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Romanian migrants' journeys as transformational entrepreneurs in London

Iuliana Maria CHITAC*

Abstract

Migrant entrepreneurship is recognized as an essential economic driver for host and home countries. However, Eastern European entrepreneurs' social initiatives and contributions are rarely acknowledged, shadowed by their image of precarity and economic survival in host countries. This Interpretative Phenomenological Study (IPA) challenges this paucity by investigating how 18 London-based Romanian migrant entrepreneurs interviewed (LRMEs) enable transformational entrepreneurial practices transcending their "individual subsistence to create jobs and income for others" (Schoar, 2010, p.5) and contributing positively to Britain's social fiber. Specifically, this interdisciplinary study draws on Berry's acculturation model (1997, 2003, 2005) and social learning and self-efficacy theories (Bandura, 1971, 1977). This article contributes to the nascent transformational entrepreneurship scholarship and practice (TE) and policy. Specifically, it demonstrates how these Romanian migrant entrepreneurs enable acculturative belonging for themselves and other stakeholders as they enact through their everyday transformational entrepreneurship practices of role modelling, encouraging other migrants to pursue a social-economic entrepreneurial path and acculturative mentoring, supporting them to become custodians of bicultural values and customs, empowered to address social injustice and discrimination.

Keywords: interpretative phenomenological analysis, migrant entrepreneurship, transformational leadership

Introduction

It is widely recognised that entrepreneurship, and consequently, migrant entrepreneurship, is a critical factor in socioeconomic development (Acs *et al.*, 2014; Vertovec, 2020). However, due to the sluggish transition away from the conventional universalist perspective and toward recognition of its varied diversity and its socioeconomic transformational potential embedded and exhibited via its everyday practices, migrant entrepreneurship's social effect and its transformational leadership potential have been devalued and delayed (Evansluong *et al.*, 2019; Rayburn and Ochieng, 2022; Vertovec, 2019; 2020).

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Over the past ten years, academics have adopted a more interdisciplinary approach, enabling the study of migrant entrepreneurship practices to go beyond its conventional, financial, and necessity-based boundaries. The potential for transformational leadership in migrant entrepreneurship was unlocked through transformational entrepreneurship practices of role-modelling, acculturative mentoring and transformational leadership that integrate social interactions, learning, and technology to serve as a catalyst for leading social change (Giraldo *et al.*, 2020; Rayburn and Ochieng, 2022; Marmer, 2012).

Addressing this knowledge gap which could unlock the transformative potential embedded in Romanian migrant entrepreneurship in superdiverse London, this IPA study launches an interdisciplinary inquiry into how these entrepreneurs' transformational entrepreneurial practices enable acculturative belonging for themselves and other stakeholders. Furthermore, to fulfil its aim, it draws on transformational entrepreneurship (Maas *et al.*, 2019) and Berry's acculturation model (1997, 2003, 2005) and social learning and self-efficacy theories (Bandura, 1971, 1977) to investigate how these migrant entrepreneurs' transformative entrepreneurship practices enable acculturative belonging for themselves and other stakeholders in London.

This study employs a qualitative IPA perspective, which aligns with the methodological tradition (Alase, 2018) of prioritizing and amplifying the voices of 18 Romanian migrant entrepreneurs who shared their experiences of acculturative belonging through their entrepreneurial practices in London, United Kingdom, during semi-structured interviews conducted between 2019-2020, averaging 50 minutes each.

Therefore, this interdisciplinary study contributes to the nascent transformational entrepreneurship scholarship and practice (TE) and social psychology literature (i.e. acculturative belonging) by examining this largely unexplored social everydayness lens embedded in migrant entrepreneurship practices (Evansluong *et al.*, 2019; Dheer, 2018). It showcases how transformational entrepreneurial practices of role modelling, acculturative mentoring and transformational leadership enable these migrant entrepreneurs' acculturative belonging and other stakeholders. Consequently, this interdisciplinary approach highlights TE's capacity to develop novel solutions to a range of societal problems as well as overcome anti-immigrant social stigma (Moroşanu, 2018) and the crucial part that entrepreneurial practices play in tackling global concerns (Dicuonzo *et al.*, 2021; Marmer, 2012; Maas *et al.*, 2019).

This paper has the following structure: section one presents an overview of the theoretical and empirical background relevant to the topic; section two justifies the IPA research methodology and method suitable for this study; section presents three presents the research findings and discusses

them in the light of previous empirical evidence; section four outlines this article's theoretical and practical contributions, in the light of its context and time-bound limitations and future research directions; finally section five succinctly presents the conclusion of this article.

