesthetic appreciation or fun and excitement. For example, students express joy when discussing their research topic with other students and professors. The common basis of these three subtypes is the pleasurable sensations experienced during the self-initiated and reasonably challenging activity.

In contrast to intrinsically motivated behaviours, extrinsically motivated behaviours represent actions that are carried out to achieve some instrumental goals, such as earning a reward or avoiding punishment. This type of motivation does not necessarily mean a lack of self-determination in the behaviours performed. Rather, Deci and Ryan (1985) and Vallerand (1997) maintained that different types of EM can be classified along a continuum according to the extent to which they are internalized into the self-concept as a part of self-determination. Three levels of EM have been differentiated (Vallerand, 1997; Vallerand, 1989, 1992). From the lowest to the highest level of self-determination, there are external regulation, introjected regulation, and identified regulation.

External regulation represents those activities that are determined by sources external to the person, such as the costs of the study program, the opportunity to get a scholarship, receiving internationally recognized certificates of higher education or title, career prospects, possibilities to travel, and other tangible benefits. If the reason for studying at a Hungarian university is taken away, there is no intention to continue the engagement in this process (Vallerand, 1997). The second type of extrinsic motivation, which is more internalized into the self-concept, is introjected regulation. Introjected regulation refers to reasons that pertain to performing an activity due to some type of pressure that individuals have incorporated into the self, such that they compel themselves to carry out that activity. Although the source of the pressure is internal, it is not self-determined because the people are reacting to pressure, not acting based on personal choice (Vallerand, 1997). An example of this type of regulation is when students study because they would feel ashamed among family or professors if they could not take this possibility. Studying would only take place as long as they feel the need to reduce guilt. The most self-determined form of EM is identified regulation. At this point, individuals invest energy in an activity because they have chosen to do so for personally relevant reasons. In this situation, students would carry out studying because of its integral part of how they define themselves. For instance, students who feel that pursuing a degree at a Hungarian university is an important aspect of their professional development will endure learning activities.

Deci and Ryan (2000) contrasted all types of IM and EM with amotivation. Intrinsic and extrinsic motivation both imply the existence of intention that drives behaviours towards the goals, whereas the lack of such intention is represented by the concept of amotivation. Amotivation refers to the situation in which students see no relation between their actions and the consequences of those actions; the consequences are seen as

arising as a result of factors beyond their control. In such a situation, students have neither intrinsic nor extrinsic engagement in the activity, and they are likely to stop the activity as soon as possible or participate passively merely to meet formal requirements. Students who demonstrate a lack of self-motivation, display disaffection, and can act irresponsibly. A lack of competence, control, or value can lead to amotivation and passive participation (Ryan & Deci, 2000). Moreover, the difference in expectations and experience during study leads to dissatisfaction and amotivation (Oliver, 1980; Sun et al., 2021; Yoo & Marshall, 2021). The expectations shape satisfaction and amotivation.

Empirical literature regarding SDT in the field of education has shown that a higher level of self-determination leads to positive educational outcomes, i.e., deeper engagement, better conceptual learning, and higher persistence (Areepattamannil et al., 2011; Black & Deci, 2000; Lin et al., 2001; Moneta & Siu, 2002; Pelletier et al., 2001; Standage et al., 2005; Vansteenkiste et al., 2006; Wang & Guthrie, 2004; Zhou et al., 2009; Zhu & Leung, 2011). This educational outcome is particularly important for students who meet a lot of challenges during their studies. Hence, more self-determined students have more positive educational outcomes in skills and knowledge that they can apply in their future study and career. To develop a higher sense of self-determination towards intrinsic motivation, an individual's basic psychological needs of autonomy, competence, and relatedness must be satisfied (Deci et al., 1991). Students are intrinsically driven to meet three innate and universal needs of autonomy, competency, and relatedness as the contributors to the success at higher education level (Clinton, 2011; Deci & Flaste, 1995; Deci & Ryan, 2000; Benware & Deci, 1984; Black & Deci, 2000; Deci et al., 1999; Guay et al., 2008; Guay et al., 2013; Jang, 2008; Ryan & Deci, 2000, 2008; Vansteenkiste et al., 2004).

The three basic psychological needs of autonomy, competence, and relatedness are the source of students' inherent and proactive intrinsically motivated tendency to seek out novelty, be more active and persistent, pursue the optimal challenge, exercise their capabilities, explore, and learn (Ryan & Deci, 2000). As a consequence, the high sense of self-determination towards IM is connected with satisfaction of the basic psychological needs of autonomy, competence, and relatedness. To meet basic psychological needs is essential to consider internal factors such as an individual's age, gender, cognitive ability, and the introduction of external social factors, including the degree of autonomy support in the environment of the university (Wehmeyer et al., 2011). When a university environment supports a degree of autonomy to satisfy the three basic psychological needs,

students' intrinsic motivation is expected to be facilitated. However, considering the diverse cultural backgrounds of international student coming from various countries, providing a necessary degree of autonomy support can represent a big challenge for universities.

2.3.3 Basic Psychological Needs

As a basic psychological need, autonomy refers to the experience of one's behaviour as voluntary, the inner endorsement. A university environment can support students' autonomy by tapping into inner motivational and professional resources, providing opportunities to engage in studying activities with an internal locus of causality, a sense of psychological freedom, and perceived choice over their actions in the particular field (Reeve, 2009).

Students have a need to feel that they are the masters of their own studying and research process, that they have control over their academic life; most importantly, students have a need to feel that they are in control of their own behaviours. The students' sense of control can be enhanced by minimizing external pressure through language and providing explanatory rationale that helps transform tasks into ones of personal value (Reeve, 2009). Autonomous support from teachers increases students' motivation towards attending university and meeting academic requirements (Girelli et al., 2018). Hence, students come to the programs with different backgrounds and experiences - the use of language with professional and specific vocabulary as the medium of instruction can play a crucial role in students' autonomy due to the limited professional vocabulary and possible language barriers in studying in a foreign language.

Competence represents the need to be effective in students' pursuits and interactions with the environment. It reflects the inherent desire to exercise one's capacities during studies and seek out and master environmental challenges (Deci & Ryan, 2000). So, students can go through some challenges and difficulties to prove and develop their competence. Competence concerns their achievements, knowledge, and skills to develop mastery over tasks. This competence can be supported by introducing appropriate learning and research activities at universities, providing students with the appropriate tools, techniques, and feedback for improvement (Niemic & Ryan, 2009). Moreover, satisfaction of the need for competence demonstrates a positive effect on the student's engagement in the adoption of new learning technologies (Wang et al., 2021).

Relatedness refers to the experience of a sense of belonging and connectedness to a group of other students, teachers, and professors during the study program. This is realized when students feel that a supervisor or professor genuinely respects and cares for them (Ryan & Deci, 2000). Relatedness is connected with the establishment of close emotional bonds and secure attachments with others. It reflects the desire to be emotionally connected to and interpersonally involved in warm, caring, and responsive relationships (Deci et al., 1991). Also, the lack of interaction with peers and professors influences the success of learning (Händel et al., 2020; Holzer et al., 2021; Richardson et al., 2015). So, relatedness can play a crucial role in students' successful studying in a foreign country. It becomes a big challenge for students to relate to others in an authentic, caring, and reciprocal way, especially for international students who are far away from home.

Some research has combined the needs for autonomy, competence, and relatedness into one composite variable, and the satisfaction of these needs has been positively associated with self-determined motivation, i.e., intrinsic motivation, identified motivation, and introjected motivation (Chen & Jang, 2010; Jang et al., 2009; W. C. Liu et al., 2009; Standage et al., 2003), but negatively associated with external regulation and amotivation (Liu et al., 2009; Standage et al., 2003). Thus, students' self-determined motivation can be developed through the satisfaction of the basic psychological needs if the learning process contributes to it, even if students are motivated by external factors or amotivated. Alternatively, students might be initially motivated by external factors, and by meeting basic psychological needs during study, their self-determined motivation, personal growth, and well-being can be facilitated.

2.4.1 Self-regulated Learning

Self-regulated learning (SRL) includes different aspects of learning, such as cognitive, metacognitive, behavioural, motivational, and emotional. SRL represents an extraordinary umbrella under which a considerable number of variables that influence learning (e.g., metacognition, self-efficacy, cognitive strategies) within a comprehensive and holistic approach. For that reason, SRL has become one of the most important areas of research within educational psychology (Panadero, 2017).

SRL concerns the application of general models of regulation and self-regulation to issues of learning, in particular, academic learning that takes place in school or university contexts. SRL describes how learners metacognitively, motivationally, and behaviourally improve their learning and performance. Thus, self-regulated learners are constantly ready

to learn by monitoring and controlling their thinking and motivational beliefs, managing internal resources and the learning environment effectively (Zimmerman & Schunk, 2001). Moreover, self-regulated learners are different from their non-self-regulated counterparts because they are aware of the connection between self-regulatory strategies and learning outcomes, and they know that self-regulation is conducive to learning, and they use self-regulatory strategies to attain their learning goals and outcomes (Zimmerman, 1990).

SRL represents a self-directed process in which students transform their mental abilities into academic skills. It refers to self-generated thoughts, affect, and behaviour that are oriented towards the achievement of their goals, with the interaction of environmental conditions (Zimmerman, 2002). SRL is also considered a form of learning, through which the learners set goals and make plans before starting to learn. They monitor and regulate their cognition, motivation, and behaviour during the learning process and then reflect on their learning process and outcomes for corrections in the future (Pintrich, 1995; Pintrich, 2000; Pintrich et al., 2001; Zumbrunn et al., 2011). SRL is an active, purposeful, constructive process by which learners control their motivation, behaviour, and cognition. Specifically, Pintrich emphasized the role of motivation in SRL, clarified the conceptual framework, and conducted key empirical research on the relationship of SRL and motivation (Pintrich et al., 1993a).

2.4.2 General Features of Self-regulated Learning

The different models of self-regulated learning propose different constructs and different conceptualizations (Boekaerts & Niemivirta, 2000; Butler & Winne, 1995; Pintrich & De Groot, 1990; Pintrich & Schunk, 1994; Schunk & Zimmerman 1994; Winne, 1995; Zimmerman, 1986; 1989; 1990; 1998a, 1998b, 2000) but all of these models share some general features. These models view learners as active, constructive participants in the learning process. Learners are not just passive recipients of information from teachers, professors, parents, or other adults, but rather active, constructive meaning makers as they go about learning. Students actively construct their own meanings, goals, and strategies from the information available in the external environment and internal environment (information in their own) (Wolters et al., 2003). Students with SRL strategies are more engaged in the learning process because they are able to determine study objectives and appropriate learning strategies, as well as track their progress toward their learning objectives (Mahmud & German, 2021).

All the models assume that learners can potentially monitor, control, and regulate certain aspects of their own cognition, motivation, and behaviour as well as some features of their environments. Students can monitor and control their cognition, motivation, or behaviour not at all times or not in all contexts, but some monitoring, control, and regulation are possible according to biological, developmental, contextual, and individual differences and individual efforts at regulation (Wolters et al., 2003).

Also, there is some type of criterion or standard (goals or reference value) against which comparisons are made to assess whether the process should continue as is or if some type of change or correction is necessary (Pintrich, 2000). Individuals can set standards or goals to strive for in their learning, monitor their progress toward these goals, and then adapt and regulate their cognition, motivation, and behaviour to reach their goals (Wolters et al., 2003).

Most models of self-regulation assume that self-regulatory activities are directly linked to outcomes such as achievement and performance. Self-regulation is a mediator between personal characteristics and actual achievements. The individuals' self-regulation of cognition, motivation, and behaviour can mediate the relationships between the person, context, contributing to academic achievement (Boekaerts et al., 2000).

Even so, learners are active participants who can plan, monitor, and control their learning. However, the application of self-regulated learning in the academic domain can be complex and diverse due to the complexity of SRL and its aspects. Effective implementation of SRL requires consideration of learners' cognition, motivation, behaviour, goals, and self-regulation. These aspects affect academic achievement (Boekaerts et al., 2000).

2.4.3 Phases of Self-regulated Learning

The process of self-regulated learning consists of several phases. According to Zimmerman's Cyclical Phases model, Zimmerman's (2000) SRL is organized in three phases: forethought, performance, and self-reflection. The forethought phase is the preparatory phase for individuals' learning (Zimmerman & Kitsantas, 2005). Students analyse the task, set goals, plan how to reach goals, and several motivational beliefs energize the process and influence the activation of learning strategies. The forethought phase is separated into two: self-motivation beliefs and task (Zimmerman, 2002). Task analysis includes goal setting and strategic planning (DiBenedetto & Zimmerman, 2013; Zimmerman, 2002). Self-motivation originates from one's beliefs about learning, such as

self-efficacy beliefs about having the capacity to learn and outcome expectations about consequences of learning (Bandura, 1997). Self-motivational beliefs include self-efficacy, outcome expectations, task value, and goal orientation (DiBenedetto & Zimmerman, 2013; Zimmerman, 2002).

In the performance phase, the students execute the task while they monitor how they are progressing, and use some self-control strategies to keep themselves cognitively engaged and motivated to finish the task. The performance phase consists of self-control and self-observation phases. The self-control precaution phase takes the specific chosen method as a reference. Self-observation takes self-testing as a reference to find out the reasons for self-recording (Zimmerman, 2002). Self-observation corresponds to metacognitive monitoring or record keeping of one's performance, the relevant conditions related to such performance, and the effects that it results in (Zimmerman & Paulsen, 1995; Zimmerman & Kitsantas, 2005). Self-observation is crucial in determining one's progress and quality of behaviour. In the absence of self-observation, selective memory of successes and failures becomes activated. Self-observation may lead to increased motivation because when students realize what they do, they may correct their behaviour (Pintrich & Schunk, 2002).

Finally, in the self-reflection phase, students assess how they have performed the task, making attributions about their success or failure. This phase, which forms the structure of the self-regulatory process, consists of self-judgment and self-reaction phases. Self-judgment means comparing present performance with one's goal. Self-judgment includes self-evaluation by attributing temporal importance to the individual's performance and results (Zimmerman, 2012). If a student believes that he/she is making progress toward their goal, self-efficacy increases and motivation sustains. Students who consider a task to be easy may think that they set their goal too low or set their goal higher. If students know that similar students performed a task, they can reach increased levels of self-efficacy and motivation (Schunk, 1987).

At the same time, self-judgments refer to evaluating students' learning performance and attributing causal significance to the learning outcomes. Students who are highly regulated self-evaluate themselves in a more appropriate way and more frequently compared to those who are poorly regulated (Lan, 1998; cited by Zimmerman & Kitsantas, 2005). Getting results by self-judgment and the importance of purpose attribution depend on the specifics of purpose and following self-evaluation standards (Schunk, 2008). Self-

judgment may become affected by the specifics of the purpose, the significance of failing, and contributions to one's performance (Schunk, 1989).

Self-reaction involves taking one's performance into consideration and feelings of self-satisfaction (Zimmerman, 2002). Self-reaction involves attribution of learners for performance as well as evaluation of learners' performance and judgment over completed tasks (Pintrich, 2010). Self-reaction includes one's cognitive, emotional, and self-judging behavioural reactions (Zimmerman, 1994). Self-reactions to goal progress have effects on motivation (Bandura, 1986). Students who judge their progress toward their goal to be acceptable would find themselves efficacious about continuing to improve and be motivated. If students believe that they can improve their performance, negative evaluations of their results may not decrease their motivation. Self-reactions are behavioural, cognitive, and emotional responses to self-judgments. Believing that one is making good progress and the anticipation of satisfaction regarding accomplishing a goal increases the level of self-efficacy (Pintrich & Schunk, 2002).

Pintrich (2000) suggested a SRL model, assuming that self-regulated learners set their learning goals, monitor their learning processes, and control their cognition, motivation, and behaviour as directed by their goals and environmental features. According to the Pintrich (2000) model, SRL is compounded by four phases: forethought, planning and activation, monitoring, control, and reaction and reflection. The forethought, planning, and activation phases involve planning and goal setting as well as activation of perceptions and knowledge of the task and context, and the self in relationship to the task. The monitoring phase concerns various monitoring processes that represent metacognitive awareness of different aspects of the self or task and context. The control phase involves efforts to control and regulate different aspects of the self or task and context. The reaction and reflection phase represents various kinds of reactions and reflections on the self and the task or context. These four phases of self-regulated learning will be considered in the study: how students make a plan, monitor, make changes to stay on the track, and reflect on the process and result (Gaumer Erickson & Noonan, 2018).

Each of the phases has four different areas for regulation: cognition, motivation/affect, behaviour, and context. Cognition includes cognitive and metacognitive strategies and knowledge of content and strategy (Pintrich, 2000). Motivation and affect comprise self-efficacy beliefs, task values, and motivational strategies for volitional and emotional control to regulate motivation and affect. Behaviour, as the general effort for

successful task performance, includes persistence, help-seeking, and choice of behaviours. Context involves task types and environmental features (Pintrich, 2000).

Models of Zimmerman and Pintrich (1994; 2010) include forethought, performance, and reflection phases of SRL. Moreover, both models are grounded in socio-cognitive theory (Bandura, 1986) and have a higher impact when a framework is provided for students and teachers (Dignath et al., 2008). Socio-cognitive models (e.g., Zimmerman, 2000) are more comprehensive and easier to understand (Dignath et al., 2008). These models include motivational and emotional aspects, which are more important for academic performance in higher education (Dignath et al., 2008). Moreover, results from higher education and workplace trainees (Sitzmann & Ely, 2011) show that the four biggest predictors—goal level, persistence, effort, and self-efficacy have a significant motivational value and are all comprehended in the socio-cognitive theory. It could be hypothesized that models with an emphasis on motivation and emotion might have a higher impact on higher education students (Pintrich, 2010; Zimmerman, 1994). Due to the factors mentioned above, these two models were chosen in this study.

2.4.4 Self-regulated Learning Strategies

Students to become self-regulated learners must learn to assess the task, evaluate their knowledge and skills, plan an approach, monitor the progress, and adjust their strategies as needed (Ambrose et al., 2010). In other words, to become a self-regulated learner, students must acquire learning strategies, then implement these strategies and reflect on the results. Self-regulated learning strategies, as part of self-regulated learning, are defined by Zimmerman (1990, p. 5) as “actions and processes directed at acquisition of information or skills that involve agency, purpose, and instrumentality perceptions by learners”. SRL strategies are widely used by learners in order to meet their tasks effectively and efficiently. By contrast, self-regulated strategies are actions and processes that eventually lead to learning or skill. Intermediate goal-setting is an example of self-regulated strategies (Henderson, 1986; Paris et al., 1983; Pintrich & De Groot, 1990). SRL strategies are contextually influenced approaches that involve individuals' organizing and managing time, emotions, thoughts, behaviours, and the environment (Schunk & Zimmerman, 2013).

Self - regulated learning strategies affect learning outcomes by assisting learners to acquire and retain knowledge in a methodical and structured way. Strategies are part of the SRL process and specific skills that can be taught to students and put into real-world

practice (Zimmerman, 1989). And this application of SRL strategies can predict high academic achievement (Wang et al., 2013).

Although the list of self-regulated strategies is still open for more additions, most scholars and researchers in the field agree on at least fourteen strategies that are identified by Zimmerman and Martinez-Pons (1986): (1) self-evaluation, (2) organization, (3) transformation, (4) goal setting, (5) planning, (6) information seeking, (7) record keeping, (8) self-monitoring, (9) environmental structuring, (10) giving self-consequences, (11) rehearsing, (12) memorizing, (13) seeking social assistance, and (14) reviewing. While the above-mentioned strategy list is not all-inclusive, it has served as a crucial foundation for further educational psychology research and continues to influence teaching strategies meant to foster student autonomy and academic success (Panadero, 2017; Zimmerman, 2000).

According to Pintrich (2010), self-regulated learning strategies can be summarized into cognitive strategies, metacognitive regulation, and resource management strategies. Cognitive strategies aim to help learners acquire knowledge at a surface level to retain information. Metacognitive strategies direct the awareness to plan, monitor, and regulate learning (Yukselturk & Bulut, 2007), and resource management strategies require students to use resources around them for learning (Puzziferro, 2008).

In this study, I will focus on three general types of cognitive strategies - rehearsal, elaboration, and organization, as they are directly linked to the learning process (Weinstein & Mayer, 1986). Rehearsal strategies influence the attention and encoding process; these strategies are best suited for a simple task to memorize material by repeating and the activation of information in working memory rather than the acquisition of new information in one's long-term memory (Garcia & Pintrich, 1995; Pintrich et al., 1991). More complex cognitive strategies include elaboration and organizing, involving the incorporation of information into long-term memory (Pintrich et al., 1991). Elaboration strategies help students store information in long-term memory by building internal connections between new information and prior knowledge (Pintrich et al., 1991). For example, students can relate new material to what they already know. These strategies require students to edit notes, summarize, paraphrase, find examples from the real world, and use generative note-taking (Pintrich et al., 1991; Talbot, 1997). Organizing strategies are described as an active endeavour that results in the student's involvement in the task (Pintrich et al., 1991; Talbot, 1997). With the help of these strategies, students can select appropriate information and make connections with the information to be learnt (Pintrich

et al., 1991). Organising relates to one's ability to highlight main points during learning (Effeney et al., 2013). For example, a learner draws up charts and tables to organize material. Organizing strategies include clustering, outlining, grouping, and paying attention to headings, subheadings, diagrams, tables, figures, charts, and graphs (Garcia & Pintrich, 1995; Pintrich et al., 1991).

Metacognitive regulation includes control and regulation of cognitions through planning, monitoring, and regulation strategies (Garcia & Pintrich, 1995; Pintrich et al., 1991). Planning activities, goal setting, and task analysis help to activate relevant aspects of prior knowledge that make the organization of the material easier. Monitoring activities include tracking of an individual's attention, self-testing, and questioning during learning. Monitoring assists the learner in understanding the material and integrating it with prior knowledge (Garcia & Pintrich, 1995; Pintrich et al., 1991). Regulating refers to the continuous adjustment of learners' cognitive activities to improve performance by assisting in checking and correcting their behaviour as they proceed on a task.

Besides cognition and metacognitive learning strategies, students also apply resource management strategies in learning. Resource management strategies represent learners' abilities to establish conditions that may facilitate their learning (Pintrich & Garcia, 1991). These strategies include time and study environment, how learners manage their study time and learning environment, effort regulation as the degree of commitment to achieve study goals, peer learning, how often learners are willing to study with peers, and help seeking, how often learners are willing to ask groupmates, instructors, or teachers for help. Students' resource management strategies are considered in this research as an important ability to facilitate their learning (Garcia & Pintrich, 1995; Pintrich et al., 1991).

Time management refers to the ability to plan study time and tasks (Effeney, Carroll & Bahr, 2013). Time management can be essential for academic achievement. For example, students may schedule a weekly time to read the recommended readings. Students who can effectively manage their time and prioritize responsibilities are more likely to have focused and effective study periods. Effective time management helps students to complete assignments, prepare for tests, and learn more, which eventually leads to higher accomplishments. Peer learning can be described as collaborating with other learners in order to aid one's learning (Effeney et al., 2013). For example, students can get together to study and learn from each other. Studies examined the effect of peer learning on academic achievement and found a significant positive relationship (ChanLin, 2012; Johnson et al., 2009; Michinov et al., 2011; Puzziferro, 2008). Help-seeking relates to obtaining assistance

from instructors to overcome academic challenges (Richardson et al., 2012), such as when students seek clarification from the teacher regarding the task or learning materials. Help-seeking represents an essential component of self-regulated learning as knowing whom, when, and how to ask for assistance. Facing difficulties or in need of explanation, students can ask for help from teachers, peers, or academic support services.

Moreover, pedagogical support can have a significant impact on learners' capacity for self-regulated learning. Research has shown that teachers who provide clear instructions, offer feedback, and support have a positive influence on learners' SRL (Zimmerman & Schunk, 2011). In particular, teachers' timely and suitable feedback provision, motivation, and engagement with students in class discussions are educational characteristics that can have a positive effect on students' self-regulation (Jouhari et al., 2015).

The most comprehensive set of self-regulatory strategies (i.e., metacognitive self-regulation strategies, cognitive strategies, and environment and resource management) has been widely discussed in the sphere of language learning (DiPerna et al., 2002; Tseng et al., 2006). Published literature has well documented that self-regulated learners manipulate a range of these components as part of their learning process to achieve successful outcomes (Liu & Feng, 2011; Rasooli et al., 2014; Vianty, 2007; Zhang & Seepho, 2013). Pitenoe et al. (2017) asserted that metacognitive strategies are closely tied to the executive control of cognition, which increases students' achievement scores. Recent empirical studies have identified a positive correlation between SRL strategies and learning engagement (Zheng et al., 2023), where both can predict students' learning outcomes (Cheng et al., 2024; Seker, 2016; Wei et al., 2023). Learning engagement in foreign language learning plays a significant role, as students refer to the extent of time, attention, willingness, and dedication invested in language learning tasks (Hiver et al., 2024). Researchers have found a significant positive relationship between SRL strategies and academic achievements (Smith, 2001; Zimmerman & Schunk, 2001; Yumusak et al., 2007). Nonetheless, a positive relationship was found in the context of language learning, providing insight into the connection between SRL and academic performance.

2.4.5 Self-Efficacy

Moreover, students have a view of their ability to perform sequences of required actions to deal with potential situations, relating to self-efficacy (Artino et al., 2013). Self-efficacy refers to “beliefs in one’s capabilities to organize and execute courses of action required to produce given attainments” (Bandura, 1997, p. 3). Bandura’s definition highlights two aspects of self-efficacy: as a belief about an individual’s ability, it is not completely consistent with one’s actual capability in a specific field. Individuals relate their efficacy assessment to specific objectives, which suggests the task itself and the nature of the situation.

Self-efficacy affects the choices individuals make, their ways of acting, the effort they spend, their perseverance, and elasticity (Bandura, 1977). Learners are apt to choose activities for which they feel themselves capable, decide how much effort they will spend on a task, how long they will persist when experiencing difficulties, and how resilient they will appear in detrimental situations. The stronger the notion of self-efficacy, the greater the effort, perseverance, and elasticity (Bandura, 1986).

As Bandura (1997) stated, one’s belief and confidence in his or her own ability would affect how he/she performs actions and tries to overcome obstacles. Simple acquisition of required skills and abilities is not sufficient for a person to perform a task; he must have the belief in the abilities that he can undertake the task under difficult settings. As for effective functioning, skills as well as efficacy belief required to execute appropriately. This underlines that the outcomes of learning and performance depend on an individual's own belief and confidence in his or her capacity to succeed in particular tasks or domains. Students who have high levels of self-efficacy in their academic abilities are more likely to set demanding goals, keep going in the face of blocks, and apply efficient learning strategies (Bandura, 1997).

Self-efficacy also plays a crucial role in the conceptualization and development of SRL (Zimmerman, 2000), as part of the self-regulated learning process. SRL and self-efficacy are related constructs in which self-efficacy is perceived to be a subcomponent of self-regulated learning. Self-regulated learning reflects the effort individuals make to modify their responses through inhibiting impulses and substituting them with different approaches that lead to desirable learning outcomes; thus, individuals with stronger self-regulated learning traits tend to have a higher level of self-efficacy (Luszczynska et al., 2005).

Self-efficacy operates during all phases of self-regulated learning. Skilful self-regulated learners enter learning situations with specific goals and a strong sense of self-efficacy to attain them. As they work on tasks, they monitor their performance and compare their attainments with their goals to determine progress. Self-perception of progress enhanced self-efficacy, motivation, and continued use of effective self-regulated learning strategies (Ertmer & Newby, 1996; Schunk, 1996). During periods of self-reflection, they evaluate their progress and decide whether adaptations in self-regulatory processes are necessary.

The concept of self-efficacy is more specific and circumscribed than self-confidence (i.e., a general personality trait that relates to how confidently people feel and act in most situations). Self-efficacy is also a much stronger predictor of how effectively people will perform a given task than their self-confidence. Self-efficacy is characterized by individuals' self-belief of being successful in specific tasks or achieving objectives (Carpenter, 2007). The feeling of high self-efficacy raises the learner's motivation. Self-efficacy indicates confidence level among individuals in their ability to practice self-control over other circumstances (Bandura, et al, 2001). Self-efficacy contributes to success as it helps to determine goals and promotes the achievement of these goals.

2.4.6 Overview of Empirical Studies on Motivation and Self-Regulated Learning, and the Research Gap

Numerous studies have demonstrated the significant relationship between motivation, high-quality classroom engagement, and positive school functioning (Deci & Ryan, 1985, 2000; Reeve et al., 2004; Ryan & Deci, 2000, 2002; Vansteenkiste et al., 2010). Following the self-determination theory, which assumes that all students, no matter their nationality, age, gender, socioeconomic status, or cultural background, demonstrate inherent growth tendencies for intrinsic motivation and satisfaction of basic psychological needs.

Concerning the growing recognition of academic motivation, it plays a crucial role in the development of an individual's potential for success in life (Alderman, 2013). Motivation can be considered as an indicator of a student's ability to effectively utilize their skills and talents (Pfeiffer, 2003). Fundamentally, motivation provides a driving force that influences individuals' behaviour in education and other areas (Amrai et al., 2011; Miñano et al., 2012). Academic motivation provides a significant impact on students' academic achievements (Law et al., 2012; Ryan & Deci, 2009).

Indeed, many studies demonstrated the significant role of academic motivation in facilitating academic achievement (Alderman, 2013; Amrai et al., 2011; Law et al., 2012; Miñano et al., 2012; Pfeiffer, 2003; Ryan & Deci, 2009). Different types of academic motivation, such as intrinsic and extrinsic motivation, have divergent effects on students' academic performance. More precisely, EM primarily drives students to achieve higher grades, while intrinsic motivation influences students' energy for overcoming academic challenges (Cole et al., 2004). A high level of IM encourages students to take ownership of their learning and has a positive impact on their level of performance (Patall et al., 2019; Popa & Voicu, 2015). Therefore, there is a direct relation between increased academic motivation and higher levels of academic achievement (Amrai et al., 2011; Wu, 2019).

