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**The Third Mission Practice of Central-Eastern European Universities:
The University of Dunaújváros and the Transilvania University of Brasov**

Doctoral (PhD) theses

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Pécs

2024

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Introduction

To interpret the title of the thesis, we consider Central-Eastern Europe to be the former socialist countries of the eastern part of historical Central Europe¹. Among these, Hungary and Romania were selected for our research with the cases of the University of Dunaújváros (DUE) and the Universitatea Transilvania din Braşov (UTBv), whose sampling criteria are described in the methodology chapter. The term 'Central-Eastern European regional university' is used to refer to universities located in this macro-region in a non-metropolitan area of their country with a population below 500,000 inhabitants (Zenka & Slach, 2016; Gál & Ptáček, 2019; Polónyi & Kozma, 2022).

The "third mission" in our understanding refers to all the activities of higher education institutions carried out in response to the needs of the stakeholders (economic, political, educational, cultural, social, environmental and civil actors) of their city/region/country/international environment, across all three of their functions (teaching-learning, research, public service), and are designed, implemented, evaluated and developed in collaboration with relevant partners to achieve some specific advantage. The third mission manifests itself in different ways and forms in different disciplines, which change over time depending on the current motivations of the parties (Benneworth et al, 2018; Hrubos, 2013). Our research used this broad interpretation, while geographically narrowing it down to the local-regional territorial level, i.e. the functional urban area.

The dissertation required a long and complex research effort, which could not have been accomplished without the continuous professional, practical and emotional support of the two advisors, István András and Tamás Kozma, and the persistent coordination and patronage of Florin Nechita, Vice-Dean of the Faculty of Sociology and Communication at UTBv. The doctoral candidate would like to express her gratitude to them.

Relevance of the subject

The concept of the 'third mission' of higher education institutions has been developing for decades due to its historical revival at the expansion of economic, social and higher education policy expectations from universities² (e.g. Benneworth, 2018; Compagnucci & Spigarelli, 2020). Since the turn of the millennium, several waves of university governance and funding reforms across Europe have occurred (de Boer & Huisman, 2020), and the range of university stakeholders have expanded (Jongbloed, Enders & Salerno, 2008; Goddard, 2018; Farnell, 2020), which resulted in a diverse range of external expectations being placed upon higher education institutions. Most recently, macro-level societal challenges, referred to in European higher education policy as the

¹ As interpreted by the Central Statistical Office of Hungary (KSH, 2009).

² In the dissertation, the words "university" and "higher education institution" are used as synonyms, both in accordance with the English literature and in the light of recent changes in the names of higher education institutions in Hungary. In other words, all types of universities and European higher education institutions are grouped under these two terms and in the same meaning: 'university' or 'higher education institution'.

"grand challenges of the 21st century", such as ageing European societies, the climate crisis, the migration crisis, the Covid-19 pandemic, the war in Ukraine and the subsequent energy crisis, are forcing higher education institutions to reconsider their institutional strategy, including the redefinition of the public service (Gál, 2016) mission (Farnell, 2020). Their reactive, proactive, or even pre-active response depends on a multitude of factors, many of which are rooted in the position of the university in its local-regional context (Goddard, 2018; Kempton, 2019; Tijssen, Edwards & Jonkers, 2021). This can be observed in the extent to which they are embedded in the social networks of their cities and regions (Jongbloed et al., 2008; Goddard, 2018; Benneworth et al., 2018), and in the role they play in the implementation of such spatial development concepts as the learning region (e.g. Kozma et al., 2015), the quadruple- and quintuple helix models (e.g. Carayannis, Grigoroudis, Campbell, Meissner & Stamati, 2018), the regional innovation ecosystems (e.g. Tödtling, Tripl & Desch, 2021), the Smart City (e.g. Farnell, 2020) or local sustainability (e.g. Trencher, Yarime, McKormick, Doll & Kraines, 2013; Compagnucci & Spigarelli, 2020).

Although numerous studies have concentrated on the external stakeholder relations of European higher education institutions, with a particular focus on their role in the multifaceted development of their region, the majority of case studies have been conducted on universities situated in large cities, with only a few examples from Central-Eastern Europe. Therefore, it seemed worthwhile to examine the cases of two non-metropolitan, small and medium-sized Central-Eastern European higher education institutions (Gál & Ptáček, 2019), the University of Dunaújváros and the Universitatea Transilvania din Braşov, to see how they serve the specific social problems of their urban areas through their activities which can be classified under the third mission of universities. In particular, the Central-Eastern European macro-region occupies a special place in the European Higher Education Area: its Humboldtian tradition and the Soviet influence on its national higher education systems not only influenced the post-1990 neoliberal turn in educational governance, but still determines the way it addresses its various challenges (Pukánszky & Németh, 1996; Polónyi, 2008; Kozma, 2012; Kwiek, 2012; Halász, 2018; Polónyi & Kozma, 2022). The historical background of some universities is further enriched by a specific urban legacy of communist economic and social policies: they are located in former "Stalin cities" (Baranyai, 2016; European Commission, 2016). For these reasons, UTBv in Brasov and DUE in Dunaújváros have provided an interesting case study for how higher education institutions founded in communist industrial cities in Central-Eastern Europe contribute to addressing the societal challenges of their cities today.