1. Theoretical background and context

This study's interdisciplinarity resides at the intersection of transformational leadership, which anchors the nascent discipline of transformational entrepreneurship (TE) and social psychology, which supports the understanding of acculturative belonging through the lens of Berry's acculturation model (1997, 2003, 2005).

1.1. This study's context

Reasoning the contextual migrant entrepreneurship perspective promoted by renowned scholars (Baker and Welter, 2020; Welter *et al.*, 2019; Welter, 2020), this article also acknowledges the significance of context in understanding these migrant entrepreneurs' experiences of acculturative belonging. It is through this contextual lens that these migrant entrepreneurs' transformational practices have the potential to enable social change in a super-diverse London metropolis (Vertovec, 2020). Furthermore, according to the British Office of National Statistics (2019), Romanian entrepreneurs are members of the second-largest community of EU migrants in the UK and the youngest community of migrant entrepreneurs in the UK, according to the Centre for Entrepreneurs Report (2015).

1.2. Transformational entrepreneurs as transformational leaders

According to Bass (1990) and Burns (1998), transformational leaders inspire others to become role models and empower their followers to be creative and imaginative solutions to economic and social problems that align with organizational goals and vision. This beneficial influence transcends organizational borders to bring positive change in the immediate community and broader society. As a result, the transformative leader is said to engage in transformational entrepreneurship (Maas *et al.*, 2019). Therefore, as these migrant entrepreneurs become transformational leaders, they serve as community role models, motivating their staff and other stakeholders to pursue positive social change and thus replace their "winner-takes-all" mentality with one of "let's-grow-together" (Gunawan *et al.*,

2021). Furthermore, the CEO-entrepreneur becomes a transformative leader, enabling positive socioeconomic change, and eventually serves as an example for their society through this mindset that embraces and cares for the greater social good of the broader community, enabling the sustainable development of the migrant enterprise (Berntsen *et al.*, 2022).

Although the discipline of transformational entrepreneurship is still in its infancy (Berntsen *et al.*, 2022), more and more research has emerged in the last ten years showing how entrepreneurs engage in transformational leadership through encouraging positive organizational and social change, addressing social injustice and discriminatory practices (Berntsen *et al.*, 2022; Maas *et al.*, 2019).

However, there needs to be more understanding of transformational entrepreneurship practices, which enable social change without sacrificing business objectives. Their transformative leadership role modelling motivates other stakeholders to become change agents (Xu and Linlin, 2022). Increasing empirical evidence suggests that by fulfilling their role as transformational leaders, transformational entrepreneurs face several complex challenges in bringing about social change in a dynamic and ever-changing global context where various cultural, social, and economic goals are expected to converge to serve the greater good. However, they should not be held solely accountable for this challenging task (Maas *et al.*, 2019).

Against this theoretical and empirical landscape, this study challenges the image of precarity and necessity surrounding migrant entrepreneurship, specifically Eastern European migrant entrepreneurship (Shubin and Dickey, 2013; Gurau *et al.*, 2020). Therefore, it proposes a fresh perspective on migrant entrepreneurship, launching an inquiry into its untapped transformational potential to understand how these migrant entrepreneurs' everyday practices enable acculturative belonging for these migrant entrepreneurs and other stakeholders by employing Berry's acculturative model (1997, 2003, 2005).

1.3. Berry's acculturation model

A growing body of research defines acculturation as a dynamic process of change, maintenance, and acquisition of identities, attitudes, values, and behaviors related to both the heritage culture and the host society culture (Harim and Hue, 2022)

However, Berry's acculturation model (1997, 2003, 2005) is considered for this study because it is one of the most frequently referenced models and considers immigrants' agency and acculturative changes. Following this theory, immigrants' acculturation is influenced by their involvement in both the culture of the host country and their own country of origin. As a result, immigrants may experience

assimilation (as they distance themselves from their own culture in favour of participating in that of their host nation), social inclusion (as they strike a balance between participating in the host culture and their own culture of origin); social segregation (as they participate in co-national enclaves), and marginalization (when they give up participating in any culture, estranging themselves from any social interaction).

Within this context, migrants' acculturative practices are modified through various levels of social contact, which serve as settings for social learning (Bandura, 1971), as well as possibilities for exposure to and engagement with their culture of origin and the host nation (Berry *et al.*, 2011). Although acculturation is a "...dual [bidirectional] process of cultural and psychological change resulting from contact between two or more cultural [sic] groups and their members," the contextual dynamics incorporated into Berry's model (1997, 2003, 2005) would not be sufficient if these immigrants have not been able to exercise his or her agency by enabling the context to change. It entails modifications to social structures, institutions, and cultural norms at the collective level. At the micro level, "it involves changes in a person's behavioural repertoire" (Berry, 2005, p. 698).