An interesting study was conducted in Chile among 11 universities to discover the factors that determine students' motivation to complete their undergraduate studies, involving a sample of 2032 undergraduate students (Espinoza et al., 2024). The initial model was constructed to evaluate the effect of students' sociodemographic characteristics, academic performance, and the characteristics of the university and the degree program they were pursuing on their academic motivation. The results of the study demonstrated that students' motivation to complete their studies is identified primarily by their socioeconomic status, the allocation of financial support, their relationship with professors, and their level of integration into the social and academic environment of the university (Espinoza et al., 2024). The relationships and integration can be considered as part of the basic psychological needs - relatedness.

Another quantitative study was conducted to investigate the differences in academic motivation among university students in Istanbul considering gender, faculty, and different years of study (Turhan, 2020). The survey was administered to two different student samples based on the year of study. The survey was distributed to more than one thousand students in total. The results of the study demonstrated that students are more oriented towards extrinsic motivation than intrinsic values. At the same time, based on the results of one-way analysis of variance (ANOVA) and t-tests, there are no significant differences in academic motivation across years of study, faculty, or gender. This study provides valuable insights into the non-significant difference in academic motivation based on the year of study, faculty, or gender.

Another quantitative study was designed to discover if and to what extent differences in motivation exist among high school and undergraduate students in Israel, considering that school is mandatory for high school students and undergraduate students

in tertiary institutions, who made an active choice to study at an institution. Moreover, the study provided findings on whether and to what extent motivation affects the achievements of these two groups of students, and whether motivation is related to their personal, family, and socio-economic background and gender (Davidovitch & Dorot, 2023a). Results of the study show that undergraduate students are more motivated for learning compared to high school students. It can be associated with satisfaction of basic psychological needs, such as autonomy and competence, as students choose to study at an institution, and studying at school is mandatory. Significant differences were found between students' personal and academic background and their motivation, which increased with age and grade average. There was no significant difference in motivation among male and female students (Davidovitch & Dorot, 2023a).

Another quantitative cross-sectional analysis was conducted in three institutions in Pakistan. The data were collected with the help of a questionnaire from 222 third-year and fourth-year undergraduate nursing students (Kausar et al., 2024). The results of the study show that internal factors such as self-efficacy and personal growth drive students' motivation. Students who can see their progress, who are confident in their abilities, and who achieve high grades demonstrate a higher level of motivation. Though external rewards played a less significant role. Intrinsic motivation and self-assurance contribute to success. Highly motivated students achieve better educational outcomes, demonstrate faith in their skills, and demonstrate higher academic performance (Kausar et al., 2024).

Moreover, many studies have demonstrated the significant role of academic motivation in facilitating academic achievement among domestic students from a quantitative perspective (Alderman, 2013; Amrai et al., 2011; Law et al., 2012; Miñano et al., 2012; Pfeiffer, 2003; Ryan & Deci, 2009). At the same time, intrinsic and extrinsic motivation have different effects on students' academic performance. A high level of intrinsic motivation encourages students to take ownership of their learning and has a positive impact on their level of performance (Patall et al., 2019; Popa & Voicu, 2015). Moreover, it was discovered in some studies that there is no significant difference in students' motivation considering gender (Davidovitch & Dorot, 2023a; Espinoza et al., 2024). However, there is still a limited number of studies on academic motivation among international students, despite the importance of motivation in academic achievements.

Furthermore, several studies were conducted to investigate international students' motivation to study in Hungary, which can be related to intrinsic and extrinsic motivations. (Khudur, 2019; Casas Trujillo et al., 2020; Kéri, 2018). In a study conducted by Khudur

(2019) the motivation of Kurdish students to study in Hungary was explored with the help of an in-depth qualitative interview. The findings of the study highlighted that all Kurdish students were motivated by future achievements as a result of pursuing their studies abroad and getting an international qualification. These attainments include getting better future career opportunities, professional development, and language proficiency progress. Future career opportunities can be associated with external regulation, those activities that are determined by sources external to the student. Professional development and language proficiency progress can be associated with the motivation of acquiring knowledge through studying at Hungarian universities.

In another study, Casas Trujillo et al. (2020) studied international students' motivation to study at the University of Debrecen, Hungary. 15 qualitative interviews were performed among international scholarship holders at postgraduate levels to analyse study motivation with a focus on institutional perspectives. The findings of this analysis show that the main motivational domains for these international students to study at the University of Debrecen are personal motives, geo-academic motives, financial motives, family, and future expectations. To focus on the first three domains, such as personal, geo-academic, and financial motives, personal motives are associated with the perception that studying abroad helps students learn more about themselves, become more mature, gain self-confidence, and test their ability to adjust to different situations and new circumstances. These motives can represent intrinsic motivation - accomplishment, such as international students attempting to achieve their goals. Geo-academic motives are related to the chance to achieve a high level of education, broaden their horizons, and continue studies in a better educational system. So, geo-academic motives can also be associated with the motivation of getting knowledge through studying in Hungary. Financial motives to get financial support to study from a scholarship are a great motivation for international students to study in Hungary. Financial motives are related to external regulation. Similarly, based on previous studies, international students usually choose to study abroad for better career prospects and economic benefits (Eder et al., 2010; Li & Bray, 2007). Moreover, international students reported a higher level of intrinsic motivation, identified regulation, and external regulation in another study, which provided similar results to the current study (Chue & Nie, 2016a).

In a quantitative study conducted by Keri (2018) foreign students' motivation and expectations at the University of Szeged, Hungary was analysed. Five motivation types that influence expectations were discovered; these five motivation types are reference

groups, self-realization, getting to know the culture, integration into the Hungarian community, and gaining knowledge. As can be seen, all five types represent intrinsic motivation as a dominant type. Motivation to get knowledge about Hungarian culture and motivation to gain knowledge play an important role in studying at the University of Szeged.

Similar results were received in the study among doctoral students conducted by Tempus Public Foundation (Attraction and support of international PhD students, lecturers and researchers in Hungary: state-of-the-art, challenges and areas for improvement, 2022) to discover the motivation of international academics to move to Hungary for study or work at a Hungarian higher education institution. The data set was compiled from several countries in Central and South-East Europe, including Bulgaria, Croatia, Czech Republic, Hungary, North Macedonia, Poland, Romania, Serbia, Slovakia, and Slovenia. Results of the study showed that acquiring knowledge and specific know-how from good practice was one of the key motivating factors shaping the respondents' decision to choose Hungary and its higher education institutions as a mobility destination. Two other top reasons included the possibility to work with outstanding scientists or lecturers in the field and the enhancement of future employment and career opportunities. These professionally oriented reasons were relevant for the dominating group of PhD students. Motivation for getting knowledge through studying at a Hungarian university was the dominant factor, followed by external regulation – future career prospects.

Moreover, some academic studies revealed that there are positive relationships between self-efficacy and the use of SRL strategies (Pintrich, 1999; Pintrich & De Groot, 1990; Yusuf, 2011). Positive correlation was found between self-efficacy and SRL strategies, including rehearsal, elaboration, and organization strategies for both middle school students and college students (Pintrich, 1999). Based on the study findings, it was concluded that self-efficacy promotes and sustains SRL processes. Therefore, students who have high self-efficacy, characterized by being more persistent and hard-working, tend to use more SRL strategies than those who have low self-efficacy (Zimmerman, 2000). Students with low self-efficacy beliefs are more likely to give up tasks when they face challenges; students with high self-efficacy are more likely to participate in tasks (Schunk, 1990). Self-efficacy represents a significant predictor of academic achievement (Ahmad & Safaria, 2013; Akram & Ghazanfar, 2014; Enny & Pujara, 2019; Goulao, 2014; Hassan et al, 2015; Honicke & Broadbent, 2016; Kolo et al, 2017; Koseoglu, 2015; Meral et al, 2012; Shkullaku, 2013).

Concerning the relation between self-efficacy and achievement, research has been performed at various levels of education (e.g., primary, secondary, tertiary), several areas (foreign language learning, writing, mathematics, computing science), and different ability levels (average, below average). These studies (Carmichael & Taylor, 2005; Lane et al., 2004; Pajares, 1996, 2003; Pajares & Miller, 1994; Relich et al., 1986; Schunk, 2003) show the direct and indirect effects of students' self-efficacy on their achievements, relating to several grades and ability levels.

Another study revealed that students who have high self-efficacy are more confident and are expected to achieve higher academic achievement, which suggests that self-efficacy plays a critical role in predicting academic achievement (Komarraju & Nadler, 2013). Students become proactive learners who incorporate various self-regulated learning strategies (Cleary & Zimmerman, 2004). In a recent study in the higher education context, a strong positive correlation was found between students' self-efficacy and academic achievement in different colleges and universities in the United Arab Emirates (Moussa, 2023). Moreover, students' self-efficacy was detected as a significant predictor of students' academic achievement.

The main strength of previous studies on motivation is the rooting in SDT. This theory is considered one of the major motivational frameworks that brings a powerful theoretical foundation and rigorous validation in many empirical studies in second language learning, education, etc. SDT is grounded in clearly defined core constructs, such as intrinsic motivation, extrinsic motivation, amotivation, autonomy, competence, and relatedness, that have been consistently validated across different contexts in many studies. The broadness of the empirical findings is supported by studies conducted across various education contexts and countries (Chile, Israel, Pakistan, Turkey, etc.), including large quantitative studies (Espinoza et al., 2024; Turhan, 2020). SDT provided a broad and well-validated motivational framework (Al-Hoorie et al., 2024).

Despite all the strengths of the previous empirical studies, several limitations can be highlighted. The first limitation is the dominance of the quantitative research design; as a result, there were only few qualitative and mixed-methods studies, which could provide a more comprehensive understanding of motivation and its relationship with academic achievement. The second limitation is related to the focus on self-report measures of motivation, where the possibility of social desirability in answers could affect the final findings. At the same time, there is no discussion on the alternative research designs and measurement approaches. The third limitation is connected to the integration of results in

different countries and cultural settings, assuming that basic psychological needs are universal across cultures, with the main focus on autonomy as a basic psychological need, while the basic psychological needs can be expressed differently in individualist and collectivist cultures.

Similarly, previously conducted studies on SRL utilised a coherent theoretical framework grounded in socio-cognitive theory (Bandura, 1986; Pintrich, 2010; Zimmerman, 1994). Many studies were conducted across different educational levels, from middle school to higher education, providing consistent empirical support to highlight a positive relationship between self-efficacy, SRL strategies, and academic achievement (Moussa, 2023; Pintrich, 1999; Zimmerman, 2000). These empirical studies cover various contexts, including mathematics, writing, computing, and language learning, which enrich the generalizability of the findings and possibilities for practical implications.

Regardless of the previous empirical studies' strengths, a few limitations can be highlighted. While research across primary and secondary education is well-presented; there is a limited number of studies in higher education and international student contexts. Studies mostly rely on self-report questionnaires; the final results could be affected by social desirability bias. Although all studies were conducted in different countries, there is no critical review of cultural factors that may affect SRL, SLR strategies, and self-efficacy.

Even though many empirical studies have been conducted on motivation and SRL across different educational levels (primary, secondary, higher), different contexts (second language learning, mathematics, sport, etc), and different countries, where relationships between motivation, high-quality classroom engagement, and positive school functioning have been discovered (Deci & Ryan, 1985, 2000; Reeve, Deci, & Ryan, 2004; Ryan & Deci, 2000, 2002; Vansteenkiste et al., 2010). Relationships between self-efficacy, SRL strategies, and academic achievement have been researched (Pintrich, 1999; Pintrich & De Groot, 1990; Yusuf, 2011); however, research on academic motivation and self-regulated learning in the context of Higher Education and study abroad is still limited. Moreover, the population of international students is still underrepresented in the research.

Most of the studies have been conducted among domestic students applying a quantitative research design, mainly relying on self-report questionnaires. Even though mixed-methods design can provide a more comprehensive understanding of academic motivation and SRL among international students, there is still a limited application of this design to these two phenomena. This study aims to analyse academic motivation and self-

regulated learning among international students in Higher Education, applying a mixed-methods design.

The study presents findings on academic motivation and self-regulated learning, highlighting the gaps in the knowledge of these phenomena among international students and the dominant focus of previous empirical studies on the domestic student population. Considering the rapid growth of international students worldwide and in Hungary due to the Internationalisation of higher education, there is a rising demand for the analysis of academic motivation and SRL among international students, an increasing number of educators are paying attention to the necessity of helping students become motivated and self-regulated learners (Boekaerts & Cascallar, 2006; Kim, Raza, & Seidman, 2019; Pintrich 2000; Schunk 2005; Winardi, 2024; Yue & Lu, 2022). Emphasizing the importance of intrinsic motivation, satisfaction of basic psychological needs during study, application of self-regulated learning strategies, and self-efficacy.

Chapter 3: Methodology

3.1 Introduction

This chapter explains how the sequential explanatory mixed-methods design was employed to address the research questions, building on the theoretical framework from Chapter 2. The chapter starts with an overview of research design and its application, and the rationale for the methodology. Detailed descriptions of the quantitative and qualitative studies are presented separately, including participants, instruments, methods, data collection, and analysis. Further quantitative and qualitative results were integrated through the joint display integration. Ethical considerations were also discussed.

3.2 Study Aim and Research Questions

This study aims to analyse academic motivation and self-regulated learning among international students who study at Hungarian universities using a mixed-methods design. The sequential explanatory mixed-methods design represents a phased approach that begins with quantitative data collection and analysis, which is followed by a second phase where qualitative data are collected and analysed to explain quantitative results to get a more comprehensive understanding of academic motivation and self-regulated learning among international students at Hungarian universities (Guetterman & Manojlovich, 2024). This sequential explanatory mixed-methods design helps to provide more complex insights into academic motivation and self-regulated learning by incorporating quantitative, qualitative, and integrative perspectives, compared to the use of a single approach.

To address the aim of the study, the following research questions were articulated:

RQ1. What is the international students' academic motivation to study at Hungarian universities?

RQ2. What are the characteristics of self-regulated learning among international students?

RQ3. What characterizes the differences in academic motivation and self-regulation of learning among international students based on the level of study?

RQ4. What views do international students express in connection with their academic motivation?

RQ5. What views do international students express in connection with basic psychological needs, such as competence, autonomy, and relatedness?

RQ6. What views do international students express regarding self-regulated learning while studying at Hungarian universities?

RQ7. To what extent do the qualitative interviews with international students serve to contribute to a more comprehensive understanding of quantitative results on academic motivation and self-regulated learning among international students at Hungarian universities via integrative mixed-methods analysis?

3.3 Research Design

Traditionally, quantitative and qualitative methodological designs have been largely used in opposing stances in social science research. Quantitative studies propose the measurement and analysis of causal relationships between variables. And it is often associated with the generalization of findings to the population. In contrast, qualitative methods allow to articulate many truths in meaningful social actions, emphasizing how social experiences are created and given meanings (Denzin & Lincoln, 2003). However, sometimes the phenomena can be too complicated to be captured within the singularity of a quantitative or qualitative approach. The mixed-methods design was utilised in this study due to the complexity of academic motivation and self-regulated learning.

The mixed-methods research involves the collection of both quantitative and qualitative data in response to the research questions. Mixed-methods research includes rigorous methods in data collection, data analysis, and interpretation of both quantitative and qualitative data. The two forms of data are integrated into the research design (Creswell & Creswell, 2018). According to Williams (2007), the mixed-methods design allows researchers to design a single research study that answers questions regarding the nature of the phenomenon from a participant's point of view as well as the relationship between measurable variables.

A mixed-methods design was applied to answer the research questions of this study. The complexity and multidimensional nature of academic motivation and self-regulated learning are seen in the theoretical background. The mixed-methods research design can provide a more complex understanding of academic motivation and self-regulated learning among international students. The mixed-methods research combines a structural framework that gives accurate measures of academic motivation and self-regulated learning and provides techniques for getting into the depth of the personal experience of students for better, significant contextual interpretation (Dörnyei, 2007).

Previous studies on academic motivation and self-regulated learning have usually been conducted from a quantitative or qualitative perspective. At the same time, a lack of mixed-methods research on academic motivation and self-regulated learning among international students can highlight the opportunity to conduct mixed-methods research to get insights into these problems. The mixed-methods research approach informed by the pragmatist worldview constitutes a good fit for this study due to its relevance to appropriately address the research problem, purpose, and research questions (Creswell & Clark, 2011).

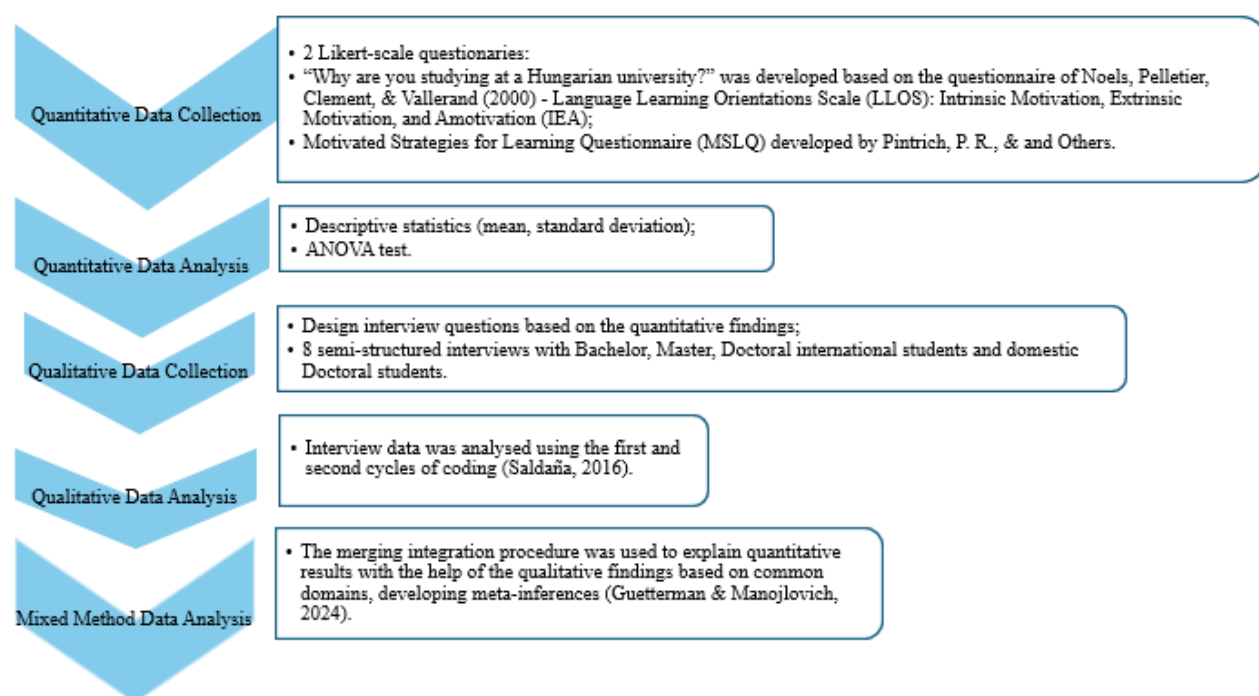
3.4 The Explanatory Sequential Mixed-Methods Design

The explanatory sequential mixed-methods design was applied in the study to provide a comprehensive analysis of the research problem. This design involved a two-phase data collection project. The quantitative data were collected in the first phase, results were analysed and used to conduct the second qualitative phase. Qualitative research was executed to provide further explanation for the quantitative research results (Barnes, 2019; Creswell, 2014). The data collection proceeded with rigorous quantitative sampling in the first phase and with purposeful sampling in the second, qualitative phase.

The quantitative and qualitative databases were analysed separately, and quantitative data were used to plan the further qualitative phase. One database explained the other, and the data collection could be spaced out over time (Creswell & Creswell, 2018). Therefore, an explanatory sequential mixed-method design made it possible to collect quantitative data about academic motivation and self-regulated learning among international students to provide generalizable results about two phenomena and their relation in the first phase, and after that, move to the qualitative questions in the second phase for a more complex understanding of participants' perspectives of the investigated phenomena. Hence, the large-scale questionnaire survey was followed by a semi-structured interview study to investigate some of the quantitative findings using qualitative data. Figure 4 represents a mixed-methods research framework for examining academic motivation and self-regulated learning among international students in Hungary.

Figure 4

Mixed-Methods Research Framework for Analysing Academic Motivation and Self-Regulated Learning Among International Students in Hungary



Note. Based on Creswell and Creswell, 2018

The strengths and weaknesses of mixed-methods designs have been widely discussed in the literature (Creswell, 2002; Creswell et al., 1996; Green & Caracelli, 1997; Moghaddam et al., 2003). The key strength of the explanatory sequential mixed-methods design is the possible explanation of the mechanism - how the variables interact - in more depth through the qualitative follow-up. This design can be implemented by a single researcher, as it sequentially proceeds from one stage to another. A sequential explanatory mixed-methods design is especially useful when unexpected results arise from a quantitative study (Morse, 1991). Interesting results on the dominant and less popular types of motivation to study abroad, the most and least popular self-regulated learning strategies, and significant differences in these two phenomena based on the level of study from the quantitative study could be explained from the participants' point of view in the qualitative study, providing a more comprehensive understanding on academic motivation and self-regulated learning among international students in Hungary.

However, some challenges must be considered during the planning of research (Creswell & Creswell, 2018). The first challenge of all mixed-methods studies is to establish the validity and reliability of the scores from the quantitative measures and to

discuss quality control of the qualitative findings. To explain the quantitative results in more depth, it is necessary to select the qualitative sample from individuals who participated in the quantitative sample. This maximizes the importance of one phase explaining the other (Creswell & Creswell, 2018). For this reason, a qualitative sample for the interview phase was selected from students who participated in the quantitative sample.

Another challenge of the mixed research approach is the need for more time, effort, and money, as it includes two phases of research at least (Molina-Azorin, 2016). In an explanatory sequential mixed-methods design, the qualitative data are dependent on the quantitative because the quantitative data are collected and analysed first and used to conduct the second phase. This design requires more time to be completed than the mixed-methods convergent design, where qualitative and quantitative data are collected in parallel. That is why both phases of sequential mixed-methods design have to be properly planned and time-managed. Therefore, this study was properly planned with the help of Easy Project software (Easy Project Software, n.d.). This software helped with planning and time management, visualizing research timeline with tasks through dashboards and Gantt charts.

The third challenge of mixed-methods research is related to the requirements of the researcher's skills, talents, and experiences, as this research requires learning about new research methods and techniques to be qualified to conduct both the quantitative and qualitative parts of research (Fetters & Molina-Azorin, 2017; Molina-Azorin, 2016). Despite all challenges, the mixed-methods design can be properly executed with organised planning and dedication to provide a deeper understanding of the research problem.

3.5 Population, Sample, and Sampling – Quantitative Study

Concerning the purpose of the study to analyse academic motivation and self-regulated learning among international students at Hungarian universities, the population of international students in Hungary was chosen. Initially, all international students who studied at a Hungarian university were considered as the general population, including scholarship holders and self-financed students. According to the UNESCO statistics, 32,000 international students study in Hungary (statista.com).

In this study, it was quite difficult to obtain a random sample of participants; that is why convenience sampling was applied. Convenience sampling is a type of non-random sampling. This sampling is based on certain practical criteria that members of the target

population meet, such as easy accessibility, availability at a given time, geographical proximity, or the willingness to participate. These criteria are included in the study (Dörnyei, 2007). The sampling procedure involved convenience sampling based on the students' location in Hungary, studying at Hungarian universities on a full-time basis, being scholarship holders for international students, their accessibility, and willingness to take part in this research.

The target population of the study had to be eligible with the following criteria in international students' contexts:

- All participants could provide information-rich data (Patton, 1990, p.169);
- All participants studied at least one semester at a Hungarian university, to ensure that a significant time had passed for adaptation to university;
- International students study on a scholarship basis;
- All participants could properly communicate in English.

To recruit international students, the convenience sampling technique was used. The total number of participants in the study was 300 full-time Stipendium Hungaricum Scholarship holders from a range of Hungarian universities (e.g., University of Debrecen, Eötvös Loránd University, Eszterházy Károly University, Corvinus University of Budapest, University of Pécs, Szent István University, Budapest University of Technology and Economics, and Budapest Business School). International students came from different countries: Albania, Azerbaijan, Bangladesh, Bosnia and Herzegovina, Brazil, China, Ecuador, Egypt, Eritrea, Ethiopia, Georgia, Ghana, India, Iran, Iraq, Jordan, Kazakhstan, Kenya, Kyrgyzstan, Laos, Lebanon, Malaysia, Mexico, Mongolia, Japan, Serbia, Montenegro, Morocco, Myanmar, Nigeria, Oman, Pakistan, Palestine, Philippines, Russia, Syria, South Africa, Tunisia, Tanzania, Turkey, Ukraine, Uzbekistan, Vietnam, Yemen. In total from 44 countries.

The SHSP, which expanded from 1,200 scholars in 2015 to almost 12,000 in 2022, is Hungary's most successful initiative for attracting international students (Education Office, Higher Education Information System). Its rapid growth ensured both the representativeness of the SHS population and an adequate sample size, while the researcher's presence in Hungary facilitated efficient data collection.

Regarding gender representation, 60% of the respondents are male international students ($n = 180$), and 40% of the respondents are female international students ($n = 120$). As convenience sampling was applied in this study, based on students' willingness and

availability to participate, male students were more open and willing to take part in the research.

Three age groups were formed based on the participants' age. The youngest group consisted of 32.6% from 19 to 24 years (n = 98), the largest group included 40.2% of international students aged 25 to 30 years (n = 121), while the oldest group consisted 28.2% of students older than 31 years (n = 85). Meanwhile, each level of study is equally represented – (n = 100): bachelor's, master's, doctoral - 33.3%. Table 2 represents international students' demographic data – quantitative sample.

Table 2

International Students' Demographic Data – The Quantitative Sample

Characteristics	Frequency	Percentage
Gender		
Male	180	60%
Female	120	40%
Age		
19 - 24	98	32.6%
25 - 30	121	40.2%
Older 31	85	28.2%
Level of study		
Bachelor	100	33.3%
Master	100	33.3%
Doctorate	100	33.3%
Scholarship status		
Scholarship holder	100	100

Note. Own findings

International students studied a variety majors: Finance and Accounting, Computer Science, International Relations, Engineering, Linguistics, Pharmacy, Economics, Physics, Media and Communication, Management, Agriculture, Business,

Social Science, Sociology, Politics, Nursing, Mathematics, Education, Biology, Administration, Chemistry, Cognitive Science, Data analytics, Dentistry, Economics, Earth Science, Literature, Environmental Science, Food science, Law, Language Pedagogy, Marketing, Psychology, Viticulture and Oncology. Students from 35 majors took part in this research.

3.6 Quantitative Instrument

The quantitative phase consisted of the self-reported questionnaires. The questionnaire is often associated with the generalization of findings to the population (Creswell & Creswell, 2018). The key focus of the choice of methods is to provide the best opportunity for answering the research questions (Johnson & Onwuegbuzie, 2004). Two self-reported questionnaires were designed to assess academic motivation and self-regulated learning for international students who study at Hungarian universities to get a general overview of these two phenomena. The research questions 1, 2, 3, 4, 5, and the theoretical background of the study led to the selection of these instruments. The main purpose of employing self-assessment questionnaires developed by Noels, Pelletier, Clement, and Vallerand, (2000) - Language Learning Orientations Scale (LLOS): Intrinsic Motivation, Extrinsic Motivation, and Amotivation (IEA) and Motivated Strategies for Learning Questionnaire (MSLQ) developed by Pintrich, P. R., & Others was to answer the research questions with the link to the theoretical background. Another reason for choosing a self-assessment instrument was the generalization of findings to the population, time saving, and reliability. Appendix B represents a full view of the instrument.

The questionnaire “Why are you studying at a Hungarian university?” was developed based on the questionnaire of Noels, Pelletier, Clement, & Vallerand, (2000) - Language Learning Orientations Scale (LLOS): Intrinsic Motivation, Extrinsic Motivation, and Amotivation (IEA) subscales to analyse motivation into distinct types along a self-determinant continuum. The instrument was grounded in the self-determination theory, providing the association with the theoretical perspective. This questionnaire was used to collect data on academic motivation among international students who study at Hungarian universities. It is composed of 28 items subdivided into seven subscales assessing three types of intrinsic motivation (intrinsic motivation to get knowledge, accomplishment, and stimulation), three types of extrinsic motivation (identified regulation, external, introjection), and amotivation. All scales were formulated in English. On this

questionnaire, the international students were required to rate, based on a Likert scale, the extent to which the items correspond to why they are studying at Hungarian university.

The collected data from the questionnaire was scored and analysed based on the seven subscales formed on questionnaire of Noels et al. (2000). The reliability of this study was verified by Cronbach's α to demonstrate the internal consistency (Hair et al., 2010). The Cronbach's α values ranged from 0.71 to 0.84, based on reliability analysis of the subscales; all seven subscales had a high reliability, which are more than 0.7 (Dörnyei, 2007). The instrument found an adequate reliability level intrinsic motivation to know ($\alpha = .84$), intrinsic motivation - accomplishment ($\alpha = .75$), intrinsic motivation to experience stimulation ($\alpha = .81$), identified regulation ($\alpha = .72$), introjected regulation ($\alpha = .76$), external regulation ($\alpha = .71$), amotivation ($\alpha = .78$). As shown in Table 3, validation procedures have exhibited strong internal consistency reliability of the instrument (Cronbach alpha coefficient) for the seven subscales. Table 3 represents Cronbach's alpha for the seven motivation subscales.