Another novelty of the research is that it looks at a wider range of external stakeholders than before: it includes not only the main public and business stakeholders, but also a broader range of societal partners (Benneworth et al., 2018) in order to draw a more complete picture of the nature of the co-operation between the two universities and local society. This reinforces the trend in European higher education research that includes community engagement in the concept of university third mission (e.g. Benneworth et al., 2018; Maassen, Andreadakis, Gulbrandsen & Stensaker, 2019; Farnell, 2020), in contrast

to the still dominant position of the third mission referring only to technology and knowledge transfer and to collaborations between university and industry (Compagnucci & Spigarelli, 2020).

Research aim and research questions

The doctoral research aimed to explore how two Central-Eastern European higher education institutions, the DUE and the UTBv, contribute to the socio-economic-cultural development of their cities through their activities that can be classified under the third mission of universities. In other words, through what co-operations and under what conditions do they meet the various needs of the external stakeholders located in their functional urban areas, Dunaújváros and Brasov?

The third mission practice of the two universities was examined from four perspectives: the emerging local-regional external stakeholder needs, the third mission activities in response to these needs, the factors that facilitate co-operation between the parties, and the circumstances that hinder it. Therefore, the central research question was broken down into four sub-questions:

- 1. What external stakeholder needs does the university face at the local-regional level?*
(What requests do external stakeholders from the city-region approach the university with?)
- 2. What third mission activities does it satisfy them with?*
(Through what collaborations does the university and the external stakeholder respond to these requests?)
- 3. What factors facilitate the university-external stakeholder collaborations?*
(Any circumstance that facilitates the successful establishment, or supports the effective implementation of collaborations.)
- 4. What difficulties are encountered in the collaborations?*
(Any circumstances that prevent the establishment, or hinder the effective implementation of collaborations.)

Methodology

In terms of its theoretical framework, the interpretative constructivist approach (Flick, 2018) to the study of the third mission practice of the two universities belongs under the theoretical framework of postmodern science philosophy (Németh, 2015). This leads to the collection of a rich set of data specific to a case and allows for a variety of data processing (Merriam, 2009), through which a multifaceted picture of social reality can be formed (Mik-Meyer, 2020). By reaching out to as wide a range of external stakeholders as possible beside the university, we were able to reflect a multi-layered social reality,

representing different contexts and perspectives (Merriam, 2009; Flick, 2018; Mik-Meyer, 2020) and revealing the experience of less influential stakeholder groups (Benneworth et al., 2018). At the same time, our research can also be understood in the context of symbolic interactionism or the study of subjective theories, because our data are essentially drawn from interviewees' subjective accounts of social reality: their individual theories by which they explain their own experiences (Flick, 2018).

Our research model is an exploratory-descriptive (Babbie, 2001) comparative case study based on two cases (Kozma, 2001; Horváth & Mitev, 2015; Flick, 2018). In terms of the time dimension, the research is a cross-sectional study (Babbie, 2001) gaining insights into the world of external stakeholder relations of the two institutions between 2020 and 2022. Yet, the research questions inherently relate to the earlier period of the relationships and seek to explore the accumulated experiences of the research participants over the years (Flick, 2018) as they assess them at the time of data collection.

Among the various data collection methods employed in case studies (Horváth & Mitev, 2015), we selected the semi-structured narrative interview (Flick, 2018) and document analysis to investigate our cases. The latter was employed to supplement the data obtained for the second research question with the objective of clarifying and detailing them relying on the official university websites and relevant internal documents. These were selected using the purposive sampling method for critical cases for the last full year of our data collection, 2021. Thus, the self-evaluation report prepared by DUE in the framework of the EURASHE UASiMAP project (UASiMAP SAR: University of Dunaújváros 2021) and the annual report of UTBv for the same year (Annual Report 2021) were used. This resulted in a multi-method qualitative research (Flick, 2018; Király et al., 2014), which is a common way of conducting sociological research in education (Kozma, 2001). For the selection of the two higher education institutions, non-probability purposive sampling was used (Babbie, 2001; Horváth & Mitev, 2015; Flick, 2018), first following the logic of typical cases and then convenience sampling (Flick, 2018). The selection dimensions of the former (Flick, 2018) were geographical location, regional importance and similar educational profile. Both universities are located in Central-Eastern European non-metropolitan areas (Gál & Ptáček, 2019) (DUE: HU211, UTBv: RO122) and their counties are part of NUTS2 statistical regions classified as "less developed region" (EC, 2022) or "emerging innovator" (EC, 2021).

This is complemented by the fact that Dunaújváros and Brasov have followed a similar industrial development path since World War II and their higher education institutions were founded with similar aims. Both universities can be seen as universities with a primarily regional scope (Kozma, 2002; Gál & Ptáček, 2019), even if DUE is a medium-sized university specialising in applied sciences, while UTBv is a large-scale comprehensive university. Moreover, both universities are the only higher education institutions in their respective urban areas, i.e. they can play their role in the regional innovation ecosystem without any competition (Gál & Ptáček, 2019). In addition, the educational profile of DUE is part of UTBv's educational portfolio.

Our other case selection method was convenience sampling: among the many regional universities in the macro-region, we chose the Hungarian case because we work as an employee of the Hungarian university, and the Romanian case because of the long-standing, active partnership with DUE, which had been initiated by a European Union project on the common "Stalinist" past (EC, 2016).