Within this study, acculturative belonging is used interchangeably and thus understood as social inclusion, assimilation and social segregation enabling practices of transformational migrant entrepreneurship. However, to understand how these transformational entrepreneurship practices enable acculturative belonging for London-based Romanian migrant entrepreneurs, this study draws on social learning and self-efficacy theories (Bandura, 1971, 1977) discussed in the following section of this paper.

1.4. Social learning theory and self-efficacy

Self-efficacy, rooted in social psychology, is crucial to entrepreneurship and the Social Learning Theory (Bandura, 1971, 1977). It refers to one's confidence in their entrepreneurial qualities and capabilities, which makes one see their entrepreneurial identity as appropriate and credible in a specific context (Wennberg *et al.*, 2013). Furthermore, entrepreneurial self-efficacy is seen to be formed by social role expectations (Qin and Estrin, 2015) and by entrepreneurial role models (Wyrwich *et al.*, 2016). As a result, it is a driver of entrepreneurs' behaviours and tactics (Barberis and Solano, 2018; Evansluong *et al.*, 2019).

Evidence suggests that low self-efficacy is more prevalent among women migrant entrepreneurs who are pursuing entrepreneurship from a disadvantageous position (Azmat, 2013), from countries with limited entrepreneurial traditions, such as Eastern Europe or where the "ideal"

entrepreneurial identity persists around masculinity (Villares-Varela and Essers, 2019). People with high self-efficacy are more aware of entrepreneurial role models and potential future successes, which is in line with the perspective of transformational entrepreneurship (Liu *et al.*, 2019). According to Bandura's self-efficacy theory, this bolsters the comprehension of why businesspeople with high levels of self-efficacy encourage and inspire others to effectuate positive social change, and by doing so, they make it possible for such transformational entrepreneurial practices to have an impact across contexts and stakeholders (Liu *et al.*, 2019). As a result, the transformative behaviours of these immigrants, which promote a sense of acculturative belonging for them, may also promote a sense of acculturative belonging for other stakeholders, including their employees and business partners.

This IPA study fills this knowledge gap by considering the theoretical and empirical foundation that highlights the significance of understanding the impact transformational entrepreneurship practices have in fostering positive social change in diverse societies like Britain and, more specifically, within the super-diverse London metropolis (Vertovec, 2020). This study contributes to the emerging transformational entrepreneurship scholarship, practice, and policy by examining how 18 London-based Romanian immigrant entrepreneurs (LRMEs) enable transformational entrepreneurial practices to build a legacy of socio-economic value benefiting the larger host society.

2. Research design

This study uses a phenomenological interpretative technique (IPA), continuing the tradition of earlier researchers who supported phenomenology because of its capacity to delve deeper into meaning (Alase, 2017). As a journey of "becoming," which has multiple meanings, the interpretive epistemological perspective prioritizes "understanding the social environment that individuals have produced and which they reproduce via their continued behaviors" (Blaikie, 2010, p. 124). (Alase, 2017). Inductive reasoning is considered more appropriate for this interpretative phenomenological philosophy than the "hypothetico-deductive" version, which concentrates on evaluating preexisting theory (Saunders *et al.*, 2019).

The research methodology that was appropriate for this IPA study comprised the characteristics of the iterative process of accessing and mixing classic and modern purposive sampling techniques, including derived rapport, time-space, snowball, and e-snowballing sampling via Facebook (Chitac and Knowles, 2019), to sample 18 Romanian immigrant business owners in London. This sample size is consistent with the IPA tradition (Alase, 2017). It has been justified as a point of empirical saturation, where no new emergent themes across interviews and within interviews were found after

conducting any additional interviews (Saunders *et al.*, 2018). Semi-structured interviews and field notes were used to collect data, then classified into emerging themes organized as open and collaborative codes and analysed using NVivo12.

Given that IPA is portrayed as “merely doing what human beings do. OK, it’s doing it in more detail, it’s doing it more steadfastly, but it’s an essential human process that is happening in the research’s endeavour” (Smith, 2019, p. 171), the thematic analysis has been launched across the interviews and within each of the interview (Braun and Clarke, 2020; 2021). The data analysis is structured into three stages. First, a descriptive analysis of the London-based Romanian entrepreneurs’ demographic profiles is presented. Secondly, a summary of the main research findings which align with this study’s aim is created, and interpretative discussions are embedded based on the critical assessment of how these research findings are relevant within the interdisciplinary debate on transformational entrepreneurship.

GDPR (2018) ethical research regulations were carefully considered, including participant information sheet and research briefing, participant consent and right to withdraw and their confidentiality and anonymity respected.

3. Research findings and discussion

This section presents and discusses the research findings aligned with the aim of this study of investigating how these migrant entrepreneurs’ transformative entrepreneurship practices of role modelling, acculturative mentoring and transformational leadership enable acculturative belonging for themselves and other stakeholders.