Table 3

Cronbach's Alpha for The Seven Motivation Subscales

Motivation domain	Internal consistency	Item count	Item example
Intrinsic motivation - to know	.84	4	"I study at a Hungarian university to broaden my knowledge about subjects which appeal to me"
Intrinsic motivation – accomplishment	.75	4	"I study in Hungary for the satisfaction I feel when I solve a problem during my study."
Intrinsic motivation- to experience stimulation	.81	4	"I study in Hungary for the pleasure I experience when I am able to achieve my goals in studying."
Extrinsic motivation - identified regulation	.72	4	"Study is a fundamental part of who I am"

Motivation domain	Internal consistency	Item count	Item example
Extrinsic motivation – introjection	.76	4	“I would feel guilty if I didn’t study.”
Extrinsic motivation - external regulation	.71	4	“I study at a Hungarian university in order to get a more prestigious job later on”
Amotivation	.78	4	“I can’t think of any academic reason for what I am studying.”

Note. Own findings

To shed light on questions about self-regulated learning among international students studying at Hungarian universities, the Motivational Strategies for Learning Questionnaire (MSLQ), developed by Pintrich, Smith, Garcia, & McKeachie (1991), was used. Instruments and Measurement Methods One major contribution to the SRL field is the MSLQ (Pintrich et al., 1993b). The MSLQ is composed of 15 scales, divided into a motivation section with 31 items and a learning strategies (SRL) section with 50 items, which are subdivided into three general types of scales: cognitive, metacognitive, and resource management (Duncan & McKeachie, 2005). One of the strengths of the MSLQ is its combination of SRL and motivation, which offers detailed information about students’ learning strategy use. According to the literature review, the most popular measure used to assess SRL strategy is the Motivated Strategies for Learning Questionnaire (MSLQ) (van de Boom et al., 2007; Chang, 2007; Chang, 2010; Cho & Shen, 2013; Hodges & Kim, 2010; Johnson et al., 2009; Klingsieck et al., 2012; Puzziferro, 2008; Wang & Wu, 2008). Appendix C represents a full view of the instrument.

28 items were chosen for this study and subdivided into seven subscales assessing three types of cognitive strategies (rehearsal, elaboration, organization), three types of resource management strategies (time-management, peer-learning, help-seeking), and efficacy. All scales were formulated in English. In this questionnaire, international students were required to rate, based on a Likert scale, the extent to which the items reported on students’ learning strategies used at the Hungarian university.

A Cronbach’s Alpha reliability analysis was performed to test the internal consistency of each subscale by considering values greater than or equal to .70 as an

acceptable level for data reliability. The Cronbach's α values ranged from 0.71 to 0.86. The instrument found an adequate reliability level for cognitive strategies, such as rehearsal ($\alpha = .71$), elaboration ($\alpha = .79$), organization ($\alpha = .71$), resource management strategies such as time - management ($\alpha = .81$), peer - learning ($\alpha = .84$), help - seeking ($\alpha = .84$), efficacy ($\alpha = .79$). As shown in Table 4, validation procedures have exhibited strong internal consistency reliability of the instrument (Cronbach alpha coefficient) for the seven subscales.

Table 4

Cronbach's Alpha for the Seven Self-Regulated Learning Subscales

Motivation domain	Internal consistency	Item count	Item example
Cognitive strategy – rehearsal	.71	4	When I study for the course at Hungarian university, I practice saying the material to myself over and over;
Cognitive strategy – elaboration	.79	4	When I study for the exam, I pull together information from different sources, such as lectures, readings, and discussions;
Cognitive strategy - organization	.71	4	When I study the readings for the course at my university, I outline the material to help me organize my thoughts;
Resource management strategy - time-management	.81	4	I make sure I keep up with the weekly readings, research, assignments.
Resource management strategy - peer-learning	.84	4	When studying for the course, I often try to explain the material to a groupmate or a friend;

Motivation domain	Internal consistency	Item count	Item example
Resource management strategy - help-seeking	.84	4	If I have trouble learning the material in the university course, I try to do the work with help from other students;
Efficacy	.79	4	I am able to receive an excellent grade in the course

Note. Author's own work.

3.7 Quantitative Data Collection and Analysis

The study began with a quantitative phase, using a survey to collect demographic data, including university, level of study, major, age, gender, scholarship status, country of origin, and level of English language proficiency (Basic, Intermediate, Upper-intermediate, Advanced). Appendix A represents a full view of the demographic questions. The questionnaire was designed in English as it was the medium of instruction for the international students' studies. All participants reported having an Upper-intermediate or Advanced level of English language proficiency, ensuring that they had sufficient language skills to complete the questionnaire. Demographic questions were followed by the questionnaire designed to collect data on academic motivation and self-regulated learning.

The questionnaire was then created using Google Forms and distributed online among international students studying at Hungarian universities. Online questionnaires were sent through social media in a personal message and to the International Community Alumni Hungary group.

Quantitative data were necessary to generalize results to the population of international students in Hungary. Data collection was conducted from 1st of April to 31st of August 2023. A total of 300 responses were collected from international students. Collected quantitative data were statistically analysed in Statistical Package for the Social Sciences (SPSS), applying descriptive statistics (mean, standard deviation). One-way analysis of variance (ANOVA) was used to find the differences, based on the level of study among bachelor's, master's, and doctoral students.

3.9 Methods of Qualitative Data Analysis

This study aimed to investigate international students' perspectives on academic motivation and self-regulated learning. It was conducted to gain insights into the context of higher education in Hungary and to collect information on international students' academic motivation and self-regulated learning across different levels of study.

Research questions:

RQ4. What views do international students express in connection with their academic motivation?

RQ5. What views do international students express in connection with basic psychological needs, such as competence, autonomy, and relatedness?

RQ6. What views do international students express regarding self-regulated learning while studying at Hungarian universities?

3.9.1 Developing the Data Collection Qualitative Instrument

A deductive qualitative approach using a priori codes to analyse qualitative data was used to answer research questions in this study. The relevance of the deductive approach was addressed in light of the generative and receptive role that theory plays in this sequential explanatory mixed-methods design, as theory provides the foundation for the development of interview questions (Bingham & Witkowsky, 2021; Bitekine, 2008; Crabtree & Miller, 1999; Fereday & Muir-Cochrane, 2006; Pearse, 2019). This approach allows the utilization of existing theories of SDT and SRL to examine academic motivation and self-regulated learning among international students at Hungarian universities. This deductive qualitative approach is suited to theory application, testing, and refinement (Gilgun, 2005, 2019).

Moreover, following a deductive approach, the interview protocol was developed based on the literature on SDT and SRL; further, informed by the findings of the student questionnaire. The interview protocol included information on interview time, date, place, interviewee's pseudonyms, level of study, and university. At the beginning, an ice breaker and an introduction to the research were presented, followed by the main interview questions on academic motivation and SRL. The semi-structured nature of the interview schedule in this form provided enough flexibility to vary from the set of prepared questions if an interesting theme appeared during the interviews (Dörnyei, 2007). The final instrument, highlighting four major topics for international students, is presented below with a relevant sections of the theoretical and empirical background, while the complete interview protocol is represented in Appendix D.

1. Academic motivation to study abroad and at a Hungarian university, changing of motivation during the study, and the role of other people in the decision to study at a Hungarian university;
2. Participants' point of view on success and achievement, satisfaction with studying at a Hungarian university;
3. Participants' point of view on the future perspectives with a gain of experience during studying at a Hungarian university;
4. Students' perspective on the intention to discontinue the study, the main reasons, and factors that affected the decision to continue.

Additionally, a codebook was developed during the literature review for structuring analysis (Crabtree & Miller, 1999). The use of a codebook helped to facilitate parsimony of coding by aligning with data that fit a pre-defined theoretical framework. Appendix E represents a full view of the developed codebook of the measured constructs. The codebook attempted to structure the analysis in the detective qualitative approach (Bingham & Witkowsky, 2021; Crabtree & Miller, 1999; Fereday & Muir-Cochrane, 2006; Pearse, 2019). Bernard and Ryan (2010, p. 99) suggest that, for studies with a compact number of codes, each item in the codebook should specify its:

- short description – the name of the code;
- detailed description – a 1–3 sentence description of the coded data's qualities;
- inclusion criteria – conditions of the data that merit the code;
- exclusion criteria – exceptions of the data that do not merit the code;
- typical examples – a few examples of data that best represent the code;
- atypical examples – special examples of data that still represent the code;
- “close, but no” – data examples that could mistakenly be assigned this particular code.

To collect data and gain insights into selected university students' academic motivation and self-regulated learning, a phenomenological approach was adapted, supported by the use of a semi-structured interview guide (Creswell, 2009; Dörnyei, 2007; O'Leary, 2017). The following topics related to students' motivation were covered: motivation to study, views on success during the study, future perspectives, and intentions and reasons to discontinue the study. Topics on self-regulated learning included information on techniques to organize studying and study time, exam preparation, memorizing, coping with difficult situations, and personal strength in study. The following

topics helped to get a comprehensive understanding of participants’ views on academic motivation and self-regulated learning.

3.9.2 Participants

Concerning the purpose of the study - to analyse academic motivation and self-regulated learning among international students at Hungarian universities, the population of international SH students in Hungary was selected. According to the explanatory sequential mixed-methods design, this study included quantitative and qualitative samples. Purposive sampling was necessary to follow the explanatory mixed-methods design (Dörnyei, 2007).

The qualitative sample consisted of individuals who had previously participated in the quantitative sample. This maximizes the importance of one phase explaining the other (Creswell & Creswell, 2018). The qualitative sample included eight participants from five different universities to have an “in-depth qualitative exploration and a rigorous, high-power quantitative examination of the topic” (Creswell & Plano Clark, 2018, p. 220). The qualitative sample consisted of 2.67% of the quantitative. The eight interview participants provided sufficient information to achieve data saturation because no new themes emerged in the final interview.

This sample included four male and four female international students from different universities, including Eötvös Loránd University, University of Debrecen, Ludovika University of Public Service, Eszterházy Károly University, and Budapest University of Economics and Business. Two bachelor's students and one master's student represented the age range of 20 to 24, while another master's student and four doctoral students represented the age range of 31 to 48 years old. To ensure anonymity and confidentiality, participants' real names were replaced with pseudonyms. Table 5 introduces the participants by pseudonyms and provides information on their gender, level of study, and the university’s location.

Table 5

International Students’ Demographic Data – The Qualitative Sample

Pseudonym (gender)	Level of study	University location
Simon (M)	Bachelor	Debrecen
Monika (F)	Bachelor	Eger

Pseudonym (gender)	Level of study	University location
Jerry (M)	Master	Budapest
Dora (F)	Master	Eger
Frederik (M)	Doctoral	Budapest
Katerina (F)	Doctoral	Budapest
Nicolas (M)	Doctoral	Budapest
Veronika (F)	Doctoral	Budapest

Note. Author's own work.

3.9.3 Methods of Qualitative Data Collection and Analysis

Interview data was collected via Google Meet online meetings, as this application is user-friendly, offers extensive online functionality, requires no additional downloads, and ensures security. Interview participant recruitment took place from autumn 2023 to the end of winter 2023. One participant initially confirmed their intention to participate in the interview but did not attend the scheduled meeting; this participant was subsequently replaced. All interviews were scheduled at the earliest convenience for the participant and the researcher's availability. The interviews were recorded between January 2024 and March 2024. Following the research plan, eight interviews were scheduled to include two bachelor's students, two master's students, and four doctoral students, based on their accessibility and willingness to participate. Data analysis confirmed that the data collected from eight participants were rich and sufficient to reach data saturation, as no new themes emerged in the transcripts.

The interview schedule was arranged according to each participant's preferred time. Each interview began with a brief introduction and an icebreaker, during which participants could ask any preliminary questions. Before recording, participants were reminded of the purpose of the interview, their anonymity, and their right to withdraw at any stage, and their option to skip any interview questions if they felt uncomfortable answering. Consent to record the interview was obtained from each participant, and upon agreement, recording commenced. A short introduction was provided at the start of the recording, and participants again provided their verbal consent. The language of the interview was English, as all of the participants demonstrated sufficient English language proficiency to

participate effectively. Table 6 provides an overview of the metadata of the interviews: duration of the interviews, the recording date, and the length of the interview transcripts

Table 6

An Overview of the Students' Interview Data

Participant	Time of recording	Duration	Length of transcript
Simon	March 2024	48 mins	6,660 words
Monika	March 2024	45 mins	4,049 words
Jerry	February 2024	44 mins	6,400 words
Dora	February 2024	40 mins	3,486 words
Frederik	January 2024	63 mins	6,566 words
Katerina	January 2024	55 mins	6,918 words
Nicolas	January 2024	52 mins	6,265 words
Veronika	February 2024	55 mins	5,788 words

Note. Author's own work.

The interview data were analysed through the first and second cycles of coding (Saldaña, 2016). Data were also ensured by a thematic analysis method (Braun & Clarke, 2006). Coding is a cyclical act. Interview transcripts were reread multiple times during the first cycle of descriptive coding to develop the codes within the theories. Description represents the foundation for qualitative inquiry, and its primary goal is to guide the reader to see and hear what the researcher saw and heard in general during interviews. The first cycle of initial coding (Saldaña, 2016) was conducted manually in Excel and generated 335 codes via descriptive coding techniques. Descriptive coding provides essential groundwork for second cycle coding and further analysis and interpretation in mixed-methods research (Creswell, 2009; Creswell & Plano Clark, 2011; Tashakkori & Teddlie, 2003).

After categorizing data at the basic level and providing an organizational grasp of the study, the second cycle coding was performed - pattern coding. Pattern coding defines a way of grouping those summaries into a smaller number of sets, themes, or constructs. (Miles & Huberman, 1994, p. 69). During pattern coding, similarly coded passages were collected from the data corpus. The first cycle codes were reviewed to assess their commonality and assigned to various pattern codes. Pattern codes are used to develop a

statement that describes a major theme from a theoretical background. According to Lichtman (2010), most qualitative studies in education typically generate 80–100 codes, which can be organized into 15–20 categories and subcategories, ultimately synthesizing into five to seven major concepts (p. 194). In this study, 86 codes were generated and organized into 21 categories, which were synthesized into six major concepts. The eight interviews were sufficient to reach data saturation, as no new themes emerged during the final coding.

Before answering the research questions, three additional reliability measures were established. First, two of the interview transcripts - 25% were re-coded a month later using the developed final codes to strengthen intra-rater reliability (Creswell, 2009; 2015). To enhance inter-rater reliability, 12.5% of the interview texts were reviewed by a senior researcher specializing in academic motivation and self-regulated learning, following a review of the established code system. Moreover, the final code system after the first and second rounds of coding was also revised by a senior researcher to confirm coherence and quality of the analysis. All three quality control measures verified that the final code structure represented a valid system of coded interview data.

3.10 Mixed-Methods Analysis

Mixed-methods studies involve three types of analysis— quantitative, qualitative, and integrative mixed-methods to produce results (Guetterman & Manojlovich, 2024). Meaningful integration allows researchers to realize the true benefits of mixed-methods to “produce a whole through integration that is greater than the sum of the individual qualitative and quantitative parts” (Fetters & Freshwater, 2015). Integration is the most important characteristic of mixed-methods research; it refers to the intentional combining of qualitative and quantitative data, methods, results, and interpretation such that the two forms of research become interdependent to address a research question (Bazeley, 2018). As a result of integration, this mixed-methods study answered the following research question: To what extent do the qualitative interviews with international students serve to contribute to a more comprehensive understanding of quantitative results on academic motivation and self-regulated learning among international students at Hungarian universities via integrative mixed-methods analysis.

To integrate findings at the results level, a merging integration procedure was employed, linking quantitative results with the qualitative findings based on common domains and developing meta-inferences (Guetterman & Manojlovich, 2024). Joint display

is one of the most popular tools that helps to develop meta-inferences. Joint displays represent a visual means of integrating quantitative and qualitative data results through matrices and figures to develop meta-inferences (Guetterman et al., 2021). Meanwhile, joint displays provide a framework for integration, breaking down the cognitive process of merging, comparing, relating, and linking qualitative and quantitative data or results to assist in identifying meta-inferences (Guetterman & Moss Breen, 2021).

Joint display analysis represents a strategy for integration, where development of joint displays is iterative; the process of considering what to include involves returning to qualitative or quantitative data. Its results facilitate integration through identifying meta-inferences (Fetters & Guetterman, 2021). Among major types of joint displays, the statistics-by-themes joint display was used to array statistical results by qualitative themes, with one as rows and the other as columns, similar to a crosstabulation. This facilitates relating qualitative and quantitative results to look for patterns in this study (Guetterman et al., 2021).

Quantitative, qualitative, and integrative mixed-methods findings were presented in two joint displays. These joint displays facilitate data integration by visually combining quantitative and qualitative findings. The first joint display represented quantitative data on dominant academic motivation variables, such as motivation to get knowledge and external regulation, less popular resource management strategy – peer-learning, and qualitative findings based on the quotes to provide a deeper understanding why motivation to get knowledge and external regulation the most popular motivations among international students to study at Hungarian universities, and why students apply peer-learning less than others self-regulated learning strategies during their studying.

The second joint display presented quantitative data illustrating significant differences in international students' motivation to study at a Hungarian university and self-regulated learning strategies, based on the level of study. Qualitative findings based on the quotes were used to provide a deeper understanding of quantitative findings, why master's students have significantly higher levels of external regulation compared to bachelor's and doctoral students, why bachelor's students have significantly higher levels of amotivation compared to master's and doctoral students, why doctoral students have significantly lower level of rehearsal cognitive strategy compared to bachelor and master students, who tended apply it more often than doctoral students.

The visual joint displays facilitated the interpretation and investigation of academic motivation and self-regulated learning, highlighting main differences and provided

additional insights that would not have been revealed through quantitative or qualitative data alone (Bustamante, 2019; Peters & Fàbregues, 2023). A table was used to construct, presenting mixed-methods findings visually where statistical results were arrayed by qualitative themes with one as rows and the other as columns, similar to a crosstabulation.

3.11 Ethical Considerations

The research was conducted in higher education, so ethical considerations were managed and processed through a dedicated structure within the institution, as the research ethics committee of ELTE University. The study was under review by the Institutional Research Ethics Committee (Reference number is 2023/72). The description of the research, informed consent form for participants, questionnaires, and interview protocols were provided. Permission to conduct the study was granted by the ELTE Institutional Research Ethics Committee in Hungary, March 2023. The data was collected online by the researcher (May 2023 – March 2024).

According to Burgess (1989), four ethical dilemmas are relevant to educational research: research sponsorship, research relations, informed consent, and data dissemination. I considered these ethical dilemmas through the study.

This study did not apply for sponsorship from governments, national funding bodies, the corporate sector, private organizations, or private individuals. The study was held independently by the researcher without sponsors' influence on aspects of the research process, such as the research purpose, questions posed, and findings of the research.

The second dilemma is the research relations between the researcher and participants in the study. The researcher took care not to exploit vulnerable groups of international students in the research and remained conscious of the effects the research might have on the participants at the university. As Burgess (1989, p 5) proposed, research relations concern questions of access and power; the researcher must exclude possible harm and deception for participants, keep secrecy and confidentiality.

The third dilemma is informed consent - individuals are volunteered to participate in the research. The participants in this research were international students from different countries who studied at Hungarian universities on a full-time basis. The age of those participants was over 18, and their permission to complete the questionnaires and participate in the semi-structured interview was obtained. First of all, all participants were contacted and informed about the aim of the study, why their participation is required, who the researcher is, and how research findings would be utilised. The participants were also

informed that they have the right to, at any stage, withdraw from participating in the research process without providing any reasons for doing so (Lester, Brian, & Shawa, 2017). Cultural, religious, and gender differences were respected. Secondly, trust was built between the researcher and participant to create a comfortable atmosphere for data collection. The procedure of data collection was discussed. All information was gathered to build collaboration with participants. Before the semi-structured interview session, permission to record was also obtained. Together with the interview guide, a consent form, and a brief introduction were prepared and distributed. The consent form consisted of information for participants about the main aim of the study, anonymous participation, and the possibility to withdraw their participation at any time during the study. The consent form included information that the interview would be recorded by the researcher, and that the recordings would be deleted once the interview was transcribed. For ice breaking at the beginning of the interview, a brief introductory paragraph was prepared to be delivered to each participant, to let them know about the aim of the study, the duration of the interview, and a non-judgmental approach to share their experience.

The fourth dilemma is data dissemination, including a range of aspects such as confidentiality, the extent to which data can be reported and used by policymakers, and in educational practice (Lester, Brian, & Shawa, 2017). All data was analysed concerning privacy, and the researcher ensured that all participants had the right to anonymity and confidentiality. The following actions were taken to secure the anonymity and confidentiality of the participants throughout the research project:

- The developed codebook during the literature review was regularly updated for data analysis.

- All collected data - questionnaire responses, audio interview recordings, interview transcripts, and reflexive journal are stored under a password in a secured laptop. All data will be destroyed after five years of the completion of research. Both quantitative and qualitative data have been secured and kept under a password; looking at the data is strictly prohibited for anyone.

3.12 Conclusion

Chapter 3 stated the methods to conduct a sequential explanatory mixed-methods design study in Hungary. This chapter provides an overview of the study aim, research questions, research design with a focus on the explanatory sequential mixed-methods

design, and challenges associated with mixed-methods studies. This chapter also details the population, sample, sampling, and quality assurance in sampling.

To answer the first three research questions, quantitative instruments, such as self-reported questionnaires, were used. The questionnaire “Why are you studying at a Hungarian university?” was developed based on the questionnaire of Noels, Pelletier, Clement, & Vallerand, (2000) - Language Learning Orientations Scale (LLOS): Intrinsic Motivation, Extrinsic Motivation, and Amotivation (IEA), Motivated Strategies for Learning Questionnaire (MSLQ) developed by Pintrich, P. R., & others was utilised. 300 responses from international students were collected in total.

Qualitative data were collected through eight semi-structured interviews. In line with a sequential explanatory mixed-methods design, quantitative analysis was presented first, followed by analysis of qualitative data and mixed-methods data analysis. Chapter 3 was closed by providing information on data management and ethical considerations.

Chapter 4: Results and Discussion

This chapter outlines the study's findings, organized around the research questions. It includes results from the quantitative analysis, followed by the qualitative analysis findings. Following the discussion of both findings. The chapter concludes with the integration of mixed-methods findings and the development of key insights presented in the form of a joint display.

4.1 Background Analysis on the Variables

In the present study, background variables such as level of study, age, and gender were included to discover significant differences in academic motivation and self-regulated learning among international students at Hungarian universities. However, variables of gender and age were excluded from the main analysis for the following reasons. First, the age variable was found to be closely associated with a level of study; bachelor's students tend to represent the youngest group, followed by master's students, and the oldest group was represented by doctoral students. So, I considered the main focus on the three formed groups based on the level of study - bachelor's, master's, and doctoral students, instead of the different age groups.

Second, before conducting a paired samples t-test by gender, the normality of data distribution was checked. The Kolmogorov-Smirnov and Shapiro-Wilk distribution tests were performed ($p > .05$) to evaluate normal distribution. As a result, most of the values of the Kolmogorov-Smirnov test are above .05 except for the pair Rehearsal - Elaboration, where the value was slightly below. Values of the Shapiro-Wilk test were all above .05. Detailed tables are represented in Appendix F.

Third, for the purpose of comparing international students' academic motivation and self-regulated learning with respect to gender, male and female independent sample t-tests were executed. Two separated paired-samples t-tests were conducted to discover significant differences in academic motivation and self-regulated learning by gender. Table 7 presents that there is no significant difference between the variable of the students' gender and academic motivation.

Table 7

Independent Sample Test of International Students' Academic Motivation with Respect to Gender

		Levene's Test for Equality of Variances		t-test for Equality of Means	
		F	Sig.	t	df
Identification	Equal variances assumed	.059	.808	.947	298
	Equal variances not assumed			.927	238.056
Knowledge	Equal variances assumed	6.405	.012	1.725	298
	Equal variances not assumed			1.633	207.729
Amotivation	Equal variances assumed	15.215	.000	-1.154	298
	Equal variances not assumed			-1.094	209.346
Introjection	Equal variances assumed	.493	.483	.444	298
	Equal variances not assumed			.448	267.229
External	Equal variances assumed	1.035	.310	.060	298
	Equal variances not assumed			.061	266.200
Stimulation	Equal variances assumed	11.223	.001	1.369	298
	Equal variances not assumed			1.294	206.548
Accomplishme	Equal variances	9.852	.002	1.856	298

		Levene's Test for Equality of Variances		t-test for Equality of Means	
		F	Sig.	t	df
nt	assumed				
	Equal variances not assumed			1.756	212.283

Note. Author's own work.

An independent sample t-test was conducted to examine the differences in international students' academic motivation across seven subscales by gender. As a result, there is no significant difference between the variable of the students' gender and identified regulation ($F=0.059$; $p=.346$), motivation to get knowledge ($F=6.405$; $p=.012$), and amotivation ($F=5.214$; $p=.276$). Similarly, there is no significant difference between gender and introjected regulation ($F=0.6$; $p=.657$), external regulation ($F=1.035$; $p=.957$), motivation to get simulation ($F=1.223$; $p=.197$), and motivation to accomplish ($F=9.852$; $p=.079$). Consequently, no further analysis was conducted with respect to gender, as there is no significant difference in academic motivation among male and female international students.

For the purpose of comparing international students' self-regulated learning at Hungarian universities with respect to gender (male or female), an independent sample t-test was conducted. Table 8 shows that there is no significant difference between the variable of the students' gender and self-regulated learning.

Table 8

Independent Sample Test of International Students' Self-Regulated Learning With Respect to Gender

		Levene's Test for Equality of Variances		t-test for Equality of Means	
		F	Sig.	t	df
Efficacy	Equal variances assumed	.486	.486	1.301	298
	Equal variances not assumed			1.284	245.987
Rehearsal	Equal variances	.891	.346	1.361	298

		Levene's Test for Equality of Variances		t-test for Equality of Means	
		F	Sig.	t	df
assumed					
Equal variances not assumed				1.322	231.354
Elaboration	Equal variances assumed	.096	.757	.573	298
	Equal variances not assumed			.567	257.808
Organizing	Equal variances assumed	.000	.996	.238	298
	Equal variances not assumed			.238	257.803
Time management	Equal variances assumed	.001	.996	.985	298
	Equal variances not assumed			.971	256.666
Peer learning	Equal variances assumed	2.756	.098	1.224	298
	Equal variances not assumed			1.268	237.653
Help-seeking	Equal variances assumed	.512	.475	1.295	298
	Equal variances not assumed			1.281	246.12

Note. Author's own work.

An independent sample t-test was conducted to examine differences in international students' self-regulated learning across seven subscales by gender. As a result, there were no significant differences between the variables of the students' gender and efficacy ($F=0.486$; $p=.195$), rehearsal ($F=0.891$; $p=.175$), and elaboration ($F=0.096$; $p=.567$). Similarly, there is no significant difference between gender and organizing cognitive strategy ($F=0.000$; $p=.812$), time management ($F=0.001$; $p=.326$), peer learning ($F=0.222$; $p=.556$), and help-seeking ($F=0.512$; $p=.475$). Based on these results, no further analysis

was conducted with respect to gender, as there is no significant difference in self-regulated learning among male and female international students.

4.2 RQ1 - What Is the International Students' Motivation to Study at Hungarian Universities?

The collected data on the academic motivation of international students who had studied at Hungarian universities were scored and analysed based on Noels et al. (2000) questionnaire. Intrinsic motivation, extrinsic motivation, and amotivation were represented in seven subscales: intrinsic motivation to get knowledge, stimulation, and accomplishment, for extrinsic motivation, identification, introjection, and external regulation, and amotivation. For the purpose of comparing mean scores across seven academic motivation subscales, paired-samples t-tests were performed. Table 9 represents the results of the tests.

Table 9

Paired-Samples t-Tests Across Seven Academic Motivation Subscales

		Paired Differences			
		95% Confidence Interval of the Difference	t	df	Sig. (2-tailed)
Pair 1	Identification - Knowledge	-.14868	-5.844	299	.000
Pair 2	Identification - Amotivation	2.13547	26.433	299	.000
Pair 3	Identification - Introjection	1.34828	21.983	299	.000
Pair 4	Identification – External	-.02546	-2.533	299	.012
Pair 5	Identification - Stimulation	-.25074	-9.453	299	.000
Pair 6	Identification – Accomplishment	.20144	3.107	299	.002
Pair 7	Knowledge - Amotivation	2.35970	29.402	299	.000
Pair 8	Knowledge – Introjection	1.58022	24.262	299	.000
Pair 9	Knowledge – External	.20057	2.390	299	.017
Pair 10	Knowledge – Stimulation	-.03419	-3.122	299	.002
Pair 11	Knowledge – Accomplishment	.42568	8.747	299	.000
Pair 12	Amotivation – Introjection	-.61069	-10.595	299	.000
Pair 13	Amotivation – External	-1.96247	-29.713	299	.000

		Paired Differences			
		95% Confidence Interval of the Difference	t	df	Sig. (2-tailed)
Pair 14	Amotivation – Stimulation	-2.15718	-30.849	299	.000
Pair 15	Amotivation – Accomplishment	-1.71345	-24.340	299	.000
Pair 16	Introjection – External	-1.23144	-22.125	299	.000
Pair 17	Introjection – Stimulation	-1.43938	-26.645	299	.000
Pair 18	Introjection – Accomplishment	-1.00231	-19.603	299	.000
Pair 19	External – Stimulation	-.11938	-4.795	299	.000
Pair 20	External – Accomplishment	.31974	5.683	299	.000
Pair 21	Stimulation – Accomplishment	.50376	13.580	299	.000

Note. Author's own work.