In addition to selecting the two cases, we also had to use sampling procedures to determine the data sources for our research. Following the critical case selection strategy, we identified our interviewees as expert or elite interviewees (Flick, 2018). Thus the rector of DUE and two vice-rectors with the head of the university's office of corporate relations at UTBv participated in the data collection. As for external stakeholders, a multi-stage sampling procedure was necessary: first, group selection by maximum variation was used (Flick, 2018) based on the quadruple helix model (public, business, educational, cultural and civil society organisations) (Carayannis et al., 2018). Subsequently, relevant organisations within the groups were identified based on the critical cases principle, and their representatives were selected by expert or elite interviewee selection (Flick, 2018): senior and middle managers from local government and companies, directors of institutions and other organisational leaders. For our data collection, four business and five public administration organisations, five NGOs and three secondary schools were available for a total of twenty-two interviews in the DUE sample, while two businesses, two public administration organisations and one NGO, without any secondary school, were made available for a total of eight interviews in the UTBv sample.

The verbatim transcripts of our interviews and document corpus (relevant university websites and institutional reports) were processed using qualitative content analysis (Flick, 2018; Schreier, 2012; Sántha, 2022) following the guidelines of Schreier (2012). Our four research questions required two different categorisation logics: for the first and second questions we used a data-driven, inductive approach as we were interested in the specific experiences and solutions of the two universities, while the third and fourth questions required the consideration of the findings of the relevant literature, therefore, a combined approach was used. Thus, for the first two questions we obtained a two-level, moderately complex coding framework, while for the third and fourth questions two multi-level (1-3), highly complex coding grids, each of which allowed for a detailed case description (Schreier, 2012). Based on our finalized categorization system, the main coding process was performed with MAXQDA 2022, which was chosen on the recommendations of Schreier (2012) and Sántha (2022) for its adaptability to qualitative content analysis, ability to handle multi-level hierarchical categorization systems, rich data representation options and data processing features. Our results are presented along the research questions through profile matrices generated by the Code Matrix Browser feature, case-oriented thematic summaries, and cross-case comparisons (Sántha, 2022; Horváth & Mitev, 2015).

Structure of the dissertation

The dissertation is divided into six chapters. First, two short chapters present the topicality of the topic, the interpretation of the title, the aim of the research with the research questions, and then the third chapter presents the third mission of the university summarising the results of European and national higher education research. Its five sub-chapters first describe the development of the concept of the third mission, the challenges of its strategic and practical institutionalisation, and its practice in Hungary. This is followed by an overview of the third mission of higher education policy regulation in terms of its strategic valorisation by universities, its definition by various international intermediary organisations, and national (Hungarian and Romanian) legislation. This is followed by a discussion of the role of Central-Eastern European universities in regional development coalitions, and an exploration of the relationship between social innovation and university third mission. Finally, the chapter concludes with a discussion of the measurement limitations of the third mission, an inventory of new measurement approaches and a summary of domestic research findings.

The fourth chapter describes the methodological background of the research in terms of its theoretical framework, the chosen research model and methodology, the sampling methods, the research methods, the data collection and the data processing procedure. Chapter five presents the results of the research along the four research questions, accompanied by a number of tables and figures in the Appendix. The final chapter draws the conclusions of the investigation, highlights the new findings and suggests possible future directions for further research.

The annexes of the Appendix provide the interview schedules, the interview transcripts and the original institutional reports used for the documentary analysis. The Tables and Figures provide the background to the research findings (the four coding frames, and the various tables and graphs of the analysis), as well as the Regional Innovation Impact Model (Tijssen et al., 2021; EURASHE, 2023b) used for their evaluation.

In terms of the structure of case studies, subchapter 3.2 describes the requirements of European and national higher education policies for university third mission up to 2022, then subchapter 4.3 introduces the two institutions. This is followed by the description of the various requests from external stakeholders reflecting the needs of the two local societies (subchapter 5.1), the third mission practices of the two universities in response to these requests (subchapter 5.2), followed by an exploration of the factors that facilitate and hinder the co-operations (subchapters 5.3-5.4). The results are presented along the research questions by first describing the coding framework, then by presenting the cases of the two universities, and then comparing them with each other - yet bearing in mind their uniqueness (Farnell & Šćukanec, 2018; Farnell, 2020; Tijssen et al, 2021). In the final chapter, the findings for each case and their comparison are assessed in the light of

the literature, the higher education policy expectations and the local social power relations (Kozma, 2001).

Summary of research results

1. What external stakeholder needs does the university face at the local-regional level?

Our first research question was inspired by the political need for a university contribution to the "grand challenges" of the 21st century and the emergence of contemporary societal expectations at the level of two non-metropolitan cities and their universities in Central-Eastern Europe. We assumed that locally specific needs could be identified by interviewing societal actors, i.e. the external stakeholders of the university, because the requests they make to them are based on some specific need, demand or expectation (Kempton, 2019), which at the same time reflect the current societal challenges of the urban area. Consequently, our code table from data processing represents a novel research outcome in itself. The diverse and often particular requests have been categorised into thematic areas with a view to identifying the patterns of needs in Dunaújváros, Brasov and the two cases together. Accordingly, we have found that:

- the two universities are expected to meet their external stakeholders' current workforce needs as fully and extensively as possible (e.g. recruiting fresh graduates, developing their workforce).
- through their various educational needs, they seek to determine the direction, content and quality of the higher education of their future employees to ensure that their specific professional needs are met.
- Brasov is characterised by the motivation and improvement of education quality in shortage occupations.
- Dunaújváros is characterised by the need to align the training structure of its public and higher education institutions with the local-regional labour market requirements.
- there is modest demand for university research, whether basic or applied.
- the local university is seen as a "community all-rounder", whose various resources (e.g. vast knowledge base, state-of-the-art technical facilities, competitively remunerated experts, quality facilities) are always available to solve their problems, to exploit opportunities as they arise, or to meet their specific needs (e.g. to increase the international capital of the urban area, to meet public service requests).
- most common areas of need repeat the external stakeholder expectations well-known from the literature and are based on a partner-based approach to regional innovation systems (e.g. co-operation along the four spirals, involvement of external stakeholders in university education and research, the university as the foundation of the community).

- a common expectation is the alignment of the direction and content of local vocational training and higher education with the needs of local-regional employers.
- Brasov is characterised by the need to institutionalise existing informal partnerships.
- Dunaújváros is characterised by its role as a local catalyst for the development of the urban area, and the quality assurance of dual educational co-operations.
- local business organisations have an exclusive (UTBV), or predominant (DUE) demand for educational functions, i.e. the local supply of highly qualified staff, their applied research contracts are low-volume, and there is no demand for basic research.
- local public authorities see the university as a professional partner to enhance their capacity and delivery in order to halt the ageing of the urban population, improve the quality of local human resources, meet labour needs, address infrastructure and environmental challenges, and exploit development opportunities, i.e. support the economic and social sustainability of the city.
- local NGOs are characterised by the same labour needs as the business organisations, the various service requests from public partners, and the need to strengthen the role of local social linkages. The university is seen as a natural professional partner with whom they would like to continue working more extensively in the future.
- the secondary schools in Dunaújváros expect educational co-operation, which they hope will bring marketing advantages and infrastructural development opportunities increasing their regional competitiveness for students.

Consequently, their immediate external stakeholders consider both universities primarily as educational and training institutions, secondarily as providers of various services and as resource gap fillers, and only thirdly as centres of scientific research. Added to this is a central, coordinating role by which the two universities are to link the social actors in the urban area, as well as channel their own international relations into the life of the city, plus play a benefactor role in support of local civil society. If DUE and UTBV are willing and able to fulfil these roles, they will directly support the day-to-day activities of their external partners' organisations, while contributing to the 'social development' of their cities only indirectly. However, the real results of either the one or the other can only be revealed by a complex analysis of the direct and indirect short-, medium- and long-term effects of collaborative activities (Tijssen et al., 2021), which are not yet available, or only some (e.g. graduate career tracking systems).

The primary role of education over research is particularly true for business partners, which differs significantly from university-industry co-operation expectations by higher education policy and Western European practice. In addition, university research with business partners and other societal actors (e.g. living laboratories) is intended to be a source of innovation and a driver of knowledge-based regional economic development, but only sporadically has this been demonstrated. Therefore, our results clearly differ

from trends in university third mission practices in Western and Northern Europe and may point to a specific development path of higher education in the Central-Eastern European region, confirming some findings in the literature (e.g. Kwiek, 2012; Lux, 2018; Erdős, 2018; Gál & Ptáček, 2019; Polónyi & Kozma, 2022).

In conclusion, external stakeholder demands can only contribute indirectly to the development of urban areas facing multiple challenges. For both universities, the ‘grand challenges of the 21st century’, or the objectives of sustainable development are expressed more in the form of requests from public partners (‘service provider’ role) and expectations of community involvement (‘benefactor’ role) than from resource-rich business partners or civil society. However, as regards compliance with national higher education legislation, it can be said that most of the regulatory and maintenance expectations for co-operation between higher education institutions and their societal stakeholders are relevant in the context of the two cities, even if they are locally specific and more nuanced.

2. What third mission activities do the universities meet these needs with?

The second research question sought to identify the third mission practices employed by the two universities as described by our interviewees in Dunaújváros and Brasov for the characterisation of their collaborations. These were then subjected to further analysis through document review and interpretation within the context of the Regional Innovation Impact Model (Tijssen et al., 2021). Overall, the universities were found to be engaged in a wide range of social collaboration activities of international and professional value. These were grouped into nine categories, eight of which were common to both: teaching, research, and community engagement activities; service provision; networking; sharing infrastructure opportunities; participation in the development of urban development strategies; and providing financial support to external stakeholders. The only area of divergence was university leadership involvement, which is specific to the private foundation-run DUE.

It was found that both universities carry out most third mission activities with local business partners, followed by co-operation with public organisations and then activities with NGOs. In the Dunaújváros sample, the identification of joint practices with secondary education institutions was unique, but at the same time the most limited in scope. Only one third mission activity, students’ professional practice, was found to be present in all external stakeholder groups of both universities, confirming the results of our first research question. In the case of DUE, another common activity area is the use of university facilities and equipment, which confirms the capacity-building role of universities (e.g. Benneworth, 2018; Kempton, 2019). In contrast, we found no unique activity area in the Brasov sample, only specific activities.