Following this methodological approach and the theoretical and empirical framework detailed above, this study’s research findings are organized into three transformative entrepreneurship practices, such as role modelling, transformational leadership and acculturative mentoring, portrayed as enablers of acculturative belonging for the migrant entrepreneurs interviewed as well and for other stakeholders.

3.1. Research participants’ demographics

Based on Table 1, an equal number of male and female Romanian immigrant business owners with headquarters in London, United Kingdom, and an average age of 39 make up the sample of research participants interviewed for this study. The majority began firms in the products and

services, construction, and real estate sectors after completing their higher education (a Bachelor's or Master's degree) in the EU. At the same time, the remaining minority started businesses in management consulting and healthcare. Additionally, they generated an average of 19 jobs, with only four Romanian immigrant business owners catering to their ethnic market. The rest of their products and services were aimed at the British market.

Table 1. Research participants' demographics

Participants Coded Names	Age	Highest Level of Education	SIC Industries	No. of Employees	Market Served
Radu	37	Bachelor Degree	Consumer goods & services	3	British Market
Claudiu	47	High School	Construction & Real Estate	20	British Market
Gabriel	26	Bachelor Degree	Consumer goods & services	20	British Market
Alexe	33	High School	Construction & Real Estate	56	British Market
Dan	36	Bachelor Degree	Construction & Real Estate	60	British Market
Codrut	71	High School	Consumer goods & services	20	British Market
Silviu	36	High School	Construction & Real Estate	20	British Market
Seba	32	Bachelor Degree	Construction & Real estate	15	British Market
Ionel	45	Bachelor Degree	Construction & Real estate	100	British Market
Diana	23	Master Degree	Consumer goods & services	5	British Market
Loredana	40	High School	Consumer goods & services	15	Ethnic Market
Veronica	45	Bachelor Degree	Management consultancy	1	Ethnic Market
Raluca	38	Bachelor Degree	Consumer goods & services	4	British Market
Iulia	40	Bachelor degree	Consumer goods & services	1	Ethnic Market
Andreea	32	Bachelor Degree	Consumer goods & services	3	Ethnic Market
Claudia	34	Master Degree	Management consultancy	1	British Market
Valentina	41	Bachelor degree	Consumer goods & services	1	British Market
Eca	47	Master Degree	Healthcare	1	British Market

Source: Researcher's own

According to the Romanian migrant entrepreneurs included in this study, their transformational entrepreneurship practices reason with those of previous scholars (Berntsen *et al.*, 2022; Gunawan *et al.*, 2021; Maas *et al.*, 2019), such as role modelling as transformational leaders and acculturative mentoring.

3.2. Acculturative belonging through role modelling as transformational leaders

The London-based Romanian migrant entrepreneurs interviewed shared how entrepreneurship enabled them to reach beyond the economic motivation to address “anti-immigrant” social stigma

(Moroşanu, 2018) as they share what they are experiencing in British society due to their Romanian identity:

“When you say that you are Romanian, everyone thinks of you the worse, in all honesty, because the overall image of the Romanians here is not favourable. However, is it essential to put everybody in the same pot?” (...) (Entrepreneur Codrut)

Their feelings of injustice suffered because of the “unacceptable otherness” of these immigrants, emphasizing cherry-picked characteristics contradicting the host social normativity and expectations (Virgili, 2020) is one of the most heated debates in migrant entrepreneurship rooted in Eastern European migration, which fuelled the British anti-immigrant discourse (Moroşanu, 2018), resulting in a seven-year restricted access to Romanian on the British labour market, despite their EU citizenship (European Commission, 2016). To overcome these discriminatory practices, there are instances where they choose to lie by deceiving others and hiding behind other immigrant identities, regarded as “acceptable others” by the British, such as being a Cypriot. However, they never let go of their Romanian identity; instead, they showcase it when their success as entrepreneurs cannot be questioned or questionable *“I soon learned that potential business partners avoided collaborating with my company because I was Romanian. At first, I said that I was from Cyprus to avoid this label and to avoid losing business. However, when my business took off, and my business was appreciated, I started exposing my Romanian identity (...). (Entrepreneur Ionel)*

Within this context, entrepreneurship is transformed into a *transformative vehicle* for pursuing social justice and an opportunity to undo their Romanian identity and negotiate a new, superior identity, that of entrepreneur, according to these entrepreneurs: *“Entrepreneurship motivates you to become an achiever and to reach higher, to escape xenophobia. You have a different social status. As an entrepreneur, you are growing personally and professionally...you have the freedom to become what you want (...) (Entrepreneur Codrut)*