International students demonstrated higher motivation to get knowledge than introjected regulation ($p < .001$), than external regulation ($p = .017$), identified regulation ($p < .001$), motivation to accomplish ($p = .002$), and amotivation ($p < .001$). Therefore, students were motivated more by the motivation to get new knowledge and discover ideas than external pressure, incorporating personal reasons to carry out studying activity, and motivation to achieve goals. At the same time, students had higher motivation to enjoy the learning experience more than to get new knowledge ($p = .002$). International students presented a higher level of identified regulation than introjected regulation ($p < .001$), motivation to accomplish ($p = .002$), and amotivation ($p < .001$). Students were motivated to study at Hungarian universities by personal relevant reasons more than pressure from family, professors, or friends; this personal motivation is higher than the motivation to achieve goals. Moreover, international students demonstrated a higher external regulation compared to identified regulation ($p = .012$), motivation to accomplish ($p < .001$), and amotivation ($p < .001$).

Students were motivated more by instrumental goals to study at Hungarian universities, such as higher education certification, opportunity to get a scholarship, future career prospects, possibility to travel, than personal relevant reasons to study in Hungary,

and achieving goals. In summary, international students showed higher levels of intrinsic motivation scales, such as motivation to accomplish, get knowledge, and get stimulation, compared to other scales, higher levels of identified and introjected regulations compared to amotivation. International students demonstrated their motivation to study at Hungarian universities, and did not expect to discontinue their studies. The following results were supported by descriptive statistics.

The participants in the study endorsed more items related to stimulation of intrinsic motivation ($M = 4.21$, $SD = 0.68$), after that to motivation to get knowledge ($M = 4.11$, $SD = 0.7$), external regulation ($M = 4$, $SD = 0.79$), identified regulation ($M = 3.89$, $SD = 0.71$), than to motivation to accomplish ($M = 3.77$, $SD = 0.85$), followed by introjected regulation ($M = 2.65$, $SD = 0.95$), and amotivation ($M = 1.9$, $SD = 0.86$). Table 10 depicts participants' response patterns on the seven motivation subscales.

Table 10

Descriptive Statistics on International Students' Academic Motivation

	N = 28	Mean	Std. Deviation
1. Motivation to get stimulation		4.21	0.68
2. Motivation to get knowledge		4.11	0.7
3. External regulation		4	0.79
4. Identified regulation		3.89	0.71
5. Motivation to accomplish		3.77	0.85
6. Introjected regulation		2.65	0.95
7. Amotivation		1.9	0.86

Note. Author's own work.

The results of the analyses suggest that international students' motivation can be reliably assessed using the intrinsic and extrinsic subtypes outlined by Deci and Ryan (1985) and Vallerand (1989; 1992). The fact that this instrument seems to work well in the study abroad context in Hungary indicates that international students demonstrated a higher level of intrinsic motivation than extrinsic motivation or amotivation.

The dominant type of motivation to study at Hungarian universities was motivation to get stimulation, which relates to motivation based simply on the sensations stimulated by performing the different tasks, such as aesthetic fun and excitement, or appreciation.

For example, international students demonstrated joy while discussing their studies, projects, or homework with each other; they experienced positive feelings while studying at Hungarian universities. The next dominant type of motivation is getting knowledge through studying at a Hungarian university. These students participated in study activities for the feelings associated with exploring new ideas and deepening their knowledge. These students enjoyed the feeling of acquiring new knowledge in their fields of study. The motivation of getting knowledge can be considered as one of the main pull factors for international students to study at Hungarian universities. And then external regulation was also named by students as a source of their studying activity. External regulation represents those activities that are determined by sources external to the students, such as an opportunity to get a scholarship or cost of living in a foreign country, to get an international certificate of higher education, more opportunities for career development, an opportunity to travel, and other tangible benefits. If the reason for studying at a Hungarian university was taken away, there would be no incentive to continue the engagement in this process.

Followed by identified regulation, this is the most self-determined form of extrinsic motivation. At this point, international students invested energy in study activities because they had chosen to do so for personally relevant reasons. These personal reasons could vary from the desire to get a title to enhance future career opportunities in different sectors. In this situation, international students would carry out studying because of its integral part of how they define themselves: as bachelor's, master's, or doctoral students, who study abroad. For instance, students who feel that pursuing a degree at a Hungarian university is an important aspect of professional development will persist in learning activities. The next type was motivation of accomplishment. So international students attempted to master a task or achieve their studying goals (Vallerand, 1997; Vallerand et al., 1989; Vallerand et al., 1992). They felt satisfaction with passing the examination in English, participating in conferences, completing homework and different tasks, and solving problems while studying. At the same time, some of the students were motivated by introjected regulation. They performed study activities due to some type of pressure that had been incorporated into the self, so they obliged themselves to carry out studies at a Hungarian university. The source of the pressure is internal, but it is not self-determined, because the people are reacting to external pressure, not acting based on personal choice (Vallerand, 1997). Students could be motivated to study due to the pressure from family, university teachers, and professors. These students declared that they study in Hungary because they would

feel ashamed in front of their professors or family if they did not take the opportunity to study in Hungary.

These international students demonstrated a low level of amotivation. Consider that the high level of amotivation refers to the situation in which students see no relation between their actions and the consequences of those actions when the consequences are seen as arising as a result of factors beyond their control. It can be concluded that students in this research mostly saw the relationship between their study actions and the consequences of those actions; they had different reasons, intrinsic or extrinsic, for performing the study at a Hungarian university. They would not be expected to quit the activity as soon as possible or act passively following formal university requirements and procedures.

Several previously conducted studies support the results of this research, related to intrinsic and extrinsic motivations. International students were also motivated by getting better future career opportunities, associated with external regulation, professional development, and language proficiency progress associated with motivation to get knowledge (Khudur, 2019). Future career opportunities could be associated with external regulation. Professional development and language proficiency progress could be associated with the motivation to acquire knowledge. In another study, motivational domains for international students to study were personal motives, geo-academic motives, financial motives, family, and future expectations (Casas Trujillo et al., 2020). Personal motives were associated with the perception that studying abroad helps students to become more mature and test their ability to adjust to different situations and new circumstances. These motives could represent intrinsic motivation – accomplishment. Geo-academic motives were related to the chance to achieve a high level of education, broaden their horizons, and continue studies in a better educational system. These motives could also be associated with the motivation of getting knowledge. Financial motives were related to external regulation. So, students were motivated to get knowledge and accomplish, moreover, motivated by external resources external to them. Also, foreign students' motivation and expectations were analysed. Five motivation types influence expectations; these five motivation types were reference groups, self-realization, getting to know the culture, integration into the Hungarian community, and gaining knowledge (Kéri, 2018). All five types represent intrinsic motivation as a dominant type.

Similar results were received in the study among doctoral students conducted by Tempus Public Foundation (Attraction and support of international PhD students, lecturers

and researchers in Hungary: state-of-the-art, challenges and areas for improvement, 2022) to discover the motivation of the international academics to move to Hungary for study or work at a Hungarian higher education institution. The data set was compiled from several countries in Central and South-East Europe, including Bulgaria, Croatia, the Czech Republic, Hungary, North Macedonia, Poland, Romania, Serbia, Slovakia, and Slovenia. Results of the study showed that doctoral students were motivated by acquiring knowledge and specific know-how from good practice, the possibility to work with outstanding scientists or lecturers in the field, and the enhancement of future employment and career opportunities (Attraction and support of international PhD students, lecturers and researchers in Hungary: state-of-the-art, challenges and areas for improvement, 2022). Motivation for getting knowledge through studying at a Hungarian university was the dominant factor, followed by external regulation – future career prospects.

In conclusion, the investigation of international students' motivation to study at a Hungarian university using the two-factor model of intrinsic and extrinsic motivation proposed by the SDT revealed that international students were motivated to study at Hungarian universities to get stimulation and knowledge, to accomplish, and external regulation. Results of the previously conducted studies in Hungary were aligned with the results of the current research. Motivation for getting knowledge, accomplishment, and external regulation could be considered as the main types of international student motivation to study at Hungarian universities.

4.3 RQ2 - What Are the Characteristics of Self-Regulated Learning Among International Students at Hungarian Universities?

To collect data on self-regulated learning among international students at Hungarian universities, MSRL questionnaire was used. Cognitive strategies, resource management strategies, and efficacy were represented in seven subscales. Cognitive strategies include rehearsal, elaboration, and organizing strategies. Resource management strategies represent time management, peer learning, and help-seeking. For the purpose of comparing mean scores across seven self-regulated subscales, paired-samples t-tests were performed. Table 11 shows the results of the tests.

Table 11*Paired-Samples t-Tests Across Seven Self-Regulated Learning Subscales*

		Paired Differences	t	df	Sig. (2-tailed)
Pair 1	Efficacy - Rehearsal	.32294	4.809	299	.000
Pair 2	Efficacy - Elaboration	-.10633	-4.628	299	.000
Pair 3	Efficacy - Organizing	.01549	1.602	299	.110
Pair 4	Efficacy - Time management	.13112	1.246	299	.214
Pair 5	Efficacy - Peer learning	.35974	5.571	299	.000
Pair 6	Efficacy – Help-seeking	.30198	3.380	299	.001
Pair 7	Rehearsal - Elaboration	-.32504	-9.145	299	.000
Pair 8	Rehearsal - Organizing	-.21279	-6.944	299	.000
Pair 9	Rehearsal - Time management	.20057	4.187	299	.000
Pair 10	Rehearsal - Peer learning	-.09452	.786	299	.432
Pair 11	Rehearsal - Help-seeking	.12842	.704	299	.482
Pair 12	Elaboration - Organizing	.06882	3.717	299	.000
Pair 13	Elaboration - Time management	.17928	5.806	299	.000
Pair 14	Elaboration - Peer learning	.31577	9.081	299	.000
Pair 15	Elaboration - Help-seeking	.48070	7.053	299	.000
Pair 16	Organizing - Time management	.18931	3.301	299	.001
Pair 17	Organizing - Peer learning	.42387	7.274	299	.000

		Paired Differences			
			t	df	Sig. (2-tailed)
Pair 18	Organizing - Help-seeking	.34915	5.621	299	.000
Pair 19	Time management - Peer learning	.30020	4.966	299	.000
Pair 20	Time management - Help-seeking	.24237	2.691	299	.008
Pair 21	Peer learning - Help-seeking	.00891	1.759	299	.080

Note. Author's own work.

International students indicated a higher level of efficacy than rehearsal ($p < .001$), than elaboration ($p < .001$), organizing ($p = .110$), peer learning ($p < .001$), and help-seeking ($p < .001$). Therefore, students believed in their capabilities to organize and execute necessary actions for success during the study more than they used cognitive strategies, such as rehearsal and elaboration. Moreover, students tended to apply cognitive strategies during their learning more than studying with other peers or seeking help from teachers and other students.

At the same time, the most common used cognitive strategy during their studies is elaboration. Students tended to store information in long-term memory by building internal connections between new information and prior knowledge more than rehearsal ($p < .001$) and organizing – involvement into the task ($p < .001$). International students presented applying elaboration more than time management ($p < .001$), peer learning ($p < .001$), and seeking help during their studies ($p < .001$).

Hence, international students applied more organizing cognitive strategies than time management ($p = .001$), learning with peers ($p = .110$), and seeking help during their studies ($p < .001$). Moreover, international students applied time management strategy more often than rehearsal ($p < .001$), peer learning ($p < .001$), and help-seeking ($p = .080$). Similar results were received based on the descriptive statistics – mean and standard deviation.

The participants in the study uphold more items related to elaboration ($M = 4.09$, $SD = 0.66$) and organising strategies ($M = 3.92$, $SD = 0.69$), after that efficacy ($M = 3.86$,

SD = 0.74), then time-management (M = 3.8, SD= 0.71) and help-seeking (M = 3.66, SD= 0.91) of resource management strategies, followed by rehearsal of cognitive strategies (M= 3.64, SD = 0.82), and peer learning of resource management strategies (M = 3.59, CD = 0.86). Table 12 depicts participants' response patterns on the seven self-regulated learning strategies subscales.

Table 12

Descriptive Statistics on International Students' Self- Regulated Learning

	N = 28	Mean	Std. Deviation
1. Elaboration		4.09	0.66
2. Organizing		3.92	0.69
3. Self-efficacy		3.86	0.74
4. Time management		3.8	0.71
5. Help-seeking		3.67	0.91
6. Rehearsal		3.63	0.82
7. Peer learning		3.59	0.86

Note. Author's own work.

The results of this study show that international students' self-regulated learning can be reliably assessed using the Motivational Strategies for Learning Questionnaire (MSLQ) developed by Pintrich, Smith, Garcia, and McKeachie (1991). The fact that this instrument seems to work well in the Hungarian university context indicates that the dominant self-regulated learning strategy among international students was cognitive strategy - elaboration. Elaboration strategies helped students to store information in long-term memory by building internal connections between new information and prior knowledge (Pintrich et al., 1991). For example, international students could relate new material to what they already knew and incorporated information into long-term memory (Pintrich et al., 1991). These international students actively edited notes, summarized, paraphrased, and used note-taking (Pintrich et al., 1991; Talbot, 1997). Also, international students demonstrated a high level of organizing strategy, which is part of cognitive strategies. Organizing strategies are described as an active endeavor that results in the students' involvement in the task (Pintrich et al., 1991; Talbot, 1997). International students could select appropriate information and made connections with the information to be

learnt (Pintrich et al., 1991), highlighted the main points during their learning, and be involved in the task completion (Effeney et al., 2013). Students could draw up charts and tables to organize material. Moreover, used clustering, outlining, grouping, and paying attention to headings, subheadings, diagrams, figures, and graphs (Garcia & Pintrich, 1995; Pintrich et al., 1991).

Organizing strategy was followed by self-efficacy. Students' beliefs and confidence in their own ability affect how they perform actions and try to overcome obstacles. Students did not simply acquire the required skills and abilities to perform a task; they also had the belief in their abilities that they could undertake the task under difficult settings. At the same time, the outcomes of learning and performance depend on an individual's own belief and confidence in his or her capacity to succeed in particular tasks or fields (Bandura, 1997). Meanwhile, international students had the ability to plan study time and tasks. Time management can be essential for academic achievement while studying abroad. Students made a proper weekly schedule to study and read the necessary materials. Students who can effectively manage their time and prioritize responsibilities are more likely to have focused and effective study periods (Effeney et al., 2013). Help-seeking resource management strategy was chosen by international students at Hungarian universities. Help-seeking relates to obtaining assistance from instructors with the aim of overcoming academic challenges (Richardson et al., 2012), such as when students seek clarification from the professor regarding a particular task or learning materials. Help seeking represents an essential component of self-regulated learning, as knowing who, when, and how to ask for assistance. Help-seeking strategy was not a common one among international students. When facing difficulties or in need of explanation, students might try to solve the problem by themselves without asking for help from professors, peers, or academic support services. At the same time, students simply might not know whom or how to ask for help. Meanwhile, providing support can contribute to academic success among international students.

The least popular cognitive learning strategy among international students was the rehearsal strategy. Rehearsal strategies influence the attention and encoding process; these strategies, which are best suited for a simple task to memorize material by repeating and the activation of information in working memory rather than the acquisition of new information in one's long-term memory (Garcia & Pintrich, 1995; Pintrich et al., 1991). That might be explained by the fact that international students have to deal with many different tasks with different levels of complexity.

Peer learning as a part of a resource management strategy was a less popular strategy among international students. This strategy can be described as collaborating with other learners in order to aid one's learning (Effeney et al., 2013). For example, students can get together to study and learn from each other about different topics. International students did not apply this strategy as a common one, which can be explained by the difficulty of cooperation or communication in a foreign country. Simultaneously, studies that examined the effect of peer learning on academic achievement found a significant positive relationship (ChanLin, 2012; Johnson et al., 2009; Michinov et al., 2011; Puzziferro, 2008). So, international students might miss an important opportunity to achieve higher academic achievement with the help of peer learning.

In conclusion, international students actively used cognitive strategies such as elaboration and organizing in their self-regulated learning. Students could relate new material to what they already know and incorporate information into long-term memory. They could integrate knowledge received in their home country and knowledge acquired at Hungarian universities. Meanwhile, students believed in their abilities and confidently perform study actions, tried to overcome obstacles, and undertook the task under difficult settings. Also, international students could plan study time and tasks through time management, which can be essential for academic achievement despite all challenges while studying abroad. Students applied help-seeking, which relates to obtaining assistance from professors and other students with the aim of overcoming academic challenges (Richardson et al., 2012), such as when students seek clarification from the professor regarding a particular task or learning materials. Students can ask their peers or senior students for help. The least popular self-regulated cognitive learning strategy among international students was rehearsal. Students used more complex cognitive strategies, solving more complex tasks in higher education, where memorizing cannot address this need. Surprisingly, students relied less on collaboration with other students in order to aid their learning. While they could ask for help, but not necessarily learn from each other.

4.4 RQ3 - What Characterizes the Differences in Academic Motivation and Self-Regulation of Learning Among International Students Based on the Level of Study?

According to table 6, there was no significant difference between variables of the students' level of study and identified regulation ($F=1.958$; $p>.05$) and motivation to get knowledge ($F=0.98$; $p>.05$). Similarly, there was no significant difference between level of study and introjection ($F=0.32$; $p>.05$), motivation to get stimulation ($F=0.38$; $p>.05$)

and accomplishment ($F=1.23$; $p>.05$). On the other hand, a significant difference was found between the variable of the student's level of study and external regulation ($F=0.01$, $p<.05$). The results of Tukey HSD analysis revealed that master's students have significantly higher levels of external regulation ($M=4.2$) compared to bachelor's ($M=3.91$) and doctoral ($M=3.9$) students. In addition, a significant difference was found between the variable of the student's level of study and amotivation ($F=0.029$, $p<.05$). Bachelor's students had a significantly higher level of amotivation ($M=2.05$) compared to master's ($M=1.73$), and doctoral ($M=1.92$) students. Tables 13, 14, and 15 represent the results of ANOVA of international students' motivation based on the level of study and the results of Tukey HSD.

Table 13

One-Way Variance Analysis of International Students' Motivation Based on the Level of Study

		Sum Of Squares	df	Mean Square	F	Sig.
Identification	Between Groups	.663	2	.331	.532	.588
	Within Groups	184.964	297	.623		
	Total	185.627	299			
Knowledge	Between Groups	.020	2	.010	.021	.979
	Within Groups	146.126	297	.492		
	Total	146.147	299			
Amotivation	Between Groups	5.170	2	2.585	3.579	.029
	Within Groups	214.554	297	.722		
	Total	219.724	299			
Introjection	Between Groups	2.083	2	1.041	1.144	.320
	Within Groups	270.266	297	.910		
	Total	272.349	299			
External	Between Groups	5.663	2	2.831	4.650	.010
	Within Groups	180.834	297	.609		
	Total	186.497	299			
Stimulation	Between Groups	.355	2	.178	.382	.683
	Within Groups	138.247	297	.465		

		Sum Of Squares	df	Mean Square	F	Sig.
Total		138.602	299			
Accomplish ment	Between Groups	1.793	2	.896	1.230	.294
	Within Groups	216.444	297	.729		
	Total	218.237	299			

Note. Author's own work.

Table 14

The Results of Tukey HSD for External Regulation

		Level	N	Subset For Alpha = 0.05	
				1	2
Tukey HSD ^a	PhD	100	39,000		
	Bachelor	100	39,125		
	Master	100		41,975	
	Sig.		,993	1,000	

Note. Author's own work.

Table 15

The Results of Tukey HSD Analysis for Amotivation

		Level	N	Subset For Alpha = 0.05	
				1	2
Tukey HSD ^a	Master	100	17,325		
	3 PhD	100	19,200	19,200	
	3 Bachelor	100		20,525	
	3 Sig.		,265	,513	

Note. Author's own work.

The results of the present study demonstrated the significant difference in international students' motivation to study at a Hungarian university based on the level of study. Master's students demonstrated a relatively higher level of external regulation, compared to bachelor's and doctoral students. So, master's students invested more energy

in a study activity because of external sources. This could be determined by scholarship, opportunity to get an international certificate of higher education, possibility to travel, future career opportunities, and other tangible benefits. It might be connected with the duration of the master's program (approximately two years), and relatively shorter compared to bachelor's and doctoral programs. Thus, master's students might have higher intentions to travel in a shorter amount of time and higher concerns about career opportunities after graduation. At the same time, if the external reason for studying at a Hungarian university is taken away, there is more risk for non-intentional engagement to continue in this process.

Meanwhile, bachelor's students demonstrated a higher level of amotivation. In this situation, bachelor students saw less relation between their actions and the consequences of those actions when the consequences are seen as arising as a result of factors beyond their control, compared to master's and doctoral students. So, there is a higher probability for bachelor students to be expected to quit the study activity or act passively, following formal university requirements and procedures with less engagement and involvement.

This can be explained by the results of the previous studies, as satisfaction of basic psychological needs is negatively associated with external regulation and amotivation (Liu et al., 2009; Standage et al., 2003) and positively associated with self-determined motivation, i.e. intrinsic motivation, identified motivation, and introjected motivation (Chen & Jang, 2010; Jang et al., 2009; Liu et al., 2009; Standage et al., 2003). Both internal, personal factors and the social environment influence the degree to which the three basic psychological needs can be satisfied (Ryan & Deci, 2000). Thereby, a higher level of external regulation and amotivation can be associated with less satisfaction of basic psychological needs such as autonomy, competence, and relatedness among bachelor's and master's students in a foreign country context and at the Hungarian University. A university environment can support bachelor's and master's students' autonomy by providing external support, opportunities to engage in the common activities with professors and other students, maintaining an internal locus of causality, a sense of psychological freedom, and perceived choice over their actions in the particular subjects and field (Reeve, 2009).

To satisfy the need for competence, bachelor's and master's students have to feel that they are in control of their own study, but at the same time, they can have a lack of experience of studying at a foreign university, being part of the European higher education system, so more guidance can be needed from administration and professors. The students' sense of control can be enhanced by minimizing external pressure through language and

providing an explanatory rationale that helps transform tasks into ones of personal value (Reeve, 2009). Hence, the use of English as a foreign language and the medium of instruction during international students' studying at a Hungarian university can play a crucial role in students' autonomy because of limited professional vocabulary and possible language barriers in studying in a foreign language.

The most difficult psychological need to satisfy for students can be relatedness, which refers to the experience of a sense of belonging and connectedness to a group of other students, teachers, and professors during the study abroad. This is realized when students feel that a supervisor or professor, international office staff, and mentors genuinely respect and care for them (Ryan & Deci, 2000). Relatedness is connected with the establishment of close emotional bonds and secure attachments with others. It reflects the desire to be emotionally connected to and interpersonally involved in warm, caring, and responsive relationships (Ryan & Deci, 2000). So, relatedness can play a crucial role for students who study far away from home in a foreign country.

The results of the study demonstrated a significant difference in international students' motivation to study at a Hungarian university based on the level of study, such as bachelor's, master's, and doctoral. Master's students expressed a relatively higher level of external regulation; at the same time, bachelor students demonstrated a relatively lighter level of amotivation. Thereby, a higher level of external regulation and amotivation can be associated with less satisfaction of basic psychological needs such as autonomy, competence, and relatedness among bachelor's and master's students at Hungarian Universities.

To compare international students' self-regulated learning across different levels of study, such as bachelor's, master's, or doctoral, ANOVA was conducted. When the analysis revealed a significant difference, the Tukey test was used to identify which specific group contributed to the observed difference.

According to table 16, there was no significant difference between variables of the students' level of study and efficacy ($F=1.958$; $p>.05$) and elaboration ($F=0.98$; $p>.05$). Similarly, there was no significant difference between level of study and organizing strategies ($F=0.32$; $p>.05$), time-management ($F=0.38$; $p>.05$), peer-learning ($F=1.23$; $p>.05$), and help-seeking ($F=1.23$; $p>.05$). On the other hand, a significant difference was found between the variable of the student's level of study and rehearsal of cognitive strategies ($F=0.036$, $p<.05$). The results of Tukey HSD analysis revealed that doctorate students have significantly lower levels of rehearsal ($M=3.45$) compared to bachelor's

(M=3.73) and master's (M=3.69) students. Table 16 represents the ANOVA results for international students' self-regulated learning according to their level of study. Table 17 represents the results of the Tukey HSD analysis for rehearsal.

Table 16

One-way Variance Analysis of International Students' Self-Regulated Learning Based on the Level of Study

		Sum Of Squares	Df	Mean Square	F	Sig.
Efficacy	Between Groups	1.580	2	.790	1.434	.240
	Within Groups	163.612	297	.551		
	Total	165.193	299			
Rehearsal	Between Groups	4.468	2	2.234	3.368	.036
	Within Groups	196.969	297	.663		
	Total	201.437	299			
Elaboration	Between Groups	.071	2	.036	.075	.927
	Within Groups	140.199	297	.472		
	Total	140.270	299			
Organizing	Between Groups	.778	2	.389	.808	.447
	Within Groups	143.044	297	.482		
	Total	143.822	299			
Time management	Between Groups	1.118	2	.559	1.105	.332
	Within Groups	150.189	297	.506		
	Total	151.307	299			
Peer learning	Between Groups	2.905	2	1.453	1.998	.137
	Within Groups	215.897	297	.727		
	Total	218.802	299			
Help-seeking	Between Groups	.327	2	.163	.195	.823
	Within Groups	249.401	297	.840		
	Total	249.727	299			

Note. Author's own work.

Table 17*The results of Tukey HSD Analysis for Rehearsal*

		N	Subset For Alpha = 0.05	
Level			1	2
Tukey HSD ^a	PhD	100	34,550	
	Master	100	36,900	36,900
	Bachelor	100		37,325
	Sig.		,104	,928

Note. Author's own work.

The results of the present study demonstrated a significant difference in international students' self-regulated learning during studying at Hungarian universities based on the level of study. Doctoral students demonstrated a relatively lower level of rehearsal, compared to bachelor's and master's students. In other words, bachelor's and master's students' rehearsal strategies influence the attention and encoding process during simple tasks, memorizing material by repeating, and the activation of information in working memory rather than the acquisition of new information in one's long-term memory (Garcia & Pintrich, 1995; Pintrich et al., 1991). That can be caused by the higher complexity of the tasks that doctoral students have to complete during their studies compared to bachelor's and master's students.

Similarly, a significant interaction between the effect of the level of education on SRL among Indonesian and Malaysian students. Postgraduates showed higher levels of SRL in comparison to students from other levels (Hutagalung, Peng, & Zaid, 2023). These results were partly supported in the present study, as the significant difference between bachelor's, master's, and doctoral students was found only in the rehearsal SRL strategy.

To examine whether a level of study (bachelor's, master's, and doctoral) has a significant effect on international students' academic motivation and SRL, one-way analysis of variance was conducted. The level of study represented the independent variable, while academic motivation (motivation to get knowledge, accomplishment, stimulation, identified, rejected, and external regulation, amotivation) and self-regulated learning (rehearsal, elaboration, organizing strategies, time-management, peer learning, help-seeking, and efficacy) represented dependent variables. The effect sizes were

evaluated using partial eta squared (η^2) to quantify the magnitude of the result, providing a dimension of practical significance.

The analysis demonstrated that there is no significant effect of the level of study on motivation to get knowledge, accomplishment, stimulation, identified, and rejected regulations; moreover, there is no significant effect of the level of study on elaboration, organizing strategies, time-management, peer learning, help-seeking, and efficacy. At the same time, analysis revealed a practically significant effect of the level of study on external regulation, amotivation, and rehearsal. Level of study had a small but significant impact on external regulation, amotivation, and rehearsal cognitive strategy.

The level of external regulation was different among bachelor's, master's, and doctoral international students, as it was discovered master's students were more motivated to study at Hungarian universities by sources external to them, bachelor's students demonstrated a higher level of amotivation compared to master's, and doctoral students, doctoral student applied less rehearsal cognitive strategy during their studying at Hungarian universities due to complexity of PhD study. Table 18 represents a significant result for the effect of the level of study on motivation and SRL.

Table 18

ANOVA Results for the Effect of Level of Study on External Regulation, Amotivation, and Rehearsal Cognitive Strategy

Dependent variable	F	Sig.	Partial eta squared	Effect
External regulation	4.65	.010	.030	Significant, small effect
Amotivation	3.58	.029	.024	Significant, small effect
Rehearsal	3.37	.036	.022	Significant, small effect

Note. Author's own work.

In conclusion, there was a significant difference in international students' self-regulated learning based on the level of study. Doctoral students expressed a relatively lower level of rehearsal cognitive strategy, which represents memorizing material by repeating, compared to bachelor's and master's students. That can be caused by the higher complexity of the tasks that doctoral students have to complete during their studies.

4.5 Qualitative Results

Highlighting the qualitative results, at the end of the analysis, 6 main concepts and 45 categories were assigned to a total number of 452 interview segments. Table 19 summarizes the final concepts, categories, and frequencies of codes in the interview study. Codebook of measured constructs provided in Appendix E. Figure 5 provides an overview of the concepts and categories with participants' citations.