The comparison of external stakeholder groups from various perspectives have revealed a number of specific motives and highlighted that the two samples' common stakeholder

groups (business, public and non-governmental organisations) cooperate with their universities in different fields of activity. They present a unique picture for each group in both cities, yet with a number of common, and well-known third mission practices. Therefore, it can be claimed that both universities and their local external stakeholders are active in a number of third mission activity areas, most of which are in line with the typical dimensions of international self-assessment tools (e.g. TEFCE Toolbox, RIIA, UASiMAP). In our samples, only the areas of developing the network of municipality relations and external partner sponsorship are unique.

It is worth highlighting both university's third mission activities which have a regional development impact and are in line with international and literary best practices: mentoring and thesis consultation, internship, professional competitions, research collaborations, expert advisory services, grant co-operation and the university's infrastructural support to external stakeholders.

Evaluating our results in the light of international literature, we can conclude that both universities assume the role of producing new knowledge, creating innovations and being a source of knowledge and technology transfer to contribute to the socio-economic sustainability of the region (e.g. EUA, 2021, 2023). A common macro-level expectation is the stimulation of a regional entrepreneurial culture among students and society, but we did not find any external stakeholder request or institutional practice in our data. Regarding participation in initiatives aiming at the socio-economic development of the region, it seems that their source and the integrating agent (e.g. Salomaa & Charles, 2021; EUA, 2023) is not the university, but the municipality (DUE, UTBv), the county assembly (UTBv) or the strongest industrial partner (DUE, UTBv).

In the Hungarian literature, Gál and Ptáček (2019) emphasise that Central and Eastern European rural universities can only play the role of initiator-coordinator-developer of regional innovation ecosystems by increasing their regional engagement. Our data show that both universities are doing so, and in a very diverse range of ways, even if we have only a limited picture of the results and impacts of their activities. At the same time, our research clearly shows that they maintain extensive local-regional relationships, seek to maximise their potential and provide ample opportunities for the creation of innovations based on local needs. However, how external stakeholder demands are handled, i.e. whether they are thoroughly explored, systematised and weighted within an institutionalised mechanism and organisational structure (e.g. Jongbloed et al., 2008; Compagnucci & Spigarelli, 2020), is a matter for further research.

Comparing the two universities to the university models prevalent in the literature and higher education policy, it can be said that both are a specific mix of the entrepreneurial university and the engaged university models. UTBv is a comprehensive university oriented primarily towards its local industrial and administrative partners, with a strong (international) research focus and a strong professional training profile, which is balanced by a strong commitment to the well-being and urban development goals of the people of

Brasov. DUE can be seen as a young entrepreneurial university which may enter the mature phase of this model in the wake of the change of ownership, while still maintaining its long-standing, strong local social commitment.

Highlighting our new research, we examined the third mission activities of a regional university in two different countries, as opposed to two examples in the same country and/or metropolitan area. The choice of research topic is also novel, as capturing university third mission practices is still a sensitive area in higher education research. The fact that not only the higher education institution but also its wider local social partners were consulted in the exploration of activities is an example of the participatory approach. Moreover, our data collection included data from the DUE UASiMAP pilot survey, while the results of our research were interpreted in the framework of the Regional Innovation Impact model, which is less known in this country.

We also used a new international self-assessment tool, the UASiMAP Self-Assessment Tool, to interpret our data, thus enriching its international use and highlighting its shortcomings. Although our data confirm the uniqueness of the two cases and only reveal their relationship to each other, our conclusions provide valuable insights into the regional universities of the Central-Eastern European macro-region, in particular their role as participants in the regional innovation ecosystem and the differences in the institutional weighting of their social partners and collaborations.

3. *What factors facilitate the university-external stakeholder collaborations?*

Our aim was to identify the conditions that in some way facilitate, i.e. enable the establishment of the collaborations, or support their realisation. The DUE sample did not include a number of facilitating conditions known from the literature: the knowledge absorption capacity of the actors in the regional innovation ecosystem, the inclusion of partnerships in university strategy documents, external stakeholder membership in the university management, and academic career progression. Three factors familiar from Brasov were also missing: the university as a cost-effective supplier, moral obligation, and the curricular flexibility in Masters and PhD programmes. At the same time, most interviewees stressed the relevance of the training offer, the university's cooperativeness and openness to initiatives, the good personal relationship between partners' senior management, the relevant professional knowledge of the university staff, external stakeholder resources and the university's infrastructure, which reinforce the European higher education literature to date.

There was a consensus among all the stakeholders in Dunaújváros on the university's training offer, research areas, knowledge base and infrastructure, its willingness to cooperate and its openness to new opportunities. On their own side, the importance of available resources (expertise, equipment, funding and network of contacts) was stressed, but trust among senior management, referrals from DUE alumni and local university contacts of their employees were also considered as key supporting factors. Furthermore,

attitudinal factors such as their organisation's human resource management principles and the corporate value of supporting the local community were also cited. Comparing their views with those of the university management, there is agreement on the essential role of the knowledge of their workforce, openness to new collaborations, the principle of supporting the local community and the trust between the organisational leaders.

The UTBv sample also did not include some of the conditions that are well known from the international literature to support regional university engagement: geographical proximity, external stakeholder membership in university boards, legal obligation to cooperate, the knowledge absorption capacity of the regional innovation ecosystem actors, and the university's industrial capital. Some of the factors that apply to the case of Dunaújváros were also missing, such as the documentation of the strategic objective of collaboration with external stakeholders, the involvement of the external partner in university strategy development, the role of university foundations, flexibility in problem solving, the pulling power of competitors, and stakeholders' own events as communication channels. However, the resources made available to the university by the partner, the offer of professional practical training, the relevance of the university's research areas and educational offer, the university's openness and willingness to cooperate, the university's resources, the commitment to success, the good personal relationship and trust between individuals and institutions, the motivation of tender opportunities, local patriotism and the ambition for a long-term partnership based on shared values were confirmed.