Emphasising the importance of addressing discriminatory practices, Entrepreneur 8 shares engaging in transformative practices to help his migrant workforce regain their dignity and social justice by recognizing the value of their work not as 2nd class citizens but as a competitive workforce:

“(...) the vast majority of the people we employ are Romanians. (...) Most of them came here without knowing the language and without having documents (...). I treat them with dignity and do not mock them or underpay them. For example, many of my guys who used to work for £ 50 a day,

for nothing, barely making ends meet, currently take home £ 120 because I want to maintain a certain standard to motivate them (...)" (Entrepreneur Silviu)

Furthermore, they also share the financial and social reasons they engage in these transformational entrepreneurship practices: *"So I started from 0 (...). And although I started with only three clients, I was confident there was potential. Moreover, as the demand increased over time, I decided to rent an office (....). Moreover, now, I have 100 clients, and thus I have reached my business goal (...) Being a businesswoman influences my social interaction, mainly because I am now visible, invited to speak as a social model in schools for Romanian children, and a model of entrepreneur sharing to others my experience as an entrepreneur in the UK (...)." (Entrepreneur Andreea)*

Entrepreneur Andreea demonstrates how becoming an entrepreneur made her visible as a valuable community role model for the younger generation of Romanian immigrants and other first-generation immigrant entrepreneurs who would like to take on a redeemable journey of entrepreneurship. The confidence in socioeconomic success through entrepreneurship aligns with Bandura's (1971, 1977) self-efficacy theory and previous empirical evidence (Barberis and Solano, 2018; Evansluong *et al.*, 2019), showcasing that entrepreneurs with high self-efficacy, thus who believe highly in their abilities to succeed as entrepreneurs (*i.e.* *"started from 0 to become a social and entrepreneurial model"*) (Entrepreneur Andreea), are also likely to become community role model and transformational leaders, which enables their belonging *"Being a businessman in the UK has helped me feel included (...) I am interested to see my employees improving their careers, even if it means them leaving me. (Entrepreneur Seba).* As transformational leaders, they are very likely to inspire others, being these their employees, a future generation of migrant entrepreneurs and business partners, to become role models and enablers of transformational entrepreneurial practices, as Entrepreneur 8 shares: *"It is a common topic among Romanian entrepreneurs to transform our businesses into cultural and educational hubs, as we often discuss how migrants formed cities and how we lay the foundations of a better community."* (Entrepreneur Valentina) Similarly, sharing the same perspective of entrepreneurship being an enabler for positive social change for others, Entrepreneur 1 reinforces that *"as an entrepreneur, it was more important for me to do something that brings value to the community (...). Luckily, London is a very diverse place, and they do not feel like I do not belong (Entrepreneur Diana).*

3.3. Acculturative belonging through acculturative mentoring

These illustrative examples also suggest that these Romanian migrants experience entrepreneurship as social learning, a journey described by many as “*dignifying*” (Entrepreneur 8), “*opportunity for personal and professional development and freedom to become what you want*” (Entrepreneur Codrut), “*visibility and recognition as a community and entrepreneurial role-model*” (Entrepreneur Andreea). As such, they enable social change as they become positive, transformational leaders enabling acculturative belonging for their employees and other business partners; as Entrepreneur Silviu shares: “*I hired a Romanian-English teacher to teach them English. I see this as an investment in my own company because if my employees get a decent salary and thus a good life, and they learn English, this will allow them to integrate into this society. This is how I make a difference as an entrepreneur. These are some of the wins I care about. (...) From my point of view, if you want to belong in this society, you have to learn how to do the right thing, not the Romanian way. Romanians usually get a bad reputation, but we, as a company, are here to prove them wrong (...) I teach them to adopt a different mindset and work style that focuses on finding solutions to current problems to be motivated to grow together as a company (...). In London, you are exposed to a world with different perceptions and cultures, and this multiculturalism has drawn me. And it motivated me to find my place in this society. I believe that this is a society that absorbs you and in which each one of us could find his place.*” (Entrepreneur Silviu)

Similarly, Entrepreneur Seba demonstrates a transformational entrepreneurial mindset which encourages a “let's-grow-together” attitude (Gunawan *et al.*, 2021), reaching way beyond the migrant enterprise: “*I know that my company offers few opportunities for promotion, but I encourage them to take professional courses and, when ready, apply for larger companies (...). This means to be human, a moral duty to encourage those with the potential for more when you cannot offer the support needed. It would be wrong to stop it (...). I often represent the Romanian community, and once a month, I meet with local representatives to mediate certain situations involving Romanians in this area (...).*” (Entrepreneur Seba)