Table 19

An Overview of the Final Codes and Coding Frequencies of the Students' Interview Study

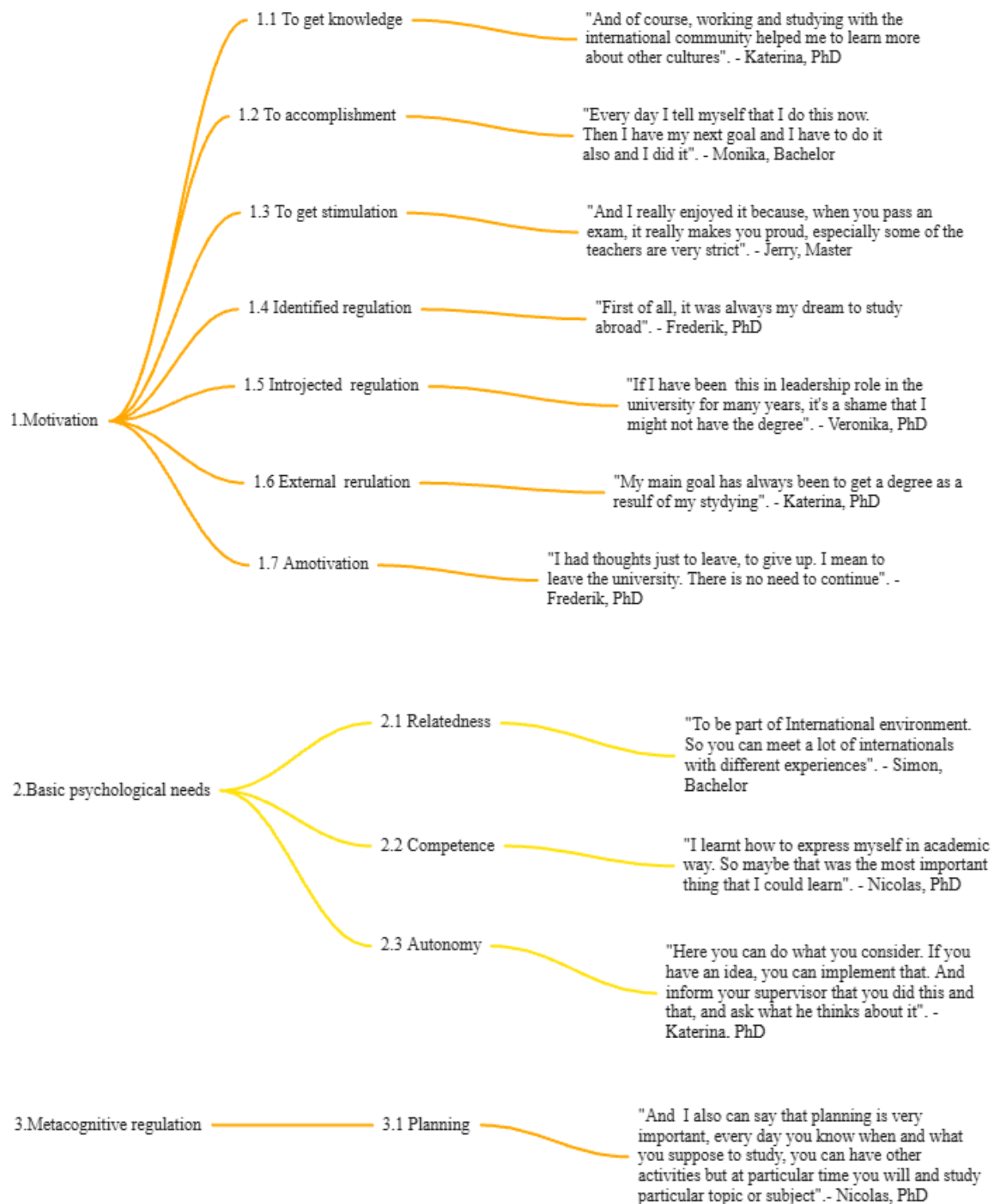
Concept (Total: 6)	Category (Total: 21)	Times code was used (Total: 335)	% of all codes (Total: 100%)	Number of participants (N = 8)
1. Motivation	1.1 Motivation to get knowledge	27	8.06%	8
	1.2 Accomplishment	4	1.19%	3
	1.3 Stimulation	7	2.09%	4
	1.4 Identified regulation	9	2.69%	5
	1.5 Introjected regulation	8	2.39%	4
	1.6 External regulation	32	9.55%	8
	1.7 Amotivation	23	6.87%	8
2. Basic psychological needs	2.1 Autonomy	10	2.99%	6
	2.2 Relatedness	54	16.12%	8

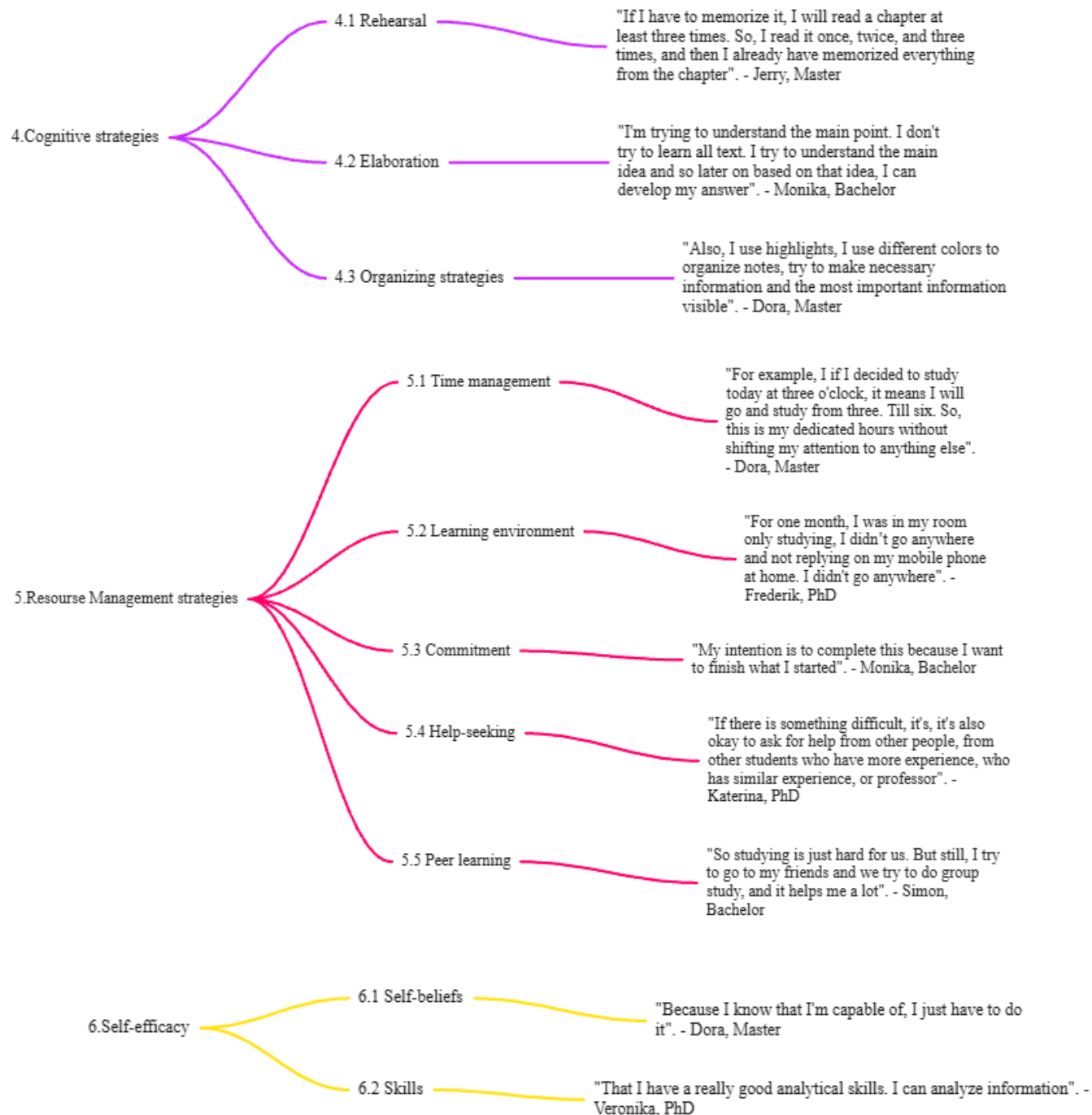
	2.3 Competence	8	2.39%	5
3. Metacognitive regulation	3.1 Planning	8	2.39%	4
4. Cognitive strategies	4.1 Rehearsal	6	1.79%	4
	4.2 Elaboration	10	2.99%	8
	4.3 Organizing strategies	9	2.69%	5
5. Resource Management Strategies	5.1 Time management	34	10.15%	8
	5.2 Learning environment	33	9.85%	8
	5.3 Commitment	14	4.18%	7
	5.4 Help-seeking	6	1.79%	4
	5.5 Peer learning	6	1.79%	4
6. Self-efficacy	6.1 Self-beliefs	20	5.97%	7
	6.2 Skills	7	2.09%	4

Note. Author's own work.

Figure 5

An Overview of the Concepts and Categories with Participants' Citations





Concept 1 – International Students' Academic Motivation

Data analysis revealed that international students' motivation included stimulation, accomplishment, and motivation to get knowledge, identified, introjected, and external regulation. Participants also provided their views on amotivation or reasons for intentions to discontinue the study. International students' motivation to get knowledge in Hungary, which they cannot get in their home country, is related to the particular fields and knowledge about conferences, how to participate in and organize conferences. Motivation

to get knowledge also includes practical knowledge about research and academic writing, knowledge about different cultures and international environment, and academic English.

International students also expressed motivation to get stimulation during studying, which relates to motivation based simply on the sensations stimulated by performing the task, such as aesthetic joy and excitement. Moreover, international students revealed motivation to accomplish and experienced the sensations related to attempting to achieve a goal or master a task. Students felt satisfaction by passing the examination in English and participating in different projects.

International students expressed their view on extrinsic motivation to study at Hungarian universities, to be more precise, on external regulation, which represents those activities that are determined by sources external to the students. These external sources include internationally recognized certificates of higher education degrees, as a degree from abroad is more recognized compared to a local degree, the opportunity to get a scholarship to cover tuition fees, the cost of living in Hungary while studying, the possibility to enhance career prospects, and get a job after studying at Hungarian universities. International students mentioned the possibility of travel as an important part of their motivation to study in Hungary, based on its central location in Europe. Where career prospects and economic benefits can be associated with extrinsic motivation, to be more precise, with external regulation. In another study, international students highlighted their motivation to study at a Hungarian university due to location, academic reputation, the study programmes (curriculum), campus, and dormitory, which can also be associated with external regulation.

Some international students invested energy in a study activity because they had chosen to do so for personally relevant reasons, related to personal and professional development. That can be considered the most self-determined form of extrinsic motivation - identified regulation. Meanwhile, students also expressed another type of extrinsic motivation - introjected regulation. As they tended to study due to some type of pressure that they have incorporated into themselves, such that they compelled themselves to carry out that study activity because it was a shame not to have this degree due to professional reasons. Students would also be ashamed among their family or professors if they could not take this opportunity (Ryan & Deci, 2000).

Besides academic motivation mentioned above, which applies to the existence of intention that drives behaviours towards the goals, all students mentioned the lack of such intention at some moments of their studying, which is represented by the concept of

amotivation. Amotivation refers to the situation in which students see no relation between their actions and the consequences of those actions, as the consequences are seen as arising as a result of factors beyond their control. Students have no reason for performing the studying activity, and they would be expected to quit the activity as soon as possible or act passively following formal requirements (Ryan & Deci, 2000). There was a lack of intention to continue the study due to disrespect in the professional relationship and uncertainty in the study's progress, a lot of pressure from work and study at the same time, lack of finances, lack of international students' engagement in university activities, strict teaching styles, and high expectations about the study program.

Concept 2 – Basic Psychological Needs

International students mentioned autonomy, competence, and relatedness, representing the three basic psychological needs. These are the sources of students' inherent and proactive, intrinsically motivated tendency to seek out novelty and be more active and persistent in learning (Ryan & Deci, 2000). Autonomy refers to the experience of the behaviour as voluntary, the inner endorsement. Students need to feel that they have control over their academic life and their behaviour (Reeve, 2009). Students could organize their studying as they prefer, build their curriculum, choose subjects, and topics for the final work, and have open conversations about their interests with a supervisor.

The competence represents the need to be effective in pursuits and interactions with the environment (Deci & Ryan, 2000). Competence concerned their achievements, knowledge, and skills to develop mastery over tasks, learning, development of research, and professional skills, and be able to overcome challenges.

The relatedness refers to the experience of a sense of belonging and connectedness to a group of other students, teachers, professors, and university staff during the study program. Supervisor's support played a crucial role in all levels of studies among international students to have trust and a feeling of belonging. A relationship with a supervisor was also related to satisfaction with the study program. University environments, other people's support, and the friendly attitudes of professors contributed to the satisfaction of relatedness. In another study on first-semester students' adaptation to university was found that social connection and interpersonal relationships were associated with their sense of belongingness and well-being (Bowman et al., 2018). This lack of social connections can play a crucial role for international students who study abroad, as it can affect their well-being. International students had a need to be interpersonally involved in caring and responsive relationships during their studies at Hungarian universities.

Considering the importance of basic psychological needs, it is worth highlighting that to develop a higher sense of self-determination towards intrinsic motivation, an individual's basic psychological needs of autonomy, competence, and relatedness must be satisfied (Deci et al., 1991). Moreover, basic psychological needs serve as motivating forces for student engagement in the classroom, so satisfaction of basic psychological needs leads to better classroom engagement (Hosseini et al., 2022).

Concept 3 - Metacognitive Regulation – Planning

Data analysis revealed that international students' self-regulated learning included metacognitive strategy – planning, cognitive strategies, such as rehearsal, elaboration, and organizing strategies, resource management strategies – learning environment, time management, help-seeking, peer learning, and self-efficacy. International students analysed the task, set goals, and planned how to reach these goals in their learning. They used planning on a daily, weekly, and monthly basis, organizing what they would like to achieve. So, every day, there was a plan to study to complete assignments and reach their goals. Also, planning helped to avoid difficult situations and gave enough time to reach the goals. International students set goals and plan how to reach these goals.

Concept 4 – Cognitive Strategies

International students highlighted cognitive strategies in self-regulated learning, such as rehearsal, elaboration, and organization. Rehearsal strategies are best suited for a simple task to memorize material by repeating and activating information in working memory. Students used to read materials and repeat them several times to memorize. Some students read texts out loud several times to memorise. International students used rehearsal strategies for simple tasks during self-regulated learning. For more complex tasks and the incorporation of information into long-term memory, students used elaboration to relate new material to what they already know, make summaries, understand the main idea, and connect with prior knowledge. International students applied elaboration as a cognitive strategy in their self-regulated learning. International students also mentioned another complex cognitive strategy, such as organizing strategies, which represent involvement in the task. Students organized materials in drawings, tables, graphs, and notes. Students practiced writing on a day-to-day basis and used highlights to mark the most important information. To summarise, students mentioned cognitive strategies such as rehearsal, elaboration, and organization in self-regulated learning.

Concept 5 – Resource Management Strategies

International students highlighted resource management strategies. Resource management strategies represent students' abilities to establish conditions that may facilitate their learning (Pintrich & Garcia, 1991). These strategies include learning environment, time management, commitment, peer learning, and help-seeking. International students tried to organize their learning environment through organising learning materials online in separate folders for articles, workshops, conference materials, and training materials, and using a separate notebook for each subject to navigate learning materials. At the same time, students tried to avoid distraction, put away their mobile phones, and isolate themselves to focus properly on their studies. They tended to stay at home and dedicate themselves to learning, with limited going out.

Students could effectively manage their time and prioritize responsibilities. Students highlighted the importance of a schedule in time management. There was a need to have a schedule with set hours for studying daily. Students set a dedicated time with a certain amount of work that should be done in these hours without shifting attention to anything else during this time. Dedicated time can also be represented daily or during the weekend. Meanwhile, the role of the deadline in time management was also highlighted, as there was no possibility to avoid it, and the necessary assignments had to be done by a particular time.

Additionally, international students highlighted two time management techniques to prepare for the exams, such as preparation in advance and last-moment preparation. Some students preferred to have more time to prepare for exams, so there was less stress and no need to rush. Materials could be learnt day by day with the possibility to address weak points and work on them. Some students preferred to prepare for exams at the last moment, in a few days before the deadline, students did not sleep, organized materials, and took some notes to the best of their ability. Students applied time management through the use of schedules, dedicated time, deadlines, preparation in advance, and last-moment preparation for exams.

At the same time, international students declared their views on the degree of commitment to achieving study goals despite difficult situations, as an effort regulation. When faced with difficult situations, students considered opportunities to change the situation without thoughts of quitting. Thus, they wanted to finish their studies without the intention of giving up. International students were committed to reaching their study goals at Hungarian universities.

International students also considered help-seeking as an essential component of self-regulated learning, as it involved knowing who to ask, when to seek assistance, and how to request help when facing difficulties. The ability to identify the source of help was considered a strength, which helps in the learning process. There were no expectations from students to do everything by themselves, which is why students had a supervisor whom they could ask for help or other students with similar or greater experience. In addition, students were able to ask for help and clarification from their friends. Thus, international students facing difficulties or in need of explanation could ask for help from teachers, professors, peers, or friends.

Some of the students applied peer learning as learning as a collaboration with other learners to support each other's learning. Through open discussions, students could learn from each other's experiences. Moreover, they could gather together to learn and explain difficult topics. Some of the international students applied peer learning in self-regulated learning.

Concept 6 – Self-Efficacy

International students referred to their belief in their abilities to complete tasks, achieve goals, and overcome difficult situations as self-efficacy. They expressed confidence in their learning process and their capabilities in achieving goals and overcoming difficult situations. Furthermore, international students described their beliefs regarding their skills, such as analytical, presentation, and leadership skills. They reported being able to give presentations, talk openly in public, and having analytical and leadership skills. Students had the subjective view of their abilities to perform sequences of required actions to deal with potential situations (Artino, La Rochelle, & Durning, 2013). At the same time, students who have high self-efficacy are more confident and are expected to achieve higher academic achievement (Komarraju & Nadler, 2013).

4.6 RQ4 - What Views Do International Students Express Concerning their Academic Motivation to Study at Hungarian Universities?

All interview participants unanimously stated academic motivation to study at Hungarian universities. International students highlighted intrinsic motivation to get knowledge, stimulation, and accomplishment. Simultaneously, extrinsic motivation was also mentioned, such as identified, introjected, and external regulation. Besides intrinsic and extrinsic motivation, which both imply the existence of intention that drives behaviours towards the goals, all students mentioned the lack of such intention at some moments of their studying, which is represented by the concept of amotivation.

All international students expressed their motivation to get knowledge at a Hungarian university. This motivation refers to doing an activity for the feelings associated with developing knowledge and exploring new ideas. In this situation, students experience the pleasure of studying at Hungarian universities and getting knowledge in a particular field of study, knowledge about conferences, academic writing, different cultures, and academic English. Frederik expressed that he could get this kind of knowledge in his field, which he could not get in his field at home. He got an opportunity to participate in the conferences as a student; this possibility was not available at home, as only teachers could participate. Jerry also said about conferences that first, he learned about conferences and opportunities to participate for students, and then he learned during his participation. Monika stated that she gained knowledge about conferences and publishing articles during her studies. Nicolas highlighted that he learned during his studies about academic writing - how to write academic texts, abstracts, articles, and summaries. Simon mentioned that work and study within the international community helped her to learn more about other cultures.

Nicolas stated more about motivation to get knowledge: “To get to know about things and get deeper knowledge on language learning, or how to implement this knowledge. Knowledge of language in general or teaching. How to use some particular tools in learning and teaching”. To support motivation to get practical knowledge, Monika mentioned: “Comparing the teaching systems, I am not saying that studying in my home country is bad, but the way they teach there is different compared to the teaching system we have here in Hungary. So, I learned that learning can be more computerized, as everything is based on written materials, back to my country. I did not know about presentations, but here I learned how to make presentations and present them”.

Another motivation to get knowledge is related to the knowledge about conferences and the knowledge received from the conferences. Frederik emphasized: “I learned about conferences, how to participate, and how to organize a conference. Because back in my country, I did not know about conferences at all. I did not know how to participate or do all these things. Participation for students was restricted; only professors could participate. But here I learned that even bachelor students can organize conferences and participate in them. And if you want something in academia or in general in learning, you can study a lot of things through conferences”.

Nicolas highlighted the role of feedback during conferences and the opportunity to learn from it: “Participation in different conferences helped me to learn a lot when I

presented my first results, and I got a lot of positive feedback about my work - that was very important for me”.

International students also expressed their motivation to get knowledge about different cultures, the international environment, and different ways of living in another country. As mentioned by Frederik: “During my studies in Hungary with other international students, I could learn more about other cultures and other experiences”. Simon indicated: “I have friends from different cultures, from different backgrounds. Now I can see the world differently compared to how I saw it earlier when I was in my country. So, I used to think about how people in my country typically think. But now I can see how people from different countries think. How they make considerations in their lives. It is a different angle for me, now I know international society from the inside”. These results are associated with intrinsic motivation to get knowledge.

Moreover, students mentioned motivation to get practical knowledge about research and academic writing. As it was stated by Jerry: “Learning was very practical. And allowed us to do research with the real data, which we have to collect by ourselves. I think this practical knowledge was very good in terms of writing a paper or doing your research”. Nicolas mentioned that: “My academic writing became stronger during studying compared to writing during my previous studying”. Also, it was noticed by Dora that her motivation to study in Hungary was supported by the possibility of studying in English and improving language proficiency: “First of all, I wanted to choose the study program in English. So, I do not need to study any additional language. It is a great opportunity to study English and learn it more in an academic way”. International students expressed motivation to get knowledge in a particular field, the international community, practical knowledge, academic writing, and academic English.

International students also expressed motivation to get stimulation during studying, which relates to motivation based simply on the sensations stimulated by performing the task, such as aesthetic appreciation and excitement. For example, it was highlighted by Jerry: “And I enjoyed studying because when I pass an exam, it makes me proud, especially because some of the teachers are very strict, and it was not easy”. Moreover, Katerina mentioned the possibility of making studying more enjoyable: “You can achieve your goals straight away, or you can make it in a more interesting way. And you can make this more enjoyable for yourself to achieve your goals”. Veronika stated that sensation stimulated by performing studying: “I enjoyed studying. So, it was a very big motivation for me, and also how I could understand the university's structure and how it works”. International students

expressed motivation to get stimulation during studying, and besides motivation to get knowledge, students expressed joy when completing their studying duties. There is a possibility of making studying more enjoyable.

Moreover, international students expressed motivation to accomplish and experienced the sensations related to attempting to achieve a goal or master a task. Students feel the satisfaction of passing examinations and participating in different projects. As was stated by Monika: “I did this now. I passed all exams during this semester. I set the next goal and I have to achieve it too”. Additionally, Jerry indicated the importance of goals during studying: “When I pass an exam or complete an assignment, I know that I reached one more goal, and there are many more - I keep going.” International students experience satisfaction in achieving their goals.

In addition, international students stated the most self-determined form of extrinsic motivation - identified regulation. These students invested energy in an activity because they had chosen to do so for personally relevant reasons. For instance, students felt that pursuing a degree at a Hungarian university was an important aspect of their professional development. Veronika mentioned that studying at a Hungarian university was important for her career: “I think that for my career, as I work in public administration or this sector, it is necessary to have a relevant title before my name”. Dora also highlighted that studying abroad was a dream for her: “I always wanted to continue my studies abroad, particularly in Hungary, even when I was doing my bachelor’s, that was like a dream for me”. Frederik, as a doctoral student, stated that he had this intention to become a doctor: “And when I started my PhD, I just had this dream that you can become a doctor”. Similarly, motivation to become a doctor at the university was mentioned by Nicolas: “I want to be a doctor at the University in the future”. International students invested energy into studying activities because they have chosen to do so for personally relevant reasons, such as having a dream to study in Hungary or becoming a doctor.

Meanwhile, international students expressed another type of extrinsic motivation - introjected regulation. Students tended to study due to some type of pressure that they have incorporated into themselves, such that they compel themselves to carry out that activity. As mentioned by Veronika, it would be a shame not to have this degree: “If I had been in this leadership role in the university for many years, it would be a shame that I might not have the degree”. Dora also highlighted the feeling of shame of missing this opportunity to study abroad: “Maybe I would feel regret if I missed this opportunity. And I did not take it, and that is not an average opportunity for everyone. I would be ashamed”.

Nicolas stated that he could not imagine not having this degree because of his supervisor: “But I cannot imagine that I am not going to have a degree. My supervisor told me that I have a big chance to study abroad and graduate. I try my best as the supervisor thinks that I should complete my studies”. International students studied because they would feel ashamed among their family or professors if they did not take this opportunity.

International students expressed their view on extrinsic motivation to study at Hungarian university, to be more precise on external regulation, which represents those activities that are determined by sources external to the students, such as the costs of the study program, an opportunity to get a scholarship, receiving internationally recognized certificates of higher education degree, career prospects, possibilities to travel, and other tangible benefits. Motivation to get a foreign degree was mentioned by all interview participants. As was stated by Katerina: “One of the most important reasons to study in Hungary is that a degree from outside is respected more than a local degree. It is more prestigious.” Monika also confirmed this motivation: “The main goal for me was to get a degree, as I explained before, to get a foreign degree, which was my dream, my goal was to get a degree.” It was also mentioned by Simon: “My goal is to have a European degree. This is the thing, and it is stronger compared to Asians and compared to my hometown”. A similar motivation was mentioned by Frederik: “I want to graduate and get a certificate that I am a professional in this field of study. So, I will have an official certification of my degree in Hungary”.

Half of the interviewers stated their motivation to enhance their careers and get a job after studying at Hungarian universities. As was noted by Veronika: “The first motivation for me to study in Hungary was an intention to pursue a scientific career in the future and continue my studies”. Monika also mentioned the difficulty of finding a job as a minority in her home country: “My diploma might be excellent, but as long as I am a minority, I will not get a good job. But in Hungary, I can get a job after graduation”. Likewise, Simon mentioned his intention to find a job after graduation: “Maybe after my degree, I plan to work a bit. Find a job here. That was my goal for studying in Hungary. Also, in terms of achievement, I can say that if I was able to score a job”.

Furthermore, the consideration of finances and the opportunity to get a scholarship to study in Hungary played an important role in international students' motivation to study at Hungarian universities. Staying in a foreign country for a long period of time requires consideration of the financial capacity of international students and their families to be able to cover living costs besides tuition fees, which are covered by the scholarship. It was

mentioned by six interview participants at bachelor's, master's, and doctoral levels. Simon highlighted the possibility of getting a scholarship as his motivation to study in Hungary:

It would be a big burden for my father to arrange a lot of things for me to study abroad. I am really happy because he did not pay a lot of money for many things, as I saw how my other friends had to pay a lot. They had to pay a lot of money to study in Australia, Canada, or the USA. So, for me, it was a really big achievement to study with a scholarship in Hungary.

Moreover, Dora noted the role of scholarship: "And also at the same time, there was a scholarship. So, I knew that if I got it, that would be really nice for me. That I do not need to pay for studying by myself". Additionally, Dora highlighted that besides the scholarship to cover tuition fees, living with a monthly payment was hard to manage: "I sacrificed a lot of things during my studies. And I have been struggling financially by myself without support from anyone".

Monika mentioned: "When I saw this opportunity, and if God gave me this opportunity to try to study in Hungary, even I was the first person in my family to get this scholarship and the opportunity". Katerina stated the importance of considering not only the opportunity to get a scholarship but also the cost of living in the country: "When I choose the country where I want to study, I consider not only the education but also the cost of living because when you are coming for the degree, it usually takes a minimum of two years. The ratio between scholarship and living costs is very important to consider, and apart from that, because it is a scholarship, of course, it can assist mainly. So, I chose to study here not because of the scholarship, but it played an important role". Scholarship played an important role in international students' motivation to study in Hungary, but other expenses during studying were also considered by students. As in this study, interviewers mentioned their motivation to enhance their career and get a job after studying at Hungarian universities; also, consideration of the cost of living and the opportunity to get a scholarship played an important role.

Three of the interview participants considered the possibility of travel as an important part of their motivation to study in Hungary, based on its central location in Europe. As it was mentioned by Jerry: "Hungary has quite a central place in Europe. So, I think the location is perfect because from here you can travel a lot." Dora also stated the possibility of studying and traveling at the same time: "To get this opportunity to travel at the same time". Simon expressed a slightly different motivation to study in Hungary, as a possibility to travel outside of his country: "When I saw that there is an opportunity from

my country to go outside, I had an idea that I could, you know, travel outside of my country and have a look”.

Based on the above, it can be seen that international students declared their view on extrinsic motivation to study at Hungarian universities and Hungary, to be more precise on external regulation, which states those activities that are determined by sources external to the students, such as the costs of living in Hungary during study program, opportunity to get a scholarship, receiving internationally recognized certificates of higher education, career prospects, possibilities to travel. Similar results were received in a quantitative study conducted to investigate the differences in academic motivation among university students in Istanbul, where students demonstrated orientation towards extrinsic motivation to study abroad (Turhan, 2020).

Besides intrinsic and extrinsic motivation, which both imply the existence of intention that drives behaviours towards the goals, all students mentioned the lack of such intention at some moments of their studying, which is represented by the concept of amotivation. Amotivation refers to the situation in which students see no relation between their actions and the consequences of those actions; the consequences are seen as arising as a result of factors beyond their control. In such a situation, students have no reason, intrinsic or extrinsic, for performing the studying activity, and they would be expected to quit the activity as soon as possible or act passively following formal requirements (Ryan & Deci, 2000). As it was mentioned by Nicolas at the beginning of his doctoral studies, due to the relationship with other members of the doctoral school, he wanted to discontinue his studies: “First two semesters were very challenging for me. I was completely lost. So, I was giving up. I have never given up on things, but it could be the first time. I was trying to give up on studying because it was so stressful for me. People were very disrespectful at the doctoral school. I think it can be a reason for many PhD candidates to give up”. Similarly, Nicolas highlighted the role of uncertainty in PhD study and amotivation: “I felt myself lost. I did not know where to start or what to do exactly. I could not see where I was going. There was so much stress. I did not know if I would get to the end and graduate”. Additionally, Frederik stated his intention to give up on studying due to uncertainty and work and study at the same time: “The thoughts were just to leave, to give up. I mean to leave the university. There is no need to continue. There is so much stress that comes from work and study at the same time. Also, studying does not give you immediate results; you do not see where you are going”.