The external stakeholders of the University of Brasov agreed on three areas: matching supply and demand, specific local resources, and attitude (business values and commitment). The majority also agreed on the stakeholder's expertise, equipment, funding and business relationships, as well as on the commitment to the development of the local community. Conversely, UTBv vice-rectors were of the opinion that university resources (infrastructure, human and financial resources, university events, communication channels and events), the relevance of their research areas, and external partner resources were the most important. They also emphasised openness to collaboration and new initiatives, professional commitment and honest communication, and agreed with the importance of available stakeholder resources and the supporting of the local community.

The majority of the same external stakeholder groups in the two cases considered that the university's training offer, the resources they offered, the potentials of university human resources and informal contacts were the most important conditions for the establishment and success of their co-operation. Differently, the research palette of the local university was more important for the UTBv partners, the motivation for the willingness to collaborate differed strikingly (in Brasov it was the principle of supporting the local society, in Dunaújváros it was the university's openness to collaboration), in the Hungarian case the use of university infrastructure was prominent, and in the Romanian the familiarity and good relations between key people of the parties. The perception of commitment to the success of collaboration also differs: while in Brasov it is important

at a general and operational level, in Dunaújváros the emphasis is on flexible problem solving, mutual support, the overall importance of commitment and individual involvement. There were also differences in terms of student volunteering and support opportunities, as well as the reputation of the university, and while the majority of Dunaújváros partners emphasised their long-standing personal relationship with the university administration, in Brasov this aspect was only mentioned by the public administration partners.

Finally, comparing the two university administrations they agreed that their collaborations with external partners are made possible by a supportive legal environment, their academic knowledge base, the talent of their students, the resources of the external partner, their openness to new ideas, their political impartiality, their colleagues' goal-oriented commitment, financial incentives, their open communication, and their commitment to their cities. Their local social embeddedness is particularly strengthened by the linking role of common colleagues, recurring annual university events and ongoing communication.

Our results confirm that higher education institutions have specific characteristics, networks of relationships, social embeddedness, resources and external stakeholder expectations (e.g. Benneworth et al, 2018). As can be seen in the RII model, there are multiple complex interactions between the resources and internal incentive systems of the university and its regional partners, the factors that motivate the parties to cooperate (stakeholder needs and wants, university goals and intentions) and the resulting 'regional innovation performance' (resources, processes, activities and outcomes).

The supporting effect of available financial resources on an appropriate scale (e.g. Kempton, 2019; Maassen et al., 2019; Compagnucci & Spigarelli, 2020), in the form of EU and national funding open to city regions and their universities at any given time, is also confirmed. The majority of university-municipality/county council partnerships are funded by these sources in both cities, but they also limit the purpose, scope and nature of collaborations. Moreover, the financing of joint activities in this way is risky as it is linked to EU and national budget cycles, the respective budgetary situation of the funding providers and a number of other external circumstances. As a result, funding may dry up and, after a period of intensive activity, university-external stakeholder activities may dwindle or even cease. As a solution, Holland (2000) suggests a dedicated annual allocation of the university's own financial resources, which we found references to in both samples, but our research did not explore this area.

In terms of the weight of local-regional partners (Goddard, 2018), both universities are open to being approached by any external stakeholder and are involved in a number of joint activities, but they mainly engage with the "strong men" of regional society (e.g. local government, large companies) for the various material benefits they provide. Therefore, for both universities, Benneworth's (e.g. 2012, 2018) oft-repeated warning is worth considering: it is the social partners with low advocacy and modest capacities that they should engage with for the social development and sustainability of their city and region.

The conditions necessary for the regional development role of Central-Eastern European regional universities, i.e. the establishment of broad university-stakeholder partnerships, the systematic cultivation and long-term maintenance of relations with external stakeholders (Gál & Ptáček, 2019), are met by both universities. Kempton (2019) adds that the frequency of co-operation opportunities is also important, for which she recommends the more effective functioning of intermediary organisations. However, according to our results it is the direct, personal nature of the contact and its maintenance that is decisive, rather than the role of an agent organisation delegated to the region. This confirms the findings of Lengyel (2012) and Benneworth (2018) that the regional engagement of a university is mostly implemented through weak, bottom-up relations. In our view, this difference is due to a variation in the degree of institutionalisation of university third mission in Western and Eastern Europe, as well as cultural characteristics.

As for internal conditions (Kempton, 2019), the motivation, interest and rewarding of academics and researchers to participate in third mission activities, especially in terms of financial incentives (e.g. Compagnucci & Spigarelli, 2020), is specific to the Romanian case. However, the details or extent of this were not investigated in this research, while a similar system was only put in place at DUE following the change of business model in 2021. A particularly important facilitating condition has been found to be the continuous and meaningful communication with external stakeholders, which, according to the Dunaújváros case, requires the regular assessment of the knowledge needs of local-regional social actors for tailored service delivery (e.g. Benneworth et al., 2018; Compagnucci & Spigarelli, 2020).