These transformative entrepreneurship practices are learned and then shared to enable positive social change for others: “*Amongst the best compliments that I have ever received, I remember that one of my British clients, to whom I provided cleaning services for over 17 years, told me that she remembers that when I came to the UK I was a young girl with a ragged backpack and now I became a lorry because I now influence and lead people to improve and become better. (...) As for English society, I feel socially included. I lead a very diversified life in this society through my business, and*

through the charity work I do, I donate from my vegetable garden to the local hospital (...) I sponsor Romanian students to study here in the UK because I am confident that education would help us improve our image as Romanians (....). (Entrepreneur Loredana)

From these narrative accounts, it becomes clear that for the Romanian migrant entrepreneurs interviewed, acculturative belonging is an empowering journey of social learning and acculturative mentoring, which enables others' personal and professional improvement, overcoming the social stigma of having a bad reputation as Romanians and finding one's place in multicultural London.

These Romanian migrant entrepreneurs prove that they overcome social injustice and social stigma through entrepreneurship. They help others to do the same, and they become transformative leaders, paving the way for a better understanding of transformative entrepreneurship, which transcends enterprise borders and economic motivation to *"practice medicine to do good around me (...), and this social motivation is much more important to me (than its financial one)". (Entrepreneur Eca)*

These transformative leaders enable positive socioeconomic change as they care for the greater social good of the broader community (Berntsen *et al.*, 2022). Aligning with previous empirical evidence, the potential for transformational leadership in migrant entrepreneurship was unlocked through transformational entrepreneurship practices of role-modelling, acculturative mentoring and transformational leadership that integrate social interactions and learning to serve as a catalyst for leading social change (Giraldo *et al.*, 2020; Marmer, 2012; Rayburn and Ochieng, 2022) and acculturative belonging.

These migrant entrepreneurs' feelings of acculturative belonging are presented as feelings of social inclusion (Berry, 2019) as they create through their enterprises a supportive 'reservoir of social relations' (Snel *et al.*, 2020, p. 6), which further enables positive social change, as they help themselves and others to overcome social stigma and discrimination experienced as Romanians in the UK. (Moroşanu, 2018). Therefore, it is essential to understand that similar to Asian migrant entrepreneurs in the UK and Latin American entrepreneurs in Spain (Cederberg and Villares-Varela, 2019), entrepreneurship allows these migrant entrepreneurs to exercise their agency and thus enable them to capitalize on social resources for economic and social advantage (Berntsen *et al.*, 2022; Gurau *et al.*, 2020). It is almost paradoxical to see how these transformative entrepreneurial journeys significantly impact these entrepreneurs and others' acculturative belonging as they transform socio-economic disadvantages into competitive socio-economic advantages.

4. Contribution, limitations and future research directions

This interdisciplinary study contributes to the literature and practice of transformational migrant entrepreneurship by demonstrating how Romanian entrepreneurs, through their entrepreneurial practices of role-modelling and acculturative mentoring, transformed adverse effects that immigrant communities might experience in a less diverse or anti-immigrant environment by creating jobs and mentoring their workforce to adjust to the host country. Doing so enables themselves and other stakeholders to achieve different degrees of acculturative belonging, such as social inclusion or assimilation. The results of this study, when considered in the context of migration, are consistent with those of earlier studies (Berntsen *et al.*, 2022; Rafferty, 2019; Solano *et al.*, 2019). According to the Social learning and self-efficacy theories (Bandura 1971, 1977), these migrant entrepreneurs' transformative business activities result in beneficial socioeconomic change, which may encourage other migrants to engage in comparable business strategies. Additionally, these findings promote the importance of understanding the diversity embedded in migrant entrepreneurship and the possible practical and policy consequences that these findings bring are highlighted by this cascading impact.

However, in light of these theoretical, practical and potential policy-based contributions, this IPA study also has its limitations. These findings are context and time-bound, and thus, they cannot be generalized to other communities of migrant entrepreneurs, which creates the opportunity for further research to be expanded to other communities of migrant entrepreneurs in London or other maybe less diverse societies, like Scotland, for example. Although central to entrepreneurship studies, gender is portrayed as a way of doing business (Phillips and Knowles, 2012), its influence has not been explored. Thus, the perspective could be explored in future comparative research. Overall, this IPA study reveals how the influence of migrant entrepreneurship goes beyond its perception of precarity and its economic impact, bringing about good social change, such as overcoming anti-immigrant social stigma and discrimination. As a result, it aids immigrant entrepreneurs in developing into transformative leaders and role models who inspire and motivate their team members and business associates to take substantial steps toward acculturation.

Globalization and diversity emphasize the necessity of broadening our knowledge of immigrant entrepreneurs' potential beyond traditional economics and recognizing the significance of migrant entrepreneurs' diversity. With this strategy, it would be possible to move away from universalist and conviction-based entrepreneurial policies and programs and toward ones founded on evidence, which is critical.