Likewise, Ekaterina mentioned the role of the pressure of work and study at the same time, and lack of finances: “I was working enough in a factory on a night shift. So, this adds a lot of stress to your life. Now you have to work at night to cover your financial needs, and then during the daytime, you have to study. I was so tired, so I thought I could not continue this anymore”. Dora also noted the role of the expectations, lack of engagement, and lack of finances during studies in amotivation: “My expectations from the program and all processes were much higher than the program is in reality, related to the quality and students’ engagement. I went to study abroad. I sacrificed a lot of things. And I have been struggling financially by myself without anyone's support. Because of these reasons, I wanted to leave the university”. Similarly, Frederik stated the role of lack of engagement in amotivation:

Sometimes I feel I cannot be involved in the different events, as our connections are limited at the University. I have a connection. But I feel that my presence at the University is to meet my supervisor or to attend a lesson. And that's it. And there is no more than that; you cannot feel involved.

Additionally, Jerry highlighted the role of stress and strict teaching style in amotivation:

Because there are a lot of things going around. And you are in your studies, some teachers are really strict. They are strict in terms of assignments, and you know, they check everything precisely. Sometimes this pressure makes me so stressed, so I do not know if I can continue.

All international students mentioned the lack of such intention to continue their studies at some points during their studies due to relationships with other members of the doctoral school, uncertainty, working and studying at the same time, lack of finances, lack of engagement, high expectations, and stress.

International students stated their academic motivation to study at Hungarian universities. Participants expressed intrinsic motivation to get knowledge which they could not receive in their home countries - about particular fields of study, conferences, academic writing, different cultures, academic English, stimulation, and accomplishment. Simultaneously, extrinsic motivation was also mentioned, such as identified, introjected, and external regulation. Students were motivated by the possibility to get internationally recognised higher education certificate, enhanced career prospects, and the possibility of traveling. Similarly, international students reported a higher level of intrinsic motivation, identified regulation, and external regulation in another study, which provided similar

results to the current study (Chue & Nie, 2016a). Moreover, it was also confirmed that international students usually choose to study abroad for better career prospects and economic benefits (Eder et al., 2010; Li & Bray, 2007). This can be associated with external regulation. The results of this study and previously conducted studies provide a coherent view of the international students 'motivation to study abroad; students were mostly driven by the motivation to get knowledge and external regulation. Besides intrinsic and extrinsic motivation, which both imply the existence of intention that drives behaviours toward the goals, all students mentioned the lack of such intention due to different reasons at some moments of their studying, represented by the concept of amotivation. Despite different factors that could affect students' motivation, their expectations also shape satisfaction and amotivation. The difference in expectations and experience during study leads to dissatisfaction and amotivation (Oliver, 1980; Sun et al., 2021; Yoo & Marshall, 2021). This is significantly important to provide relevant information about the study program, so students can have realistic expectations and keep being motivated during studying.

4.7 RQ5 - What Views Do International Students Express Regarding Basic Psychological Needs While Studying at Hungarian Universities?

All interview participants mentioned autonomy, competence, and relatedness, representing the three basic psychological needs. These are the sources of students' inherent and proactive, intrinsically motivated tendency to seek out novelty and be more active and persistent in exploring and learn. Students pursue optimal challenges and develop professional competencies (Ryan & Deci, 2000).

International students mentioned autonomy, which refers to the experience of their behaviour as voluntary, the inner endorsement. Students have a need to feel that they are the masters of their own studying and research process, that they have control over their academic life and their behaviour (Reeve, 2009). As it was mentioned by Katerina regarding her choice of the topic for the final work and open conversation with a supervisor: "I did not find any data, and I told my supervisor openly that I do not like this topic. I do not feel comfortable, and I do not feel interested. So, I would like to choose a topic that is interesting for me". Monika also highlighted an opportunity to build your own curriculum and choose subjects: "You are more flexible with subjects that you want to study. Moreover, there is a great variety of courses that you can choose from". Frederic stated that students can organize their studying as they prefer: "Professors and teachers do not tell you how you should study. You can simply do it yourself as you like, but following the formal

requirements". Students experienced their behaviour as voluntary to choose their research topic, build a curriculum, and organize their studies.

Additionally, international students stated the competence, which represents the need to be effective in pursuits and interactions with the environment (Deci & Ryan, 2000). Students can go through some challenges and difficulties to prove and develop their competence. Competence concerns their achievements, knowledge, and skills to develop mastery over tasks. As it was mentioned by Simon: "If I do not know something, I will enlarge my horizons and learn more about my field. So, I will know". Nicolas highlighted competence related to the research: "I feel that I can understand the researchers' language. During studying, I learnt how to express myself in an academic way". Frederic also mentioned the role of expertise in professional development: "As I came to study in Hungary, I let myself acquire good experience in this expertise and learn as much as I can. It is simply important for my professional development". International students expressed their concerns regarding competence, their knowledge, and mastery of tasks through learning, development of research, and professional skills.

All interview participants mentioned relatedness, which refers to the experience of a sense of belonging and connectedness to a group of other students, teachers, and professors during the study program. Nicolas, Katerina, and Dora highlighted the importance of supervisor support. Nicolas said: "My supervisor, whom I could always trust, supported me even though we were not even in the same program. But she always tried to help me". Katerina mentioned the role of the supervisor in the doctoral study: "I am really satisfied because I like to work with my supervisor. I think the supervisor takes the most important role in PhD studies". Dora stated about the supervisor's support: "I was so stressed during my thesis writing. However, I received support from the supervisor because we were very limited in time. So, I knew that I was not alone, which helped me to complete my work".

Dora also mentioned friendly professors and students at a Hungarian university: "I had this experience that professors are very friendly in Hungary. The students were really friendly, open, and helpful. We supported each other, I really liked it and that is why I wanted to study here in Hungary". Similarly, Jerry mentioned university support: "You can deal with stress in terms of knowing where to find support, that you can get from the university, support that you get from teachers and students". Frederic highlighted support from other people: "I think sometimes I felt that I cannot study anymore but as I mentioned I could get over it with support of other people". Simon mentioned the sense of belonging:

“If there is someone else who is also doing the same as me, it helps me because other people motivate me. And I think that sense of belonging is very important”. International students expressed their need to be interpersonally involved in caring and responsive relationships during their studies at Hungarian universities.

Every student from abroad stressed autonomy, competence, and relatedness, which together represent the three basic psychological needs. Students experienced their behaviour as voluntary through autonomy to choose their research topic, build a curriculum, and organize their studies. Moreover, it was found that autonomous support from teachers increases students’ motivation towards attending university and meeting academic requirements (Girelli et al., 2018). Students had a need to feel the possibility to be autonomous, trusted, and supported by teachers.

Also, participants of the interview expressed their concerns regarding competence - their knowledge and mastery over tasks through learning, development of research, and professional skills. Satisfaction of the need for competence demonstrates a positive effect on the student’s engagement in the adoption of new learning technologies (Wang et al., 2021). Students with a satisfied need for competence are more open and engaged in new learning possibilities. At the same time, international students demonstrated the need for relatedness to be involved in responsive and warm relationships during their studies. The lack of interaction with peers and professors also influences the success of learning (Händel et al., 2020; Holzer et al., 2021; Richardson et al., 2015). All students stated the importance of basic psychological needs during their studies, especially relatedness and reasons for their dissatisfaction, such as lack of engagement and connections, exclusion, and relationship with a supervisor. The lack of satisfaction with relatedness could decrease students’ success in learning.

4.8 RQ6 - What Views Do International Students Express Regarding Self-Regulated Learning While Studying at Hungarian Universities?

International students expressed cognitive strategies in self-regulated learning, such as rehearsal, elaboration, and organization. Also, highlighted planning in self-regulated learning. Students analysed the task, set goals, and planned how to reach these goals. Meanwhile, all interview participants highlighted resource management strategies in self-regulated learning. These strategies included learning environment, time management, commitment, peer learning, and help-seeking. Students expressed self-

efficacy as their belief in their abilities to complete tasks, achieve goals, and overcome difficult situations during learning.

All interview participants highlighted cognitive strategies in self-regulated learning, such as rehearsal, elaboration, and organization. Rehearsal strategies are best suited for a simple task to memorize material by repeating and activating information in working memory. As was mentioned by Jerry, “But the technique that I use is to read material. If I have to memorize it, I read it once, twice, and three times, and then I already have memorized everything from the chapter”. Monika also stated the role of repetition in memorizing: “I just memorize it by repeating several times until I memorize the necessary material”. Dora indicated repetition as a technique to memorize: “I go through the text, I read it out loud several times until I memorize it. So, this is my technique”. Thus, international students use rehearsal strategies to memorize necessary information during self-regulated learning.

Likewise, students applied complex cognitive strategies, such as elaboration involving the incorporation of information into long-term memory. In elaboration, students related new material to what they already know. Katerina highlighted that she tried to understand new materials and connect them with knowledge that she already had: “Most of the time I try not to just memorize it without understanding it. I try to recall what I already know and remember based on this connection”. Jerry also mentioned the technique of making a summary: “Maybe I read it properly, and then it is good enough for me to get a summary out of it. This summary I can understand and use this knowledge”. Monika mentioned that she tried to understand the main idea and connect new information with prior knowledge: “I read materials and try to understand the main point. I don't learn the whole text. I try to understand the main idea and connect it with what I already know to develop an answer in my own words”. International students applied elaboration as a cognitive strategy in their self-regulated learning.

Another complex cognitive strategy that was mentioned by students is organizing strategies, which represent involvement in the task. Students organized materials in drawings, tables, and notes. Jerry highlighted the organization of notes: “I write on a day-to-day basis - write the date of the lecture and then I write the lecture in that notebook. So, during my exam when I need to go back, I already know where these lectures are”. Dora stated the use of drawings: “I try to make some graphs, schemes, and drawings for materials which I need to learn, to make it visually more attractive”. Simon mentioned the use of the highlights in the notes taking: “Also, I use highlights, I use different colours to organize

my notes, I try to make the necessary and the most important information visible”. International students applied organising strategies by taking notes, making drawings, and using highlights for the most important information. To summarise, students mentioned cognitive strategies such as rehearsal, elaboration, and organization in self-regulated learning.

At the same time, international students mentioned planning in self-regulated learning. Students analyse the task, set goals, and plan how to reach these goals. As Nicolas expressed: “I do plan in my studying on a daily, weekly, and monthly basis. So, it is like organizing what I would like to achieve”. Dora also mentioned planning in the goal setting and studying itself: “I can say that planning is very important, so every day, you know at what time you are supposed to study to complete assignments and reach your goals. I think it is not possible to reach goals without planning”. Simon highlighted the role of planning in avoiding difficult situations: “Again, you should run the planning so that you can plan and find an opportunity to avoid difficult situations as you have set goals and enough time to achieve them”. International students set goals and planned how to reach these goals.

Meanwhile, all interview participants highlighted resource management strategies in learning. Resource management strategies represent students’ abilities to establish conditions that may facilitate their learning. These strategies include learning environment, time management, commitment, peer learning, and help-seeking. These strategies include time and study environment, how learners manage their study time and learning environment, effort regulation as the degree of commitment to achieve study goals, peer learning, how often learners are willing to study with peers, and help-seeking, how often students are willing to ask other students or professors for help.

All international students mentioned their views on the learning environment. Katerina stated how she organizes learning materials online: “I have folders on my laptop, books, articles, workshops, and conference materials are in separate folders, and training materials are also separated. So, if I need to remember or study something, I always know where to find it”. Simon highlighted the use of notebooks: “I normally have a notebook for each subject. So, I don't use one notebook for all five subjects. Materials for each subject are organized separately”. International students tend to avoid distraction and isolate themselves during learning. Frederik mentioned how to avoid distractions: “Whenever I go to study, if I have a mobile phone, sometimes I get distracted, so I close my phone and put it somewhere. Because a lot of people text me, and I do not want to get distracted”. Also, Frederik highlighted self-isolation: “Before my exams, I was staying in my room, I did not

go anywhere and did not reply to my mobile phone. I did not go anywhere”. Similarly, Simon stated: “During studying, I turn off my mobile phone and do not reply to anyone and just focus on one thing”. Students mentioned the organization of the learning material online and in the notebooks, avoiding distraction and self-isolation during studying.

Meanwhile, all interview participants expressed their views on time management in self-regulated learning. Students could effectively manage their time and prioritize responsibilities. Students highlighted the need for a schedule in time management. As was stated by Frederik: “I need to have some kind of a schedule, so after my class, I know that I continue studying from this time till that time”. Dora also mentioned the use of a schedule: “So I think the trick that I have to keep myself working - I try to keep myself organized and follow the schedule in terms of studying every day”. Similarly, Jerry stated: “It is important that you make a schedule, and I do not think there is any difficulty in doing that. And based on the schedule, you know what time you should study”. Students also mentioned dedicated time for studying. Katerina expressed her view on her dedicated time: “I set for myself particularly a certain amount of work that I should do in these hours. So, I should do it, I stay at the University until I finish this”. Dora emphasized the importance of setting aside dedicated time for focused work: “For example, if I decided to study today at three o'clock, it means I will go and study from three till six. So, this is my dedicated hours without shifting my attention to anything else”. Veronika mentioned a dedicated day for studying: “I have to dedicate a day. Mainly on weekends, I used to study a lot”. International students also expressed their views on the deadline for time management. Simon mentioned the deadline as a motivation to complete the task: “At that time, I was very motivated to do these tasks because there was no way to avoid this deadline, and I did not want to stay on any extensions”. Similarly, Jerry mentioned the deadline during exam preparation: “I spent all day studying, doing this preparation because of the exam. There is a deadline, and I have to be ready before it. So, I did that, and it was a very important exam”.

Furthermore, international students described their strategies for preparing for exams, such as preparation in advance and last-moment preparation. Some students preferred to have more time to prepare for exams, while some students prepared right before a deadline. Dora mentioned preparation in advance:

I usually prepare for exams before, I know exactly when an exam is going to be, and I know approximately how much time I need to prepare for this exam, so there is not

that much stress before and not that late. So, there is not that much stress. I do not need to rush.

Similarly, Katerina stated about preparation day by day: “For example, I do not learn all of the materials in one day. For example, today I will read something and something will stick in my mind, and tomorrow again. So, I have enough time.” Nicolas mentioned the possibility of addressing weak points in the preparation in advance: “I prefer to prepare in advance for practical and possible problems. Sometimes I know that I have weak points, so I prepare in advance to address them during exams”. Some students prefer to prepare for exams at the last moment. Veronika indicated how she prepares for exams: “Two days before exams - I do not sleep day and night. I drink coffee and energy drinks, and I do everything at the very last moment. And, I try to organize materials or make some notes over there”. Similarly, Monica mentioned: “I prepare myself for exams at the very last moment, and I do everything in my power that I can, and I am successful in this process”. Moreover, Frederik stated the last moment preparation: “I prepare for exams at the very last moment. Usually, if it is one subject, I start to prepare a week before”. Thereby, international students expressed their views on time management through the use of schedules, dedicated time, deadlines, preparation in advance, and last-moment preparation for exams.

In the meantime, international students declared their views on effort regulation as the degree of commitment to achieve study goals despite difficult situations. As mentioned by Frederik: “So, there was so much pressure on me. So, I have never had it before. But I have never had the thought of quitting. So instead of quitting and giving up, consider opportunities, and how you can change”. Monika also stated her intention to complete her studies: “I have to continue my studies. I want to finish what I started, even if it is difficult”. Similarly to Monika, Jerry mentioned: “I try to build vision not to give up and finish what I have started”. International students were committed to reaching their study goals.

International students demonstrated their views on help-seeking as an essential component of self-regulated learning, as knowing who, when, and how to ask for assistance when facing difficulties. Veronika mentioned: “I think it is also a strength to know whom you can turn to and ask for help or clarification, which helps in the learning process”. Likewise, Katerina highlighted that it is not possible to do everything alone:

I asked for help. I mean that you do not have to do everything by yourself. It is impossible. And it is not a task that you have to do everything on your own. That is why you have a supervisor; you can ask your supervisor or ask your other groupmates.

Dora also mentioned that students can ask for help from more experienced colleagues: “If there is something difficult, it is okay to ask for help from other people, from other students who have more experience or similar experience, or professors who have more experience”. Simon mentioned asking for help from friends: “If I face some problems, I ask a teacher for help or other students in the class. I have some good friends and some good mates, so I can ask them to explain to me”. So international students facing difficulties or in need of explanation could ask for help from teachers, professors, peers, or friends.

At the same time, international students mentioned peer learning as a collaboration with other learners to support each other's learning. For example, Jerry stated: “We were not just reading books, we were following some books, but the class was more discussion-based, we could express ourselves and learn from each other's experiences”. Simon highlighted: “It is just hard for us. But still, I tried to go to my friends, and we tried to do group study, learn together, and explain to each other. It helped me a lot”. Thus, international students applied peer learning in self-regulated learning.

All international students mentioned self-efficacy as their belief in their abilities to complete tasks, achieve goals, and overcome difficult situations. Monika stated: “I was confident about what I was going to do. So, I did not really worry about that assignment, I was pretty sure about myself”. Dora also highlighted her self-beliefs: “I am confident in the learning process, if I have goals to achieve, there is something I would like to get, I always believe that I have all the capabilities to do so, no matter what is happening”. Jerry expressed his beliefs in overcoming difficult situations: “I believe that when I feel that I am in a difficult situation, I will definitely come out of it. I will find the solution”. Similarly, Frederik mentioned: “So, I can say that if I want to achieve something, I will do it. Even if it is going to be difficult, even if I have some obstacles, if I face issues”.

International students described their beliefs about their skills, such as analytical, presentation, and leadership skills. Monika mentioned presentation skills: “I started giving presentations here, and I was getting bolder, and I was able to talk openly in public”. Veronika highlighted her leadership skills: “I have that self-control, which the leader I would say should have. I have all the leadership qualities that a leader must have”. Frederik stated about analytical skills: “I have really good analytical skills. I can analyse

information”. Dora mentioned leadership and presentation skills: “I could develop leadership skills, presentation techniques, and public speaking as well, and I could improve myself”. International students expressed their beliefs in their capabilities to organize and execute actions that were required to complete their studies. At the same time, international students stated their beliefs about their skills, such as analytical, presentation, and leadership skills.

International students expressed their views on self-regulated learning through the use of self-regulated learning strategies and self-efficacy. Cognitive strategies were highlighted in self-regulated learning, such as rehearsal, elaboration, and organization, which students actively used during their studying. Planning was also mentioned. Students analysed the task, set goals, and planned how to reach these goals during their learning. Meanwhile, all students mentioned resource management strategies in self-regulated learning. These strategies included learning environment, time management, commitment, peer learning, and help-seeking. Students had to consider many factors while studying abroad to arrange their learning environment, avoid distractions, manage their studying and working time, address challenges, and support each other. Students tried to balance their studying, work, and personal life. Moreover, students expressed self-efficacy as their belief in their abilities to complete tasks, achieve goals, and overcome difficult situations during learning. Despite all challenges, they believed that they were capable of studying abroad and completing their degrees.

4.9 RQ7 - To What Extent Do the Qualitative Interviews with International Students Serve to Contribute to a More Comprehensive Understanding of Quantitative Results on Academic Motivation and Self-Regulated Learning Among International Students at Hungarian Universities via Integrative Mixed-Methods Analysis?

This section represents the results level merging integration procedure of mixed-methods, which was used to explain quantitative findings with support from qualitative data based on common domains and developing meta-inferences (Guetterman & Manojlovich, 2024). Joint display was used as a visual tool to represent an integration of quantitative and qualitative data results through tables to develop meta-inferences (Guetterman, et al., 2021). Statistics-by-themes joint display was applied to the array statistical results by qualitative themes, with one as rows and the other as columns, similar to a crosstabulation. This facilitated relating quantitative and qualitative results to look for meta-inferences (Guetterman, et al., 2021).

The following first joint display providing comparative analysis (Table 20) is constructed based on the quantitative data on dominant academic motivation variables, such as motivation to get knowledge and external regulation, and a less popular resource management strategy – peer-learning, and qualitative findings based on the quotes from the interviews to provide a more comprehensive understanding of quantitative results. Relating quantitative and qualitative results helps to get a more comprehensive understanding of why motivation to get knowledge and external regulation were the most popular motivations among international students to study at Hungarian universities, and why students applied the peer-learning self-regulated learning strategy less than others during their studies, and build meta-inferences. Meta-inferences represent high-order conclusions from integrating of the quantitative and qualitative findings in a mixed-methods study (Tashakkori & Teddlie, 2003). The table 20 represents the joint display on dominant and less popular variables.

Table 20

Joint Display on Dominant Academic Motivation Variables, Such as Motivation to get Knowledge and External Regulation, and a Less Popular Resource Management Strategy

Domain/theme	Quantitative (IEA and MSLQ* scales) ranges from 0 to 5	Qualitative	Meta-inferences
Motivation to get knowledge at a Hungarian university	Motivation to get knowledge scale (4.11)	You get knowledge that you can't get in your field at home. The knowledge of language in general or knowledge about language teaching. All of this together. I learned that learning can be more computerized. I learned about conferences, how to participate, and how to organize a conference. I could know more about other cultures and other experiences.	International students are motivated to study at Hungarian universities to get knowledge that they cannot get in their home countries, such as knowledge in a particular field, digital knowledge, and knowledge about conferences, other cultures, practical knowledge, academic

Domain/theme	Quantitative (IEA and MSLQ* scales) ranges from 0 to 5	Qualitative	Meta-inferences
		Learning was very practical. And allowed us to do research with the real data. My academic writing became stronger. It is a great opportunity to study English and learn it more in an academic way.	writing, and English language proficiency.
Motivation to study determined by sources external to the students	External regulation scale (4)	One of the most important reasons to study in Hungary is that a degree from outside is respected more than a local degree. After my degree I plan to work, to find a job here. And I was looking for a good scholarship. So, I don't need to pay a lot of money for my bachelor's I consider not only the education but also the cost of living Location is perfect because from here you can travel a lot	International students are motivated to study at Hungarian universities by sources external to them, such as opportunities to get internationally recognized certificates of higher education degree, scholarship, and find a job after graduation, the cost of living in Hungary, and possibilities to travel during study.
Peer - learning strategy	Peer-learning scale (3.59)	We have different learning styles and academic backgrounds Different levels of English language proficiency among international students Every lesson, I have new groupmates and meet new people,	International students apply less collaboration with other learners in order to aid their learning due to the different learning styles, academic backgrounds,

Domain/theme	Quantitative (IEA and MSLQ* scales) ranges from 0 to 5	Qualitative	Meta-inferences
		and we do not have enough time to build a contact It is also hard to find a common place where to study, it can be a park, but it should be a quiet place, someone's home, or a study room.	and English language proficiency. It is also hard to build a contact with students to arrange peer-learning, and find a common, quiet place to study.

Note. Source: own findings.

**Questionnaire "Why are you studying at a Hungarian university?" Intrinsic Motivation, Extrinsic Motivation, and Amotivation*

*** Motivational Strategies for Learning Questionnaire*

Rich qualitative data were received on motivation to get knowledge to explain what had motivated international students to study at Hungarian universities, and it was characterized by an individual engaging in a specific task simply because of personal interest in it. Intrinsic motivation to get knowledge represents the pinnacle of self-determined behaviours. Motivation to get knowledge, which refers to the motivation for doing an activity for the feelings associated with developing knowledge and exploring new ideas, and represents a prototype of autonomous motivation; thus, students' behaviour is performed autonomously. More self-determined students have more positive educational outcomes in skills and knowledge that they can apply in their future study and career. Having a more comprehensive understanding of motivation to get knowledge can help to develop study programs that fit international students' motivation to maintain their self-determined behaviours for more positive educational outcomes and success in their future careers (Deci & Ryan, 2000). At the same time, motivation to get knowledge can be highlighted in the promotion of Hungarian universities on a global scale to attract more international students for the Internationalisation of Higher education, who are motivated to develop knowledge and explore new ideas, as part of qualitative internal Internationalisation.

Based on the data integration and developed meta-inferences international students were motivated to study at Hungarian universities to get knowledge that they could not get in their home countries - not only academic knowledge in a particular field of study, but also digital knowledge, and knowledge about conferences – how to participate and organize conferences, practical knowledge about research and academic writing, enhanced English language proficiency, and knowledge about other cultures and international environment. Students were motivated to study not only to get specific academic knowledge, but also by diverse factors to get digital knowledge and use of information technologies, opportunities to participate, organize, and learn from conferences, knowledge about research, its planning and conducting, improving English language proficiency, and academic writing. At the same time, students were motivated to get knowledge about other cultures and the international environment. Motivation to get knowledge is complex and diverse, including many factors. So, focus only on motivation to get academic knowledge does not reflect international students' motivation to study at Hungarian universities. Moreover, students were motivated to get to know more about Hungarian culture and language. In contrast, students highlighted a lack of promotion of Hungarian culture and language during their studies through different events, workshops, and excursions. Application of this knowledge in the promotion of Hungarian universities can help to attract more international students, development of study programs that fit international students' motivation more can help to maintain their self-determined behavior and positive education outcomes to support the quality of education.

Meanwhile, rich qualitative data were received on extrinsic motivation precisely on external regulation. External regulation represents those activities that are determined by sources external to the international students. Extrinsically motivated behaviours represent actions that are carried out to achieve some instrumental goals, such as earning a reward or avoiding punishment. These tangible benefits can be easily highlighted in the promotion of Hungarian universities on a global scale to attract more international students.

International students were motivated to study at Hungarian universities by sources external to them, such as opportunities to get internationally recognized certificates of higher education degree, as a degree from outside is respected more than a local degree, opportunity to get a scholarship which covers tuition fees, and possibility find a job after graduation and enhance resume with a work experience from abroad, the cost of living in Hungary, and possibilities to travel during study due to the central location of Hungary. But if the reason for studying at a Hungarian university is taken away such as scholarship

or possibility to travel, there is no intention to continue the engagement in this process among international students. Even so, international students can be attracted to study in Hungary by external sources further development of intrinsic motivation during their studies is required for successful academic performance.

International students can be attracted by external sources to study at Hungarian universities, but a higher sense of self-determination towards intrinsic motivation should be developed; international students' basic psychological needs of autonomy, competence, and relatedness must be satisfied (Deci et al., 1991). To maintain their self-determined behaviours for more positive educational outcomes and success in their future careers (Deci & Ryan, 2000).

Furthermore, based on the quantitative results, international students applied cognitive strategies as rehearsal, elaboration, and organising strategies, resource management strategies, such as time management, peer-learning in self-regulated learning. At the same time, international students demonstrated beliefs and confidence in their abilities. The less popular self-regulated learning strategy among international students was peer learning, while studies that examined the effect of peer learning on academic achievement found a significant positive relationship (ChanLin, 2012; Johnson et al., 2009; Michinov et al., 2011; Puzziferro, 2008). Rich qualitative data were received on peer-learning self-regulated learning strategy to reveal a more comprehensive understanding of quantitative results on the lack of use of peer-learning among international students. International students applied less collaboration with other students in order to aid their learning because students come from different countries, have different learning styles, academic backgrounds, and differences in English language proficiency. As a result of the differences and diversity, it could be hard for international students to apply a peer-learning strategy. At the same time, there was no fixed group of students who study together; students had different subjects and different schedules, with a limited amount of time to build contact and arrange peer learning. And the last reason for the lack of use of the peer learning strategy was the difficulty in finding a common and quiet place where everyone could be comfortable studying. Thus, international students expressed their views on a lack of opportunities for collaboration and peer-learning due to the different backgrounds, language barrier, lack of contacts, and limited common space for studying. As a solution, the university can take a lead role to promote peer-learning and facilitate this learning strategy through team-building activities among students, group projects and presentations, providing a schedule and room for studying.

The following second joint display (Table 21) is constructed based on the quantitative data on a significant difference in international students' motivation to study at a Hungarian university based on the level of study, such as bachelor's, master's, and doctoral. Master's students expressed a relatively higher level of external regulation; at the same time, bachelor's students demonstrated a relatively lighter level of amotivation; doctoral students demonstrated a relatively lower level of rehearsal than bachelor's and master's students. And qualitative findings based on the quotes from the interviews provide a more comprehensive understanding of quantitative results. Relating quantitative and qualitative results helps to get a more comprehensive understanding of the differences in academic motivation and self-regulated learning among international students.

Table 21

Joint Display on Significant Differences in International Students' Motivation to Study at a Hungarian University and Self-Regulated Learning Strategies Based on the Level of Study

Domain/theme	Quantitative (IEA and MSLQ* scales, ANOVA, $p < .05$)	Qualitative	Meta - inferences
Higher external regulation among master's students	External regulation scale ($F=0.01$, $p < .05$)	The most important thing for me is to find a job and build a career. If I work abroad, I get international recognition, and I can add it to my resume. If you study abroad, you have a more prestigious higher education certificate, which opens more doors for your career. A master's degree is only for two years, so I do not have a lot of time. I should use this opportunity to see the World and travel around, also to invest in my career and find a job to work here after graduation.	Master's students are more motivated by external sources, such as an opportunity to get a more prestigious higher education certificate, to find a job, and to build a career in the future. Due to the relatively short program duration, they intend to use the opportunity to travel more.
Higher amotivation among bachelor students	Amotivation scale ($F=0.029$, $p < .05$)	It was very hard for me to be far away from home for so long for the first time, far away from my family and friends. It was also difficult to make new friends. I had to put in extra effort to learn the necessary vocabulary to understand the	Bachelor students demonstrate a higher level of amotivation due to the difficulty of being away from family and friends, the difficulty of making new friendships, lack of English

Domain/theme	Quantitative (IEA and MSLQ* scales, ANOVA, $p < .05$)	Qualitative	Meta - inferences
		subject. I was not ready to study in English, make friends because of the language barrier and stress.	language proficiency for efficient study. This can be associated with a lack of satisfaction of basic psychological needs, such as relatedness, autonomy, and competence.
Lower levels of rehearsal among doctoral students	Rehearsal scale ($F=0.036$, $p < .05$)	The PHD study is more about research, it is not about memorizing different things. You need to have an overview and find different information. Understand whether it is relevant or not, and compare it with what you already know. It is about more complex learning skills. During PhD study, there should be critical thinking, analysis, and some other competencies. We apply research competencies.	Doctoral students demonstrated a relatively lower level of rehearsal, as memorizing is not a suitable technique for PhD study. There is a use of more complex learning skills, such as critical thinking, research skills, and analysis.