Finally, new research finding is the range of supporting factors only appearing in our two samples: flexible problem solving (DUE), university prestige, political impartiality, moral obligation, the image of the university as a cost-effective supplier (UTBv), partners' willingness to innovate, diplomatic flair, professional and goal-oriented attitudes, informal personal relationships between the parties, colleagues linking the organisations, honest communication, and the prioritisation of support for local society at the strategic level (DUE+UTBv). The case study nature of our research, however, raises the need to examine these facilitating factors on a wider Central-Eastern European sample to see to what extent they are specific and generalizable to regional universities in this macro-region.

4. What difficulties are encountered in the collaborations?

This question investigated the obstacles to and the barriers of co-operation between the two universities and their external stakeholders. Our data confirmed only eight of the 22 theory-driven dimensions of our coding framework: the mismatch between stakeholder demand and university supply, path dependency, an inadequate co-operation framework, the autocratic style of university management, limited room for manoeuvre due to external partners' capacity constraints, lack of intermediary organisations, the unfavourable local industrial structure, and the unstable and inadequate regulatory

environment, i.e. these were the only similarities with the international literature. However, we identified twelve additional factors: some fundamental difference between the parties, the lack of formalised relationships, unorganised work placement, excessive university and state bureaucracy, negative stakeholder attitudes, restrictive legislation, diversity of actors (different expectations, mind-sets & organisational culture), a variety of practical problems (e.g. timing, student preferences, corporate RDI at the parent company, the departure of a key actor, the termination of the training programme, Covid-19 closure), communication problems, lack of local patriotism, contradictions in dual training, and the time needed for change.

About half of all categories were found to be relevant for both cases, in particular practical problems of collaborations, destructive behaviour, diverging strategic goals, interests, approaches and mind-sets, conflicting political loyalties, supply-demand mismatches, stakeholders' human resource and financial constraints, the lack of adequate information flow and commitment to problem solving, the complex university bureaucracy, and barriers arising from the specific legal regulation of the sectors.

Regarding the specific barriers of the Dunaújváros and Brasov case, there were similarities in some areas (dimensions), but with different emphases (code, subcode). For example, among the attitudinal factors, the Hungarian case highlighted the indifference of stakeholders towards the university and the preference for another higher education institution, while the Romanian case emphasised the distrust of new co-operation forms. While in Dunaújváros the diverse organisational culture of large foreign companies obstructs co-operations, in Brasov, the difference between industrial expectations and the university's capacities create tensions for the university. And while at DUE the range of practical problems is particularly rich, at UTBv it is various legal constraints that actors find the most difficult.

According to the aggregated opinion of the common external stakeholder groups of the two cases, distrust, burdensome university bureaucracy, lack of a properly functioning communication channel, lack of information, different political orientations, departure of a key person, lack of institutionalisation of the collaboration, insufficient financial resources, lack of effective communication between operatives, and inter-sectoral conflicts of interest prevent or hinder the effective implementation of collaborations.

Surprisingly, we did not find any common barriers or obstacles in the experiences of the two university administrations, only three areas of agreement: fundamental differences between the parties, negative attitudes of stakeholders, and practical problems. However, their manifestations are different: in the first dimension DUE highlighted different priorities, while UTBv emphasised diverging profiles and conflicting political sympathies. In the second area, distrust is the main constraint for DUE, while for UTBv it is path-dependency. As for practical problems, the Dunaújváros case is challenged by lack of information and government bureaucracy, while the Brasov case is hampered by students' preferences regarding specialisations, the partner organisation's decision-

making and RDI function being kept at the parent company, the timing of the collaborations, and the departure of a key player.

The opinions of the university leader and external stakeholders interviewed in the DUE sample showed extreme variance. The most frequent constraint was the low proactivity of local-regional social actors (lack of initiative, entrepreneurship and long-term vision), coupled with some organisations' refusal to cooperate with the university, which was followed by distrust and diverging priorities. Most of the obstacles were identified by the NGOs, who also made observations on local social, political and economic conditions, which revealed a rather negative picture about the potential for co-operation between local societal actors.

In the overall UTBv sample, specific constraints included certain organisational difficulties of internships, restrictions imposed by the Public Procurement Act, the inflexibility of bachelor programmes, the low commitment of some colleagues, differences between partner expectations and university possibilities, and differences in professional knowledge. Only one factor received majority agreement: the lengthy and complex administrative processes of higher education (approval of external initiatives, modification of training programmes). Furthermore, stakeholders agreed only on the unfavourable legislation, while university bureaucracy and differences in priorities were the only shared opinion of university management.

Comparing our results with the literature, we have repeated the well-known criticism of the lack of a clear and stable legal framework enabling universities to cooperate with their various external stakeholders, and that the existing legislation does not take into account the regulatory and spatial differences in the operational environment of higher education institutions. In Brasov, the hectic nature of the legal framework and the provisions of the Public Procurement Law running counter to local rationalities were repeatedly criticised. While not specific to UTBv, DUE is characterised by a mismatch between local-regional knowledge demand and supply due to the characteristics of the local industrial structure as well as the capacity and capability gaps of micro-enterprises. This clearly confirms the findings of Gál (2016), Erdős (2018), Goldstein et al., (2019), and Gál and Ptáček (2019) for regional universities in Hungary and the Central-Eastern European region.