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Explaining informal payments in the Romanian public health care system

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Abstract

Informal payments in the public health care system represent one of the most sensitive topics in the medical world. It is also a subject of interest for many researchers. As evidenced by reports from various European institutions, a catalyst for their use was the COVID-19 pandemic. Among all the countries of the European Union, Romania was reported with the highest rate of use of these payments. With the support of parallel marketing research, carried out both among patients in Romania and among medical staff, it is demonstrated that they do not consider such practices natural. However, following the conclusions, in order to stop this trend, it is recommended, among other things, to reduce the institutional asymmetry, to tighten the penalties for the medical staff who accept such payments or to stimulate the medical staff, by increasing their salaries.

Keywords: informal payments, COVID-19, patients, public health care system, institutional asymmetry

Introduction

The way in which a public health system works can represent, in some cases, the business card for a more effective treatment, a more stable job or a more efficient work environment. Often, the perception of this mechanism is formed with the support of patients who are treated in medical units. Following the encountered experiences, they express their opinion about the service they benefited from, emphasizing the relationship developed with the medical staff. Thus, they can also influence the behavioural intentions of their entourage (Zarei *et al.*, 2014; Zeithaml *et al.*, 1996).

If the reaction of the people who have benefited from medical services is positive, future patients can be encouraged to undergo treatment at the same facility. In other cases, however, it is possible that the patient is not completely satisfied with the service received and will give negative feedback. In addition to this, there may be certain signs that form a negative perception about the

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respective health system even before actually making contact with it. One of the signs can be represented by the use of informal payments (Cherecheș *et al.*, 2011). During the COVID-19 pandemic, among all the member countries of the European Union, Romania (22%) and Bulgaria (19%) were registered with the highest incidence of bribery in the public health sector (Transparency International, 2021). It is all the more serious as they are requested by the medical staff who receives a salary for this activity.

A health system in which the use of informal payments is promoted can lead to a decrease in trust in doctors and authorities in general (Horodnic *et al.*, 2021; Incaltarau *et al.*, 2021). Therefore, this paper aims to assess the perceptions of patients in Romania regarding the use of such practices in the medical system, but also those of the medical staff (resident doctors, specialist doctors, primary care doctors, nurses) both regarding their request or reception. For this, will be conducted a parallel research among the members of the two target groups from the North-East region of Romania. The research tool will be a questionnaire, which will have a similar set of questions, adapted for each category of respondents. The questionnaires will be distributed online. Also, at the end of the two studies, certain measures will be proposed to support the decrease in the rate of use of informal payments.

1. Literature Review

1.1. What are informal payments?

Only if we analyse the number of definitions given to the concept of informal payments in the medical system, we can see the importance of this topic for researchers. According to a study, until 2012 there were no less than 61 official definitions for this notion (Cherecheș *et al.*, 2013), from the simplest to the most complex. This can be perceived as a challenge, due to the lack of a generally accepted definition for the notion of informal payments (Lewis, 2000).

According to a definition formulated by Lewis (2000, p. 1), informal payments represent “payments to individual and institutional providers, in kind or in cash, that are made outside official payment channels”. Thus, we can consider that this practice is an unofficial one, secretly, so as not to be noticed by the responsible bodies (Thompson and Witter, 2000). The same author states that informal payments are “purchases that are meant to be covered by the health care system” (Lewis, 2000, p. 1). The definition highlights two aspects. The first is that of the fact that the public health system does not make every effort so that all patients benefit from the services they need. The second

aspect refers to the fact that these practices may represent certain additional payments, if they have already been made by the responsible authorities.

Also, other authors formulated a more complex definition, which looks like this: “a direct contribution, which is made in addition to any contribution determined by the terms of entitlement, in cash or in-kind, by patients or others acting on their behalf, to health care providers for services that the patients are entitled to” (Gaal *et al.*, 2006, p. 276). The definition continues the previously mentioned ideas, especially those related to the surcharge. Although patients want to benefit from the services to which they are entitled in their original form, unfortunately, for some reasons, they may have to or even intend to pay additionally.

A definition that can also explain the patients' motivation to make such payments was formulated by Gaal (2006, p. 73): “at the systemic level, informal payments can rather be explained as the response of patients and doctors to the shortages generated by the state’s socialist health care system”. It can be said that local authorities can be considered triggers of informal payments because, at certain times, they do not pay special attention to the needs of this system. At the same time, the communist past of certain countries can cause this reaction (Williams and Horodnic, 2018). As was presented in the introduction of the paper, during the COVID-19 pandemic, Romania and Bulgaria were the countries in the European Union with the highest rate of use of informal payments among patients (Transparency International, 2021).