Note. Source: owned findings

**Questionnaire "Why are you studying at a Hungarian university?" Intrinsic Motivation, Extrinsic Motivation, and Amotivation,*

*** Motivational Strategies for Learning Questionnaire*

Based on the quantitative findings, master's students demonstrated a relatively higher level of external regulation compared to bachelor's and doctoral students. Qualitative findings from the interviews provided a more comprehensive understanding of why external regulation had been higher among master's students. Based on the data integration and developed meta-inferences, master's students were more motivated by external sources to study at Hungarian universities, as they were more oriented towards the possibility of finding a job and building a career. A higher education certificate from abroad is perceived as more prestigious than a local qualification, offering more opportunities for a future career. At the same time, work experience abroad also brings international recognition to students, and this experience can be added to their resume for future career

prospects. Due to the relatively short duration of the master's program, approximately two years, master's students intend to use the opportunity to travel more intensively compared to bachelor's and doctoral students, who study for a longer time. Simultaneously, master's students were capable of making decisions regarding their careers, investing effort. They tried to use their time more efficiently to develop career prospects and travel more.

In contrast, bachelor's students demonstrated a relatively higher level of amotivation compared to master's and doctoral students. Amotivation refers to the situation in which students see no relation between their actions and the consequences of those actions; students have no reason, intrinsic or extrinsic, for performing the studying activity, and they would be expected to quit the activity as soon as possible or act passively following formal requirements (Ryan & Deci, 2000). So, bachelor's students had fewer intrinsic or extrinsic reasons for performing study activities compared to master's and doctoral students. Based on the data integration and developed meta-inferences, bachelor's students demonstrated a relatively higher level of amotivation largely due to challenges of being away from home, family, and friends for an extended time. Also, facing the difficulty of making friends with other students. Another reason could be associated with limited English language proficiency, so students had to put in extra effort to learn the necessary vocabulary to be able to understand the subject. Some students felt that they were not ready to study in English. Students faced a language barrier, which made it difficult to study in English and form friendships in a foreign environment. Bachelor's students might require more support from the university and professors to maintain their motivation to study.

At the same time, amotivation can be associated with a lack of satisfaction of basic psychological needs, such as relatedness, autonomy, and competence, among bachelor's students. Relatedness refers to the experience of a sense of belonging and connectedness to a group of other people. Bachelor's students might feel less satisfied with being far away from their families and friends. At the same time, a sense of belonging can be established with students, teachers, and professors during the study program. This is realized when students feel that a supervisor or professor genuinely respects and cares for them (Ryan & Deci, 2000). More events and gatherings can be organised for Bachelor's students to facilitate their sense of belonging. English language proficiency can play a crucial role in the satisfaction of autonomy and competence. Students need to feel that they are the masters of their studying and research process, that they have control over their academic life, and can be effective in their pursuits and interactions with the environment. The use of language with professional and specific vocabulary as the medium of instruction can

play a crucial role in students' autonomy and competence because of limited professional vocabulary and possible language barriers in studying in English. More academic English courses can be proposed for Bachelor's students to enhance their language proficiency. Previously conducted research combined the needs for autonomy, competence, and relatedness into one composite variable and found that the satisfaction of these needs was negatively associated with amotivation (Liu et al., 2009; Standage et al., 2003). Students who can satisfy their basic psychological needs are more motivated to study.

Meanwhile, doctoral students demonstrated a relatively lower level of rehearsal than bachelor's and master's students. Qualitative findings from the interviews provided a more comprehensive understanding of why the rehearsal cognitive strategy was relatively lower among doctoral students. Based on the data integration and developed meta-inferences, doctoral students applied less rehearsal strategy in self-regulated learning, as doctoral study is more about complex research compared to bachelor's and master's students. Doctoral study is more about the use of complex learning skills, such as critical thinking, research skills, and analysis to find necessary information, make an overview, and understand if this information is relevant. A relatively lower level of rehearsal could be explained among doctoral students by the requirement to use more complex skills, and memorizing is not a suitable technique for doctoral study, as for bachelor's and master's students. Doctoral students had to use more complex skills to be able to complete their PhD degree.

The qualitative interviews were conducted to enhance the interpretation of quantitative results on academic motivation and self-regulated learning among international students at Hungarian universities via integrative mixed-methods analysis. Two joint displays were constructed based on the quantitative data on academic motivation and self-regulated learning, and significant differences in these phenomena according to the level of study. Based on the data integration and developed meta-inferences, international students were motivated to study at Hungarian universities to get knowledge that they cannot get in their home countries. Also, students were motivated to study at Hungarian universities by sources external to them, such as opportunities to get internationally recognized certificates of higher education, opportunities to get a scholarship, and find a job after graduation, the cost of living in Hungary, and possibilities to travel during study. Meanwhile, international students engaged less in collaborative learning to aid their learning due to the different academic backgrounds and English language proficiency, and difficulties in arranging peer learning.

The qualitative findings explained the significant differences in academic motivation and self-regulated learning among international students across different levels of study. Master's students were more motivated to study at Hungarian universities by sources external to them due to their focus on future career opportunities and the relatively short duration of the master's program. Bachelor's students demonstrated a higher level of amotivation, as a result of the difficulties of satisfying basic psychological needs during study. Meanwhile, doctoral students applied less rehearsal cognitive strategy in their self-regulated learning due to the use of more complex skills than memorizing. The main significant differences in academic motivation and SRL might be considered in study programs for successful academic performance among international students.

4.10 Key Insights Developed in the Form of a Joint Display

The results of an explanatory sequential mixed-methods design broaden our current knowledge on academic motivation and self-regulated learning among international students at Hungarian universities, applying SDT of human motivation (Deci & Ryan, 2008) and Zimmerman and Pintrich's models of self-regulated learning (Pintrich 2000; Zimmerman, 2000). Internationalisation of higher education and the growing number of international students revealed the necessity to analyse these phenomena among international students.

Study participants expressed their academic motivation to study at Hungarian universities, highlighting the dominant motivation, such as stimulation of intrinsic motivation, motivation to get knowledge, external regulation, identified regulation, external regulation, then motivation to accomplish, followed by introjected regulation, and amotivation. Meanwhile, self-regulated learning among international students was also analysed, including cognitive strategies, resource management strategies, and efficacy. The participants in the study uphold more items related to elaboration and organising strategies, efficacy, time-management, and help-seeking of resource management strategies, followed by rehearsal of cognitive strategies, and peer learning of resource management strategies. Additionally, significant differences in international students' motivation to study at a Hungarian university and self-regulated learning were identified across different levels of study, such as bachelor's, master's, and doctoral.

Based on the results of the initial quantitative phase in an explanatory sequential design, an interview guide was developed for the qualitative phase, helping to understand the quantitative results. In the qualitative phase, interview data were analysed using the

first and second cycles of coding (Saldaña, 2016). The analysis of interviews with international students provided a deeper understanding of academic motivation from the participants' point of view. Two statistics-by-themes joint displays were employed to array statistical results by qualitative themes, with one as rows and the other as columns, similar to a crosstabulation. This facilitated relating qualitative and quantitative results to look for patterns (Guetterman, et al., 2021).

The first joint display represented quantitative data on dominant academic motivation variables - motivation to get knowledge and external regulation, less popular resource management strategy – peer-learning, and qualitative findings based on the quotes to provide a deeper understanding of why this academic motivation is the most popular among international students, and why students apply the peer-learning self-regulated learning strategy less than others during their studying. International students are motivated to study at Hungarian universities to get academic and practical knowledge that they cannot get in their home countries - knowledge in a particular field of study, digital knowledge, and knowledge about conferences – how to participate and organize conferences, knowledge about research and academic writing, enhanced English language proficiency, and knowledge about other cultures and the international environment.

Meanwhile, international students are motivated to study at Hungarian universities by sources external to them, such as opportunities to get internationally recognized certificates of higher education degree, as a degree from outside is respected more than a local degree, opportunity to get a scholarship which covers tuition fees, and possibility find a job after graduation and enhance resume with a work experience from abroad, the cost of living in Hungary, and possibilities to travel during study.

International students applied less collaboration with other students in order to aid their learning because students come from different countries, have different learning styles, academic backgrounds, and differences in English language proficiency. Students had a limited amount of time to build contact with each other due to the different schedules and arrange peer learning. And the last reason is the difficulty in finding a common and quiet place where everyone can be comfortable studying.

The second joint display explained the significant difference in international students' motivation to study at a Hungarian university across different levels of study, such as bachelor's, master's, and doctoral. Master's students were more motivated by external sources to study at Hungarian universities, as they were more oriented towards the possibility of getting a higher education certificate from abroad, finding a job, and building

a career. Due to the relatively short duration of the program, master's students intended to use the opportunity to travel more and use their time efficiently compared to bachelor's and doctoral students.

Bachelor's students demonstrated a relatively higher level of amotivation due to the difficulty of being far away from home, family, and friends, and facing the difficulty of making friendships with other students, and limited English language proficiency. They had to put in extra effort to understand the learning materials. At the same time, the level of amotivation can be associated with a lack of satisfaction of basic psychological needs, such as relatedness, autonomy, and competence, among bachelor's students. Bachelor's students might experience a lack of a sense of belonging and connectedness to a group of other people. English language proficiency can play a crucial role in the satisfaction of autonomy and competence. Students need to have control over their academic life, which can be difficult due to limited English language proficiency. At the same time, bachelor's students needed more support from the university to maintain their academic motivation.

Doctoral students applied less rehearsal strategy in self-regulated learning, as doctoral study is more about research and not about the simple memorization of materials. Doctoral study is more about the use of complex learning skills, such as critical thinking, research skills, and analysis to find necessary information, make an overview, and understand if this information is relevant or not. Memorizing is not a suitable technique for doctoral study, as for bachelor's and master's students.

Meta-inferences were developed to explain the reasons for dominant academic motivation and the less popular self-regulated learning strategy among international students at Hungarian universities. Moreover, developed meta-inferences provided a more comprehensive understanding of quantitative results on a significant difference in international students' academic motivation and self-regulated across different levels of study, such as bachelor's, master's, and doctoral. Quantitative results were explained by the qualitative findings based on developed meta-inferences (Guetterman & Manojlovich, 2024).

Chapter 5: Conclusions

5.1 Summary of the Most Important Findings

This chapter represents the report on the mixed-method study conducted in Hungary. The study aimed to analyse academic motivation and self-regulated learning among international students who study at Hungarian universities. An explanatory sequential design helped to get a more comprehensive understanding of academic motivation and self-regulated learning among international students, and significant differences between the two phenomena across different levels of study (bachelor's, master's, doctoral).

The most important findings of this study are presented in the conclusion part, addressing seven main research questions. Based on the literature review and applied mixed-methods design, this section highlights the implications and limitations of the study and provides opportunities for future research.

The results of the analyses suggest that international students' motivation can be reliably assessed using the intrinsic and extrinsic subtypes outlined by Deci and Ryan (1985) and Vallerand (1989; 1992). International students ($N = 300$) demonstrated a higher level of intrinsic motivation than extrinsic motivation or amotivation. International students endorsed more items related to stimulation of intrinsic motivation ($M = 4.21$, $SD = 0.68$), which relates to motivation based simply on the sensations stimulated by performing the different tasks, after that to motivation to get knowledge through studying at a Hungarian university ($M = 4.11$, $SD = 0.7$), external regulation, which represents those activities determined by sources external to the students ($M = 4$, $SD = 0.79$), identified regulation ($M = 3.89$, $SD = 0.71$), external regulation, represents those activities that are determined by sources external to the students ($M = 4$, $CD = 0.71$), than to motivation to accomplish ($M = 3.77$, $SD = 0.85$), followed by introjected regulation, where activities are done due to some type of pressure that has been incorporated into the self ($M = 2.65$, $CD = 0.95$), and amotivation ($M = 1.9$, $SD = 0.86$).

These students participated in study activities for the feelings associated with fun and excitement, exploring new ideas, and deepening their knowledge. At the same time, students' motivation was determined by sources external to them, such as an opportunity to get a scholarship or cost of living in a foreign country, to get an international certificate of higher education, more opportunities for career development, an opportunity to travel, and other tangible benefits.

Similar results were received in other studies on international students' motivation to study in Hungary, which can be related to intrinsic and extrinsic motivations (Casas Trujillo et al., 2020; Kéri, 2018; Khudur, 2019). International students' motivation to study in Hungary can be associated with motivation to get knowledge, professional development, and improvement of English language proficiency, motivation to get international qualifications, enhanced future career opportunities, the possibility to get a scholarship, and motivation to accomplish their study goals. Similarly, international students usually choose to study abroad for better career prospects and economic benefits (Eder et al., 2010; Li & Bray, 2007).

International students demonstrated a low level of amotivation. Consider that a high level of amotivation refers to a situation in which students perceive no relation between their actions and the consequences of those actions, especially when the consequences are seen as resulting from factors beyond their control. It can be concluded that students in this research mostly identified the relationship between their study actions and the consequences of those actions. International students expressed their motivation to study at Hungarian universities, which was stronger than the reasons to discontinue studies.

Self-regulated learning includes cognitive strategies, resource management strategies, and self-efficacy. Cognitive strategies contain rehearsal, elaboration, and organizing strategies. Resource management strategies include time management, peer learning, and help-seeking. The participants in the study uphold more items related to elaboration ($M = 4.09$, $SD = 0.66$) and organising strategies ($M = 3.92$, $SD = 0.69$), after that efficacy ($M = 3.86$, $SD = 0.74$), then time-management ($M = 3.8$, $SD = 0.71$) and help-seeking ($M = 3.66$, $SD = 0.91$) of resource management strategies, followed by rehearsal of cognitive strategies ($M = 3.64$, $SD = 0.82$), and peer learning of resource management strategies ($M = 3.59$, $CD = 0.86$).

The dominant self-regulated learning strategy among international students is cognitive strategy - elaboration. This strategy helps students to store information in long-term memory by building internal connections between new information and prior knowledge (Pintrich et al., 1991). These international students actively edited notes, summarized, paraphrased, and used note-taking during study (Pintrich et al., 1991; Talbot, 1997). Also, international students demonstrated a high level of organizing strategy, which is described as an active endeavor that results in the students' involvement in the task (Pintrich et al., 1991; Talbot, 1997). Meanwhile, students were confident and believed in their own ability to affect how they perform actions and try to overcome obstacles. Students

did not simply acquire the required skills and abilities to perform a task, but actually used cognitive strategies, believing in their capacities.

Moreover, international students could plan study time and tasks. Time management can be essential for academic achievement while studying abroad, when international students have to consider many factors besides academic. Students who can effectively manage their time and prioritize responsibilities are more likely to have focused and effective study periods (Effeney, Carroll & Bahr, 2013). The less popular strategy was help-seeking; this strategy relates to obtaining assistance from instructors to overcome academic challenges (Richardson et al., 2012), such as when students seek clarification from the professor regarding a particular task or learning materials. One of the reasons for students to apply a help-seeking learning strategy could be that they simply might not know whom or how to ask for help. Students did not have well-established connections with other students or professors. The least popular cognitive strategy among international students was the rehearsal strategy. This is the best-suited strategy for a simple task to memorize material by repeating and the activation of information in working memory (Garcia & Pintrich, 1995).

Peer learning as a part of the resource management strategy was the least popular strategy among international students. This strategy can be described as collaborating with other learners to aid one's learning (Effeney et al., 2013). At the same time, peer learning can positively affect academic achievement (ChanLin, 2012; Johnson et al., 2009; Michinov et al., 2011; Puzziferro, 2008).

ANOVA was conducted with respect to the level of study, such as bachelor's, master's, or doctoral. A significant difference was found between the variable of the student's level of study and external regulation ($F=0.01$, $p<.05$). The results of Tukey HSD analysis revealed that master's students have significantly higher levels of external regulation ($M=4.2$) compared to bachelor's ($M=3.91$) and doctoral students ($M=3.9$). In addition, a significant difference was found between the variable of the student's level of study and amotivation ($F=0.029$, $p<.05$). Bachelor's students have significantly higher levels of amotivation ($M=2.05$) compared to master's ($M=1.73$), and doctoral ($M=1.92$) students.

Master's students invested more energy in a study activity because of the external sources. This could be determined by scholarship, opportunity to get an international certificate of higher education, possibility to travel, future career opportunities, and other tangible benefits. Bachelor's students identify less relation between their actions and the

consequences of those actions when the consequences were seen as arising as a result of factors beyond their control, compared to master's and doctoral students. Higher levels of external regulation and amotivation can be associated with less satisfaction of basic psychological needs such as autonomy, competence, and relatedness among bachelor's and master's students at Hungarian Universities.

Doctoral students demonstrated a relatively lower level of use of the rehearsal cognitive strategy, compared to bachelor's and master's students. In other words, bachelor's and master's students' rehearsal strategies influence the attention and encoding process during simple tasks, memorizing material by repeating (Garcia & Pintrich, 1995; Pintrich et al., 1991). That can be caused by the higher complexity of the tasks that doctoral students have to complete during their studies compared to bachelor's and master's students.

International students' views were expressed in connection with their academic motivation (N = 8). International students' academic motivation included stimulation, accomplishment, and motivation to get knowledge, identified, introjected, and external regulation. Participants also revealed their views on amotivation or reasons for intentions to discontinue the study. International students' motivation was related to the motivation to get knowledge in Hungary, which they could not get in their home country, including knowledge about particular fields, knowledge about conferences, how to participate in and organize conferences, practical knowledge about research and academic writing, knowledge about different cultures and international environment, and academic English.

International students' academic motivation was determined by sources external to the students. These external sources included internationally recognized certificates of higher education degrees, as a degree from abroad was more recognized compared to a local degree, the opportunity to get a scholarship to cover tuition fees, the cost of living in Hungary while studying, the possibility to enhance career prospects and get a job after studying at Hungarian universities, and opportunities to travel. Similarly, based on previous studies, international students usually choose to study abroad for better career prospects and economic benefits (Eder et al., 2010; Li & Bray, 2007).

At the same time, students demonstrated intention to discontinue the study due to different reasons. These reasons were associated with disrespect in the professional relationship, strict teaching styles, and uncertainty in the study's progress during study. Moreover, students experienced a lot of pressure from work and study at the same time, a lack of finances, a lack of international students' engagement in university activities, a

feeling of loneliness, and exclusion. Some of the students had high expectations about the study program, feeling disappointed during the study, as their expectations were not met.

Moreover, international students' views were expressed in connection with basic psychological needs, such as competence, autonomy, and relatedness (N = 8). International students mentioned autonomy, competence, and relatedness, representing the three basic psychological needs. Students need to feel that they have control over their academic life and their behaviour (Reeve, 2009). Students could organize their studying as they prefer, build their curriculum, choose subjects, topics for the final work, and have open conversations related to their interests with a supervisor. The competence represents the need to be effective in pursuits and interactions with the environment (Deci & Ryan, 2000). Competence concerns their achievements, knowledge, and skills to develop mastery over tasks, learning, development of research, and professional skills, and be able to overcome challenges.

The relatedness represents the experience of a sense of belonging and connectedness to a group of other students, teachers, professors, and university staff during the study program. Supervisor's support plays a crucial role at all levels of study for international students to build trust and a sense of belonging. A relationship with a supervisor is also related to satisfaction with the study program. University environments, others' support, and professors' friendly attitudes contributed to satisfaction with relatedness. Students expressed their need for belonging and feeling involved during study. Based on the interview findings, this need was the least satisfied.

Characteristics of self-regulated learning among international students were discovered through semi-structured interviews (N = 8). International students' self-regulated learning includes metacognitive strategy – planning, cognitive strategies, such as rehearsal, elaboration, and organizing strategies, resource management strategies – learning environment, time management, help-seeking, peer learning, and self-efficacy. International students analysed the task, set goals, and planned how to reach these goals in their learning. They used planning on a daily, weekly, and monthly basis, organizing what they would like to achieve.

Students used to read materials and repeat them several times to memorize. Some students read texts out loud several times to memorize. International students use rehearsal strategies for simple tasks during self-regulated learning. For more complex tasks and the incorporation of information into long-term memory, students used elaboration to relate new material to what they already know, make summaries, understand the main idea, and

connect with prior knowledge. Students organized materials in drawings, tables, graphs, and notes. Students practiced writing on a day-to-day basis and used highlights to mark the most important information.

International students tried to organize their learning environment through organising learning materials online in separate folders for articles, workshop and conference materials, and training materials, and using a separate notebook for each subject to navigate learning materials. At the same time, students tried to avoid distraction, put away their mobile phones, and isolated themselves to focus properly on their studies. Students could effectively manage their time and prioritize responsibilities. Students highlighted the importance of a schedule, dedicated time, role of the deadline in time management. International students had two time management techniques to prepare for the exams, such as preparation in advance and last-moment preparation.

Furthermore, international students declared their views on the degree of commitment to achieving study goals despite difficult situations, as an effort regulation. Students considered opportunities to change the situation while facing difficult situations. Thus, international students facing difficulties or in need of explanation could ask for help from teachers, professors, peers, or friends. Some of the students applied peer learning as a collaboration with other learners to support each other's learning. Students could learn from each other's experiences through open discussions.

International students mentioned their belief in their abilities to complete tasks, achieve goals, and overcome difficult situations, as self-efficacy. They were confident in their learning process, their capabilities in achieving goals, and overcoming difficult situations. International students stated their beliefs regarding their skills, such as analytical, presentation, and leadership skills.

The mixed-methods study (merging integration - joint display) aimed to answer to what extent the qualitative interviews with international students serve to contribute to a deeper insight of quantitative results on academic motivation and self-regulated learning among international students at Hungarian universities via integrative mixed-methods analysis.

International students were motivated to study at Hungarian universities to get knowledge that they cannot get in their home countries - knowledge in a particular field of study, digital knowledge, and knowledge about conferences – how to participate and organize conferences, practical knowledge about research and academic writing, enhanced English language proficiency, and knowledge about other cultures and the international

environment. Also, international students were motivated to study at Hungarian universities by sources external to them, such as opportunities to get internationally recognized certificates of higher education degree, as a degree from outside is respected more than a local degree, opportunity to get a scholarship which covers tuition fees, and possibility find a job after graduation and enhance resume with a work experience from abroad, the cost of living in Hungary, and possibilities to travel during study.

Regarding self-regulated learning, international students applied less collaboration with other students in order to aid their learning because coming from different countries, students had different learning styles, academic backgrounds, and differences in English language proficiency, which made collaboration more limited and difficult. At the same time, students had different subjects and different schedules, with a limited amount of time to build contact and arrange peer learning. And the last reason for the limited application of the peer learning strategy was the difficulty in finding a common and quiet place where everyone could be comfortable studying. All these reasons contributed to the exclusion of the per-learning SRL strategy, while university support might be required to promote its use.

Master's students were more motivated by external sources to study at Hungarian universities, as they were more oriented towards the possibility of finding a job and building a career due to the shorter duration of the study program. A higher education certificate from abroad was more prestigious compared to a local certificate, and it gave more opportunities for a future career. At the same time, work experience from abroad also brings international recognition to the students, and this experience can be added to the resume for future career prospects.

Bachelor's students demonstrated a relatively higher level of amotivation due to the difficulty of being far away from home, family, and friends, and facing the difficulty of making friendships with other students. Another reason for amotivation could be associated with limited English language proficiency. Students experienced the language barrier, which makes it difficult to study in English and build friendships in a foreign environment. Students experienced the lack of connection and limited involvement, which might affect their motivation to study.

Doctoral students applied less rehearsal strategy in self-regulated learning because doctoral study is more about research activities, not simply memorizing materials, compared to bachelor's and master's students. Doctoral study is more about the use of complex learning skills, such as critical thinking, research skills, and analysis. A relatively

lower level of rehearsal could be explained among doctoral students by the requirement to use more complex skills, and memorizing is not a suitable technique for doctoral study, as for bachelor's and master's students.

Meanwhile, all international students were intrinsically motivated at Hungarian universities; bachelor's students tended to have more reasons to discontinue their studies, while master's students were more motivated to study by sources external to them, so the necessary support from the universities can develop and maintain intrinsic academic motivation. Moreover, this support can enhance the use of students' SRL strategies and promote peer-learning through integration and organization of the learning environment. University support can also enhance students' autonomy, competence, and relatedness to satisfy these basic psychological needs.

5.2 Significant Contribution to the Knowledge and Its Implications

This study provides new insights into academic motivation and self-regulated learning among international students. Considering the importance of academic motivation and self-regulated learning during study, the importance of satisfaction of basic psychological needs during study. The study highlighted an understanding of academic motivation and self-regulated learning in higher education.

The application of Self-Determination Theory and Self-regulated Learning Models for a mixed-methods study served the purpose of the study. These frameworks provided a theoretical foundation for the study, contributed to the understanding and explanation of academic motivation and self-regulated learning among international students. This study contributes to the mixed-methods methodological literature by using the joint displays for data integration on the results level and visualization.

5.2.1 Methodological Implications

The study further offers several significant contributions to the existing literature on mixed-methods research. First, based on the literature review, the phenomena of academic motivation and self-regulated learning are too complicated to be captured within the singularity of a quantitative or qualitative approach. Second, the application of a mixed-methods design contributed to a deeper understanding of academic motivation and self-regulated learning among international students at Hungarian universities. Quantitative studies proposed the measurement and analysis of causal relationships between variables, generalizing findings to the population of international students. Qualitative methods allowed participants to articulate their views on the research phenomena (Denzin &

Lincoln, 2003). Third, the mixed-methods research involved the collection of both quantitative and qualitative data in response to research questions in the most suitable way. The two forms of data are integrated into the research design (Creswell & Creswell, 2018). Mixed-methods research included rigorous methods in data collection, data analysis, and interpretation of both quantitative and qualitative data. Fourth, the mixed-methods research combined a structural framework that gives accurate measures of academic motivation and self-regulated learning and provides techniques for getting into the depth of the personal experience of students for better, significant contextual interpretation (Dörnyei, 2007). Fifth, joint displays were used to provide a framework for integration, breaking down the cognitive process of merging, comparing, relating, and linking qualitative and quantitative data or results (Guetterman & Moss Breen, 2021) to assist in identifying meta-inferences and process data integration for a more comprehensive understanding on academic motivation and self-regulated learning.

The key theories, Self-Determination theory of human motivation and Self-Regulated Learning, provided the foundation for an explanatory sequential mixed-methods design. Both theories worked well in the samples of international students in Hungary. Moreover, an explanatory sequential mixed-method design made it possible to collect quantitative data about academic motivation and self-regulated learning among international students to provide generalizable results about two phenomena and their relation in the first phase, and then move to the qualitative questions in the second phase for a complex understanding of participants' perspectives of the investigated phenomena. In the last phase, joint displays represented a visual means of integrating quantitative and qualitative data, results through tables to develop meta-inferences (Guetterman, et al., 2021).

5.2.2 Theoretical Implication

There are also theoretical implications of this study. The self-determination theory (Deci & Ryan, 2000), as a broad motivational framework, is sufficient in higher education and international students' contexts. This theory posits that all students, regardless of their age, gender, level of study, socioeconomic background, country of origin, or cultural context, possess inherent growth tendencies, including intrinsic motivation and basic psychological needs (Deci & Ryan, 1985, 2000). International students' motivation can be represented in a motivation continuum to assess the degree to which their behaviours is performed autonomously versus being controlled externally (Deci & Ryan, 2008). Intrinsic

motivation represents a prototype of autonomous motivation, characterized by an individual engaging in a specific task simply because of personal interest. It includes intrinsic motivation to get knowledge, stimulation, and accomplishment. Internalized extrinsic motivation or identified regulation is the type of extrinsic motivation in nature but has been internalized or regulated into a self-willing belief (Chirkov et al., 2007). Controlled motivation has two sub-categories: extrinsic and introjected regulation. Extrinsic regulation represents the individual's behaviour, which is motivated by external rewards or avoiding punishment. In the case of introjected regulation, the students are apt to implement the behaviour to avoid feelings of shame or guilt or meet the expectations of others.

Meanwhile, basic psychological needs are represented among international students. These three basic psychological needs of autonomy, competence, and relatedness are the source of students' inherent and proactive intrinsically motivated tendency to be more active and persistent, pursue the optimal challenge, and exercise their capabilities during studying. As a consequence, the high sense of self-determination towards intrinsic motivation is connected with satisfaction of the basic psychological needs of autonomy, competence, and relatedness.

Zimmerman and Pintrich's models of self-regulated learning were applied to provide a foundation for self-regulated learning among international students because both of them are grounded in socio-cognitive theory (Bandura, 1986) and have a higher impact when a framework is provided for students and teachers (Dignath et al., 2008). Both models are sufficient in the higher education and international students' context.

5.2.3 Implications for Policy Makers

At the national level, internationalisation has been charted into various national priorities, and higher education scholars emphasise many reasons why universities have to expand and deepen their international engagements, including increased revenue, enhanced prestige, and improved student learning (Knight, 2004). Findings on academic motivation among international students can contribute to the students' attraction and engagement; meanwhile, findings on self-regulated learning contribute to improved learning.