But we have also found examples of potential partners with lower advocacy and significant capacity constraints, e.g. SMEs and NGOs, in Dunaújváros. The indifference or negative attitude of the former towards university co-operation recalls the criticisms of universities as only educational institutions, or as cumbersome, bureaucratic organisations (e.g. Compagnucci & Spigarelli, 2020). Furthermore, the finding of Kozirog et al. (2022) that the most important innovation partners of European universities are local and regional public institutions, to be followed by international partners, while large private sector companies, start-ups and SMEs coming only after them is confirmed in both cases.

Among the institutional barriers, a particularity of student involvement was confirmed: while mandatory internships for all students strengthen the university's social knowledge transfer function and increase the benefits for the most potential partners (Maassen et al., 2019), students' participation in local community engagement activities is mostly voluntary. Moreover, there are inherently fewer internships at NGOs, which further reinforces the differences between the university's third mission activity areas and the weighting of external partners (e.g. Benneworth 2012, 2018; Kempton, 2019).

The issue of measuring and evaluating university third mission is a prominent one in the literature. Our research data confirm the long-established fact that higher education institutions mainly collect data describable by numerical indicators and on the economic impact of third mission practices and knowledge transfer activities, while they gather almost nothing on the multifaceted (social, cultural and even economic) impact of community engagement activities. Therefore, it would be worthwhile to use an institutional self-assessment tool, either the EURASHE UASiMAP Self-Assessment Tool, or TEFCE Toolbox, to demonstrate the results of their activities in support of local-regional society and their direct impact.

In conclusion, the theory-driven factors that were not confirmed by our data and the twelve inductively identified constraints to university-external stakeholder collaboration, such as attitudinal factors, difficulties arising from the diversity of regional societal actors, communication gaps, and a number of tangible practical problems, which take the researcher to the root of the collaborations, can be considered as new research results.

As for the practical use of our findings on the four research questions, we believe that they provide valuable information for the two universities as they have revealed the operation of their third mission practice from the external stakeholders' perspective. The current co-operation needs of some of their business, public administration, civic and public education partners, the range of collaboration activities that are relevant to them, the conditions that support them, therefore need to be strengthened, and the factors that hinder or impede their co-operation in some way, therefore require risk management, have been identified. Therefore, the consideration of our findings for institutional strategy purposes could contribute to a reassessment of the two universities' relations with local-regional societal actors, to the renewal of their co-operations with them, and to the targeted development of their third mission practice.

Possible directions of future research

We conclude by suggesting possible directions for future research. As each of these research questions has provided a wealth of empirical data, they could inspire a wide range of further studies, of which we now highlight those that seem most promising to us.

Overall, the significant difference in the number of external stakeholder interviewees in the two cases calls for a more balanced or broader replication of the research in itself, but

the research topic deserves to be explored either for NGOs, or secondary education institutions, or other local social groups (e.g. churches) in order to more fully explore the local-regional social engagement of universities.

Hence the need to capture impacts, both for the third mission practices as a whole, and for the local social actors mentioned. Impact assessments should be conducted for specific activities (e.g. the impact of service learning, or dual training with local-regional partners on the placement of graduates in the region), exploring both direct and indirect impacts, and in the short, medium and long term time dimension (Tijssen et al., 2021; EURASHE, 2023). These may provide answers to the main challenges of the two cities, such as the retention of the young, fresh graduate workforce (Dunaújváros), the provision of sufficient, skilled workforce (Brasov), or to the extent of university contribution to the "liveability" of the two cities, which is one of the main societal expectations from higher education institutions.

We have also seen that, with a few exceptions, local-regional stakeholders have so far made modest demands on their local universities for high-profile basic and applied research. In Dunaújváros, this is mainly due to its different training and research profile from the large companies of the urban area as well as the immature role as applied research partner for the Hungarian nuclear industry. In the case of Brasov, higher prestige research is kept with the German parent company, as opposed to the lower-value research contracts commissioned from the local university. How will this change and/or expand in the future, and what are the implications for local economic development and social sustainability?

It also seems to be an exciting research problem that the city of Brasov has been experiencing an urban development boom since the 2010s, which is a bittersweet experience given the number of winning proposals to be implemented and the range of challenges that arise. The city and county authorities consider these to only be realisable with the multifaceted professional support of UTBv and the effective co-operation of all local stakeholders. It would therefore be worthwhile to examine, after the tenders are over, whether these partnerships have been established, who has worked together, on what projects, how and with what results.

As far as Dunaújváros is concerned, it is worth following the innovative initiative that made Bánki Donát Technikum part of the University of Dunaújváros in 2021 and will bring together dual partners, employers and other secondary schools from the wider region in the so-called Training Career Model (KÉP). Will the Bánki - DUE student career path be realised by high-school graduates continuing their studies at the University of Dunaújváros, entering tertiary dual education and finding employment in regional industry? What about employer and student satisfaction?

Lastly, we would like to highlight the use of the UASiMAP Self-Assessment Tool to assess and stimulate the regional role and innovation impact of universities. This would

allow a systematic accounting of the third mission practice of the two universities at the local-regional scale, the demonstration of its results with relevant numerical indicators, and the exploration of the conditions and processes of implementation through detailed narratives. This may be followed by an institutional learning process, which may result in a more focused and effective institutional practice of the still very diverse university third mission activities.

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