Since the internationalisation process can bring potential benefits, such as political, socio-cultural, and academic. Internationalisation starts to be perceived as one of the essential drivers of change in higher education systems (Craciun, 2015). To enhance the quality of education and research for all students and staff, to make a meaningful

contribution to society, the findings of this study can help in the review of policies in the purpose, functions, and delivery of post-secondary education for international students in Hungary. In the intentional process of integrating international and intercultural dimensions into education, with an emphasis on academic motivation and self-regulated learning.

Development policies to maintain the necessary number of skilled and competitive labour through internationalisation. University graduates have to acquire a variety of intercultural competencies to be competitive in the global labour markets (Buckner, 2019). A 2012 OECD report illustrates that in today's world of interconnected labour markets, university graduates inevitably have to "have in a foreign language, international, and intercultural skills to be able to interact in a global setting" (Hénard et al. 2012). These competences international students can get while studying abroad; at the same time, domestic students can develop those competences through the internationalisation of higher education and interactions with international students.

Reputation, recruitment, and excellence in research are driving the agenda of institutions of higher education, national governments, and their internationalisation policies. Development of the policies to attract and retain talented international students stimulates the knowledge economy, and competition for funding and grants for complex research, for access to the top 500 in global rankings, and for access to high-impact publications. Motivated and self-regulated students have a higher level of educational outcomes, which can directly contribute to the knowledge economy and academic competition.

Findings of the study can be used by the national agency - Tempus Public Foundation (TPF), which sets the internationalisation goals of higher education (Aye & Bocsi, 2023). To promote cooperation between Hungarian partners and foreign institutions to enhance the international visibility of Hungarian Higher Education through active participation in international activities by attracting and retaining motivated and self-regulated learners from different countries (Kovacs & Tweneboah, 2020). Data on academic motivation and self-regulated learning can be highlighted in the promotion of Hungarian universities and the SHSP in the international area. To support the internationalisation of Hungarian higher education and its continued development, strengthen the international academic and research community relations.

5.2.4 Educational Implications

Findings on academic motivation and self-regulated learning of international students can be used in program development, which better fits the motivational and self-regulated learning characteristics of international students. An increasing number of educators have been paying attention to the necessity of helping students become motivated and self-regulated learners (Boekaerts & Cascallar, 2006; Kim et al., 2019; Pintrich 2000; Schunk 2005; Winardi, 2024; Yue & Lu, 2022). Findings of the study show to what extent students internationalized their motivation, the degree to which students' behaviours are performed autonomously versus being controlled externally (Deci & Ryan, 2008). Autonomous motivation, which has two sub-categories: intrinsic motivation and identified regulation, should be supported during the study. As a higher level of self-determination towards autonomous motivation leads to positive educational outcomes, i.e. deeper engagement, better conceptual learning, and higher persistence (Areepattamannil, Freeman, & Klinger, 2011; Black & Deci, 2000; Lin, McKeachie, & Kim, 2001; Moneta & Siu, 2002; Pelletier et al., 2001; Standage, Duda, & Ntoumanis, 2005; Vansteenkiste, Lens, & Deci, 2006; Wang & Guthrie, 2004; Zhou, Ma, & Deci, 2009; Zhu & Leung, 2011). The study also provided findings on the reasons for the situations in which students see no relation between their actions and the consequences of those actions; the consequences are seen as arising as a result of factors beyond their control. These reasons can be considered during the program development to avoid termination of the studies or passive following of formal requirements among international students.

The findings of self-regulated learning can be used in the program development to reflect the use of self-regulated learning strategies, such as cognitive and resource management strategies, and self-efficacy in international students' studies. It is worth highlighting the time management strategy (international students have to balance study and work in a foreign country), help-seeking strategy, as they might do not know whom and when to ask for help, peer-learning strategy to enhance their learning with a help of each other, organization of learning environment, maintaining the necessary level of commitment to achieve the study goals. The development of the relevant study programs can promote the use of these self-regulated learning strategies, students' self-efficacy, and their achievements, relating to several grades and ability levels (Carmichael & Taylor, 2005; Lane et al., 2004).

To contribute to the quality of internal internationalisation, appropriate language proficiency and openness can be guaranteed. Where teacher training is an important

intermediate, the training can be developed with the use of these study findings. Teachers and professors' appropriate communication, language skills, and open mindset can fundamentally influence the attitudes of current and future students (Lannert & Derényi, 2020).

Findings of the study can also be used for the development of the university's environment that supports satisfaction of international students' basic psychological needs, such as autonomy, competence, and relatedness. The use of language with professional and specific vocabulary as the medium of instruction can play a crucial role in students' autonomy because of limited professional vocabulary and possible language barriers in foreign language studies. The competence can be supported by introducing appropriate learning and research activities at universities, providing students with the appropriate tools, techniques, and feedback for improvement (Niemiec & Ryan, 2009). Relatedness refers to the experience of a sense of belonging and connectedness to a group of other students, teachers, and professors during the study program. This is realized when students feel that a supervisor or professor genuinely respects and cares for them (Ryan & Deci, 2000). Close emotional bonds and secure attachments with others should be established during studying to satisfy relatedness as a psychological need. When basic psychological needs are satisfied, intrinsic motivation is expected to be facilitated.

5.3 Limitations of the study

A few limitations of the current study need to be addressed in the future.

Firstly, the explanatory sequential mixed-methods design involved a two-phase data collection project. In the first phase, quantitative data were collected and analysed to guide the qualitative phase (Barnes, 2019; Creswell, 2014). The data collection proceeded with rigorous quantitative sampling in the first phase and with purposeful sampling in the second, qualitative phase. This design is time-consuming, as quantitative and qualitative data cannot be collected in parallel. The first limitation of this study is the volume of work and time to be invested. So, an initial timeline of the research was extended. Mixed-methods design requires detailed planning based on the sources and the researcher's capacities.

Secondly, the research does offer some confirmatory evidence for substantive aspects of SDT to investigate international students' motivation to study at Hungarian universities using the two-factor model of intrinsic and extrinsic motivation. The study also offers some confirmatory evidence for applying self-regulated learning models for

international students who study at Hungarian universities. However, this study does not introduce any new theoretical concepts.

Thirdly, the study focuses on a specific context of Hungarian universities that limits the generalisability of the findings to other educational settings outside of Hungary. Fourthly, from a methodological perspective, the application of mixed-methods design requires identifying quantitative and qualitative data to measure the same constructs. Mixed-methods research includes rigorous methods in data collection, data analysis, and interpretation of both quantitative and qualitative data, and two forms of data are integrated into the research design. Mixed-method design requires relevant researchers' skills.

Fifthly, the topic of research is closely related to the researcher's experience as an international student in Hungary, attitudes, and interests, which might affect the researcher's approach in data collection, analysis, and integration of results. To reduce the biases, different research methods and sources of information were used, a member checking procedure, and guidance from the more experienced researcher were applied.

5.4 Suggestions for Future Research

As this study does not introduce any new theoretical concepts. Future qualitative studies can be conducted to develop new theoretical frameworks on international students' academic motivation and self-regulated learning. Such studies can lead to the development of novel theories that address the unique challenges faced by international students in a foreign country and offer deeper insights into academic motivation and self-regulated learning.

Moreover, the study focuses on a specific context of Hungarian universities that limits the generalisability of the findings to other educational settings outside of Hungary. Expanding research to include universities in different countries would help determine whether the patterns identified in this study are similar to the patterns in other countries. Comparative studies between different countries can also reveal how local factors shape international students' academic motivation and self-regulated learning. Comparative studies can also be conducted based on the country or region of international students. The data can be nested by the country of students' origin (a particular country or countries); future studies can examine the multilevel effects of the data. And identify common patterns or differences in academic motivation and self-regulated learning among international students from different countries.

The longitudinal study can also be conducted to track the changes in academic motivation and self-regulated learning among international students in Hungarian universities over time. By following the same cohort of students throughout their academic journey, research can provide insights into the factors that influence academic motivation and self-regulated learning. Starts from the stage of adaptation to a Hungarian university and ends during graduation.

Considering the local context of internationalisation in Hungary, institutions have developed in the areas of student mobility and course expansion, and are already facing capacity problems, and increasingly perceive that quantitative expansion needs to be replaced by qualitative change in internationalisation. Considering the relatively low number of international doctoral students compared to bachelor's and master's students in Hungary, the Internationalisation of doctoral education can be a key to quality enhancement. Doctoral schools perform better in internal internationalisation than bachelor's and master's levels of higher education, according to the research. The internationalisation of curricula, the use of international literature in courses, and the sharing of foreign experience are more characteristic of doctoral schools. So, more studies can be conducted on international doctoral students' motivation to study in Hungary, self-regulated learning, and internationalisation of doctoral schools.

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Appendices

Appendix A: Demographics survey

- What is your university?

- Level of study

Bachelor

Master

Doctoral

- What is your major?

- How old are you?

- Gender

Male

Female

Rather, do not say

- Are you a scholarship holder or self-financed student?

Stipendium Hungaricum Scholarship holder

Young Christian People holder

Self-financed student

- What country are you from?

Appendix B: “Why are you studying at a Hungarian university?” instrument

Total number of questions: 28

1. Education abroad is an integral part of my life;

Fully disagree 1 2 3 4 5 Fully agree

2. Studying at Hungarian university allows me to continue learning about many things that interesting for me;

Fully disagree 1 2 3 4 5 Fully agree

3. I cannot see why I study at a Hungarian university;

Fully disagree 1 2 3 4 5 Fully agree

4. I study at Hungarian university to broaden my knowledge about subjects which appeal to me;

Fully disagree 1 2 3 4 5 Fully agree

5. I would feel bad if I didn't take the opportunity to study abroad;

Fully disagree 1 2 3 4 5 Fully agree

6. It's a great feeling to be able to study abroad;

Fully disagree 1 2 3 4 5 Fully agree

7. I study in Hungary for the satisfaction I feel when I solve a problem during my studies;

Fully disagree 1 2 3 4 5 Fully agree

8. I can't think of any academic reason for what I am studying in Hungary;

Fully disagree 1 2 3 4 5 Fully agree

9. I would feel ashamed among my family or friends if I couldn't study at a university abroad;

Fully disagree 1 2 3 4 5 Fully agree

10. I love studying abroad in Hungary;

Fully disagree 1 2 3 4 5 Fully agree

11. Studying in Hungary is an important part of how I define myself;

Fully disagree 1 2 3 4 5 Fully agree

12. I study at a Hungarian university in order to get a more prestigious job later on;

Fully disagree 1 2 3 4 5 Fully agree

13. I study in Hungary for the pleasure I experience when I am able to achieve my goals in studying abroad;

Fully disagree 1 2 3 4 5 Fully agree

14. I study in Hungary to get the opportunity to travel more;
Fully disagree 1 2 3 4 5 Fully agree
15. I can't understand why I am studying in Hungary;
Fully disagree 1 2 3 4 5 Fully agree
16. I would feel embarrassed if I didn't take part in higher education abroad (Hungary);
Fully disagree 1 2 3 4 5 Fully agree
17. Studying at a Hungarian university is an important part of what I want to do;
Fully disagree 1 2 3 4 5 Fully agree
18. I study abroad in order to have a better salary in the future;
Fully disagree 1 2 3 4 5 Fully agree
19. I study at a Hungarian university for the enjoyment I experience when I pass an examination in English;
Fully disagree 1 2 3 4 5 Fully agree
20. I study at a Hungarian university for the satisfied feeling I get in finding out new things and knowledge;
Fully disagree 1 2 3 4 5 Fully agree
21. I study at a Hungarian university for the positive feeling that I experience studying abroad;
Fully disagree 1 2 3 4 5 Fully agree
22. I truly have the impression of wasting my time in the university where I am studying;
Fully disagree 1 2 3 4 5 Fully agree
23. Studying abroad is a fundamental part of who I am;
Fully disagree 1 2 3 4 5 Fully agree
24. I study at a Hungarian university to get a better chance to work in an international setting;
Fully disagree 1 2 3 4 5 Fully agree
25. I study abroad for the satisfaction I feel when I am in the process of accomplishing my international student's duties;
Fully disagree 1 2 3 4 5 Fully agree
26. I study abroad for the pleasure I experience in knowing more about my field of study;

Fully disagree 1 2 3 4 5 Fully agree

27. I study at Hungarian university for the pleasure I experience during
studying;

Fully disagree 1 2 3 4 5 Fully agree

28. I would feel guilty if I didn't study abroad (Hungary);

Fully disagree 1 2 3 4 5 Fully agree

Appendix C: Motivational Strategies for Learning Questionnaire (MSLQ)

Total number of questions: 28

1. I am able to receive an excellent grade in the course;

Fully disagree 1 2 3 4 5 Fully agree

2. When I study for the course at a Hungarian university, I practice saying the material to myself over and over;

Fully disagree 1 2 3 4 5 Fully agree

3. When I study for the exam, I pull together information from different sources, such as lectures, readings, and discussions;

Fully disagree 1 2 3 4 5 Fully agree

4. When I study the readings for the course at my university, I outline the material to help me organize my thoughts;

Fully disagree 1 2 3 4 5 Fully agree

5. I make sure I keep up with the weekly readings, research, assignments;

Fully disagree 1 2 3 4 5 Fully agree

6. When studying for the course, I often try to explain the material to a groupmate or a friend;

Fully disagree 1 2 3 4 5 Fully agree

7. If I have trouble learning the material in the university course, I try to do the work with help from other students;

Fully disagree 1 2 3 4 5 Fully agree

8. I can understand the most difficult material presented in the readings for different university courses;

Fully disagree 1 2 3 4 5 Fully agree

9. When studying for the course, I read my class notes over and over again;

Fully disagree 1 2 3 4 5 Fully agree

10. I try to relate ideas in this subject to those in other courses whenever possible;

Fully disagree 1 2 3 4 5 Fully agree

11. When I study, I go through the readings and try to find the most important ideas;

Fully disagree 1 2 3 4 5 Fully agree

12. I find it easy to stick to a study schedule;

Fully disagree 1 2 3 4 5 Fully agree

13. I try to work with other students from the course to complete the course assignments;

Fully disagree 1 2 3 4 5 Fully agree

14. I can understand the most complex material presented by the professor in the lectures;

Fully disagree 1 2 3 4 5 Fully agree

15. When reading the new materials, I try to relate the material to what I already know;

Fully disagree 1 2 3 4 5 Fully agree

16. I make simple charts, diagrams, or tables to help me organize course material;

Fully disagree 1 2 3 4 5 Fully agree

17. I find it easy to stick to a study schedule;

Fully disagree 1 2 3 4 5 Fully agree

18. When I study for the course, I often set aside time to discuss the course material with a group of students;

Fully disagree 1 2 3 4 5 Fully agree

19. If I don't understand the concept well, I ask other students to clarify it;

Fully disagree 1 2 3 4 5 Fully agree

20. I can master the skills being taught by professors in the university course;

Fully disagree 1 2 3 4 5 Fully agree

21. I make lists of important terms for a particular course and memorize the lists;

Fully disagree 1 2 3 4 5 Fully agree

22. I try to apply ideas from course readings in other activities such as lecture and discussion;

Fully disagree 1 2 3 4 5 Fully agree

23. I try to identify students in the course whom I can ask for help if necessary;

Fully disagree 1 2 3 4 5 Fully agree

24. When I study for this course, I go over my class notes and make an outline of important concepts;

Fully disagree 1 2 3 4 5 Fully agree

25. I make effective use of my study time for each particular course;

Fully disagree 1 2 3 4 5 Fully agree

26. I try to work with other students to understand the course better;

Fully disagree 1 2 3 4 5 Fully agree

27. I memorize key words to remind me of important concepts to be ready for the subject;

Fully disagree 1 2 3 4 5 Fully agree

28. When I can't understand the material in the course, I ask my groupmate for help;

Fully disagree 1 2 3 4 5 Fully agree

Appendix D: Interview protocol for participants: International students

Time of interview:

Date:

Place:

Interviewee:

Level of study:

University:

Principal Investigator (PI): Good morning/afternoon.

- How are you today? How was this studying week?
- How do you usually spend your free time resting?

About the research project:

This interview aims to get to know about your motivation to study at a Hungarian university, how and why you chose to study in Hungary, as well as self-regulated learning during your studies, and how you improve your learning performance. Please, remember that there are no bad or good answers; the most important part for me is your experience and point of view without any expectations. If you do not feel comfortable or do not want to answer the question, you can always skip it. Let me remind you that your participation is anonymous, but I would like to record our interview so it can be transcribed later. Do you still consent to being recorded? Please read again and sign the consent form. Thank you.

[Test the audio recorder]

Please provide background information on your academic background

Pseudonym to use in the study:

Main interview questions:

Academic Motivation

1. Why did you decide to study abroad?
2. Why did you choose to study in Hungary?
3. What is your main goal in studying at a Hungarian university?
4. How has this goal changed during studying?
5. What was the role of other people in your decision?
6. What have you learnt while studying abroad that you could not learn in your home country?
7. Have you experienced success during your studies in Hungary? Can you describe it?
8. How satisfied are you with the study abroad experience at a Hungarian university?
9. What did you achieve?
10. How is this studying abroad experience shaping your future view?

Self-Regulated Learning

1. Do you have any special techniques to organize your studying? Can you describe?

2. Do you have any techniques to organize your learning time? Could you give an example?
3. How do you usually prepare for exams?
4. How do you organize your notes?
5. How do you usually memorize materials?
6. How do you cope with difficult situations during study?
7. How well can you deal?
8. Could you please describe a difficult situation and how you overcame it?
9. What are your strengths in studying?

Appendix E: Codebook of the Measured Constructs

Code	Description	Example	Inclusion criteria
Motivation to get knowledge	Refers to the motivation for engaging in an activity due to the feelings associated with developing knowledge and exploring new ideas (Vallerand, 1997).	Students experience the pleasure of studying at Hungarian universities and gaining knowledge in their particular field of study.	Data should focus on the intrinsic motivation to get knowledge, pleasurable sensations experienced during the self-initiated and reasonably challenging activity. Students engage in activity because that activity is satisfying and enjoyable to do, to develop knowledge in a particular field, to get to know more about academic writing, conducting research, improving English language proficiency, and exploring new ideas.
Motivation to accomplish	Refers to the sensations related to attempting to achieve a goal or master a task (Vallerand, 1997).	Students feel the satisfaction of passing examinations, publishing articles, and participating in research projects.	Data should focus on the intrinsic motivation to accomplish, pleasurable sensations experienced during the self-initiated and reasonably challenging activity. Students are motivated to achieve their goals and master tasks while studying at Hungarian universities. These goals can relate to passing examinations and assessments, fulfilling the academic requirements, publishing articles, and participating in different research projects.

Motivation to get stimulation	Relates to motivation based simply on the sensations stimulated by performing the task, such as aesthetic appreciation, fun, or excitement (Vallerand, 1997).	Students express joy while discussing their research topics, assignments, or studying progress with other students and professors.	Data should focus on the intrinsic motivation to get stimulation, pleasurable sensations experienced during the self-initiated and reasonably challenging activity. Students are motivated to study at Hungarian universities by sensations stimulated by performing the task, such as appreciation, fun, or excitement. This stimulation can be acquired during discussions with other students and professors, and any other studying activities.
Identified regulation	Students invest their energy in an activity because they have chosen to do so for personally relevant reasons (Vallerand, 1997).	Students carry out studying because it is an integral part of how they define themselves.	The most self-determined form of extrinsic motivation. Students who feel that pursuing a degree at a Hungarian university is an important aspect of their professional development will engage in learning activities. Students can be motivated by a dream to become professionals or by identifying with studying at a Hungarian university as an integral part of their development.
Introjected regulation	Refers to reasons that pertain to performing an activity due to some type of pressure that individuals have	Students study because they would feel ashamed among their family or professors if they	Students are reacting to pressure, not acting based on personal choice; even if the source of the pressure

	incorporated into the self, such that they compel themselves to carry out that activity (Vallerand, 1997).	could not take this opportunity.	is internal, it is not self-determined. Studying will only take place as long as students feel the need to reduce guilt in front of their family, relatives, and professors. Students can feel ashamed if they cannot take this opportunity to study at a Hungarian university.
External regulation	Represents those activities that are determined by sources external to the students (Vallerand, 1997).	Students can be motivated by the costs of the study program, the opportunity to get a scholarship, receiving internationally recognized certificates of higher education or a title, career prospects, possibilities to travel, and other tangible benefits.	External regulation represents those activities that are determined by sources external to the students (Vallerand, 1997). If the reason for studying at a Hungarian university is taken away, there is no intention to continue the engagement in this process. These reasons can be represented by an opportunity to get a scholarship, the possibility to travel due to the central location of Hungary in Europe, career prospects to get a better job in the future, the possibility to get internationally recognized certificates of higher education, or a title.
Amotivation	Refers to the situation in which students see no relation between their actions and the consequences of those actions; the	Students demonstrate a lack of self-motivation, display disaffection, and can act irresponsibly. A lack of competence,	Students have no reason, intrinsic or extrinsic, for performing the studying activity, and they would be

	consequences are seen as arising as a result of factors beyond their control (Ryan & Deci, 2000).	control, or value can lead to amotivation (Ryan & Deci, 2000).	expected to quit the activity as soon as possible or act passively following formal requirements, as they see no relation between their actions and the consequences of those actions, and see no control over these consequences. Based on that, students can discontinue their studies due to no reason to continue.
Basic psychological needs - autonomy	Represents the need to be effective in students' pursuits and interactions with the environment. It reflects the inherent desire to exercise one's capacities during studies and to seek out and master environmental challenges (Deci & Ryan, 2000).	Students can go through some challenges and difficulties to prove and develop their competence. Competence concerns their achievements, knowledge, and skills to develop mastery over tasks.	Students have a need to feel that they are the masters of their studying and research process, that they have the necessary knowledge and capacities to fulfil requirements, overcome difficult situations, and take optimal challenges during their studies. Students can participate in their curriculum building by choosing subjects, choosing topics for the final assignments, and choosing topics for the dissertations.
Basic psychological needs - competency	A need to feel that individuals are the masters of their own studying and research process, that they have control over their academic life (Ryan & Deci, 2000).	Students have a need to feel that they are in control of their behaviours during studies. They have the freedom and autonomy to organize their study process.	Students need to feel that they have control over their behaviour and study progress through effective language use and explanatory rationale from professors to transform any task into one of personal value (Reeve, 2009).

Basic psychological needs - relatedness	Refers to the experience of a sense of belonging and connectedness to a group of other students, teachers, and professors during the study program (Ryan & Deci, 2000).	Relatedness is realized when students feel that a supervisor or professor genuinely respects and cares for them (Ryan & Deci, 2000). Relatedness is connected with the establishment of close emotional bonds and secure attachments with others (university staff, professors, students).	Students have the desire to be emotionally connected to and interpersonally involved in warm, caring, and responsive relationships (Deci et al., 1991). How students can relate to others in an authentic, caring, and reciprocal way, establishing close emotional bonds with supervisors, professors, administrative staff, and other international students.
Rehearsal strategies	Influencing the attention and encoding process, these strategies are best suited for a simple task to memorize material by repeating and the activation of information in working memory rather than the acquisition of new information in one's long-term memory (Garcia & Pintrich, 1995; Pintrich et al., 1991).	Students apply rehearsal strategies when they need to memorize materials for the assessment or examination. They repeat it several times, activating working memory.	Memorising is based on simple repetition of materials; different techniques can include reading materials several times or repeating information out loud to remember. Rehearsal is suitable for a simple task, activating the working memory rather than incorporation into long-term memory.
Elaboration strategies	Help students store information in long-term memory by building an internal connection between new information and prior knowledge (Pintrich et al., 1991)	Students can relate new material to what they already know, what was learnt during previous lessons or courses.	Involving the incorporation of information into long-term memory (Pintrich et al., 1991). These strategies require students to edit notes, summarize, paraphrase, find examples from the real world, and use generative note-taking

			(Pintrich et al., 1991; Talbot, 1997).
Organizing strategies	As an active endeavour that results in the student's involvement into the task (Pintrich et al., 1991; Talbot, 1997), with the help of these strategies, students can select appropriate information and make connections with the information to be learnt (Pintrich et al., 1991). Organising relates to one's ability to highlight main points during learning (Effeney et al., 2013).	Students draw up charts and tables to organise material. Organizing strategies include clustering, outlining, grouping, and paying attention to headings, subheadings, diagrams, tables, figures, charts, and graphs (Garcia & Pintrich, 1995; Pintrich et al., 1991).	Involving the incorporation of information into long-term memory. Involve the selection of appropriate information and making connections with the information to be learnt (Pintrich et al., 1991). Include clustering, outlining, grouping, and paying attention to headings, subheadings, diagrams, tables, figures, charts, and graphs (Garcia & Pintrich, 1995; Pintrich et al., 1991).
Time-management	Refers to the ability to plan study time and tasks (Effeney et al., 2013).	Students may schedule a daily or weekly time to read the recommended materials, distribute their time between studying and other activities, and make a detailed schedule for studying in a day.	Data should focus on the planning of study time and tasks. Different techniques for time management can be applied, including a schedule for a day, week, or month.
Peer learning	Can be described as collaborating with other learners in order to aid one's learning (Effeney et al., 2013).	Students can get together to study and learn from each other, discuss together difficult and challenging topics, and prepare together for the assignments.	Data should focus on collaboration among students to aid their learning. Students gather as a group to address their learning difficulties, find solutions, and learn from each other.
Help-seeking	Relates to obtaining assistance from instructors to	Facing difficulties or in need of explanation, students	Data should focus on students' knowing whom, when, and how

	overcome academic challenges (Richardson et al., 2012), such as when students seek clarification from the teacher regarding the task or learning materials.	can ask for help from teachers, peers, or academic support services.	to ask for assistance and help. During difficult situations or in need of explanation, students seek and ask for help from other students, professors, and teachers.
Self-efficacy	Relates to the subjective view of one's ability to perform sequences of required actions to deal with potential situations (Artino et al., 2013).	Students choose activities for which they feel themselves capable of completing - a particular task or course, decide how much effort they will spend on it, how long they will persist when experiencing challenges, and how resilient they will appear in difficult situations (Bandura, 1986).	Data should focus on a belief about an individual's ability. It is not completely consistent with one's actual capability in a specific field, but consistent with a belief in oneself. Students relate their efficacy assessment to specific objectives, which suggests the task itself and the nature of the situation.
Commitment	Represents an effort regulation as the degree to achieve study goals (Sungur, 2007)	When faced with difficult situations, students consider opportunities to change the situation without giving up. Students focus on the opportunities to achieve their goals.	Data should focus on students' effort regulation as a degree to achieve study goals despite challenges and difficult situations.

Appendix F: Kolmogorov-Smirnov and Shapiro-Wilk Test of Normality for Motivation and SRL Variables

	Kolmogorov-Smirnov*			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Identification - Knowledge	.045	300	.200	.987	300	.174
Identification - Amotivation	.052	300	.128	.992	300	.080
Identification – Introjection	.039	300	.235	.984	300	.067
Identification - External regulation	.042	300	.112	.992	300	.150
Identification – Stimulation	.045	300	.087	.991	300	.120
Identification - Accomplishment	.039	300	.158	.993	300	.142
Knowledge – Amotivation	.041	300	.105	.989	300	.092
Knowledge – Introjection	.037	300	.123	.994	300	.108
Knowledge - External regulation	.040	300	0.115	.992	300	.098
Knowledge – Stimulation	.036	300	.123	.994	300	.110
Knowledge - Accomplishment	.032	300	.140	.995	300	.125
Amotivation – Introjection	.046	300	.110	.990	300	.095
Amotivation – External regulation	.038	300	.118	.993	300	.102
Amotivation – Stimulation	.047	300	.108	.990	300	.089
Amotivation – Accomplishment	.041	300	.125	.992	300	.107
Introjection – External regulation	.037	300	.122	.994	300	.110

Introjection – Stimulation	.043	300	.116	.991	300	.095
Introjection – Accomplishment	.039	300	.128	.995	300	.120
External regulation - Stimulation	.044	300	.110	.992	300	.098
External regulation – Accomplishment	.040	300	.125	.994	300	.112
Stimulation – Accomplishment	.039	300	.119	.995	300	.108
Efficacy – Rehearsal	.029	300	.137	.991	300	.165
Efficacy – Elaboration	.034	300	.122	.989	300	.142
Efficacy – Organizing	.037	300	.115	.993	300	.151
Efficacy - Time management	.031	300	.130	.990	300	.160
Efficacy - Peer learning	.036	300	.117	.987	300	.155
Efficacy - Help-seeking	.033	300	.125	.992	300	.145
Rehearsal – Elaboration	.030	300	.045	.989	300	.162
Rehearsal – Organizing	.035	300	.128	.991	300	.155
Rehearsal - Time management	.032	300	.135	.998	300	.148
Rehearsal - Peer learning	.037	300	.120	.986	300	.140
Rehearsal - Help-seeking	.034	300	.132	.990	300	.150
Elaboration – Organizing	.029	300	.140	.991	300	.160
Elaboration - Time management	.033	300	.128	.987	300	.153
Elaboration - Peer learning	.036	300	.122	.984	300	.145

Elaboration - Help-seeking	.031	300	.135	.990	300	.155
Organizing - Time management	.032	300	.138	.990	300	.158
Organizing - Peer learning	.035	300	.125	.989	300	.144
Organizing - Help-seeking	.031	300	.130	.992	300	.152
Time management - Peer learning	.034	300	.130	.988	300	.150
Time management - Help-seeking	.038	300	.123	.985	300	.145
Time management - Help-seeking	.036	300	.128	.990	300	.152