In addition to the definitions, the literature also presents several terms that are assimilated to informal payments. Among them, there are: ‘bribes/bribe payments’; ‘envelope payments’; ‘gratitude payments’; ‘informal payments’; ‘red packages/envelopes’ (Cherecheș *et al.*, 2013); ‘out-of-pocket payments’; ‘semi-official fees’ (Balanova and McKee, 2002); ‘under-the-table payments’ (Cherecheș *et al.*, 2013; Delcheva *et al.*, 1997); ‘under the counter payments’ (Delcheva *et al.*, 1997; Balanova and McKee, 2002); ‘unofficial payments’ (Cherecheș *et al.*, 2013; Ensor, 2004).

The following section discusses the main reasons for the use of informal payments in the medical system.

1.2. Reasons for using informal payments

A few years ago, it could be said that the existence of informal payments and their intensification were based on the lack of understanding of their origin, the causes that trigger them or the effects they can have (Gaal and McKee, 2004). Over time, however, researchers have tried, through their efforts, to identify some reasons that can be the basis of the acceptance of such practices, both on the part of the medical staff and on the part of the patients. These can be classified into four

categories: ‘economic factors’; ‘socio-cultural factors’; ‘service delivery challenges’; ‘legal-political factors’ (Arab *et al.*, 2022).

When we refer to economic factors, we can talk about the salaries of medical staff and how the health system is financed (Schaaf and Topp, 2019). In order to increase their motivation at work, medical staff would need an increase in the income they obtain and which they consider low (Jaminson *et al.*, 2006). Thus, due to the legislation, which limits salaries to a certain level, they prefer to request unofficial payments for the medical services. At the same time, the category of economic factors could also include situations in which medical units do not benefit from tariffs proportional to the level of inflation or from timely payment of financial claims by insurance companies, things that make the activity difficult (Arab *et al.*, 2022).

Over time, according to reports published by internationally recognized organizations, the rate of use of informal payments has recorded different values from one country to another. This can be attributed to the culture of the respective countries. It guides individuals to make a difference between what is appropriate and what is not appropriate or between what is according to the law or against it (Kaufmann *et al.*, 2018). Also, when we discuss socio-cultural factors, we have in mind the following things: ‘lost trust’; ‘corruption’; ‘value culture’; ‘public/patient awareness culture’; ‘community participation’ (Pourtaieb *et al.*, 2020, p. 3). A lack of trust in public institutions, in collaboration with the existence of cases of corruption or a non-involvement of the community in the decisions made at the central level, lead to the emergence of institutional asymmetry. This phenomenon is based on the lack of alignment between the norms, values and beliefs of informal institutions, on the one hand, and the formal laws and regulations of society, on the other hand (Horodnic, 2021). Thus, its existence will further encourage informal payments (Horodnic *et al.*, 2022a).

Another reason for making informal payments is represented by the challenges encountered in the provision of services by medical staff. Among these internal issues are: “employee motivation”; “poor human resource management”; “the authority of the medical staff”; “the level of education of the medical staff”; “moral/ethical problems of medical staff” (Pourtaieb *et al.*, 2020). These things, collaborated with the use of informal payments, can only lead to the worsening of the medical system (Giannopoulou and Tsobanoglou, 2020). Despite such situations, in the hope that they can reduce the waiting time or that they can receive services of a higher quality, patients offer informal payments to the medical staff (Doshmangir *et al.*, 2020).

Last but not least, informal payments in the medical system can also be based on legal-political factors. These things can be looked at from two perspectives. On the one hand, due to an imbalance of human resources, doctors lack control or monitoring (Pourtaieb *et al.*, 2020). This can even lead

to bribery among medical staff, especially among ambulance staff, to find them patients (Parsa *et al.*, 2015). On the other hand, at a wider level, including patients, because of the low level of sanctions that can be applied to them, they are encouraged to make informal payments (Lewis, 2007).

Considering these aspects, we carried out two marketing researches, one among patients and one among medical staff in Romania. Their aim was to observe how they perceive the use of informal payments in the public health system. The results will be presented in the following sections.

2. Research Methodology

The present study aimed to understand the phenomenon of informal payments in the public health care system in Romania and the evaluation of deterrent measures. To achieve this, two parallel marketing researches were conducted. One of them was addressed to patients who have or have not benefited from medical services within the public health system in the North-East region. The second research was conducted among medical staff employed in the public health system in the same region of Romania.

The tool of the two researches was represented by a questionnaire. In addition to the questions that referred to the socio-demographic data of the respondents, the form also contained simple answer items and questions that required the use of a 10 point Likert scale (from 1 - Strongly Disagree to 10 - Strongly Agree).

The questionnaires were distributed between May and November 2022, online, through social networks and personal connections among the respondents. The average time to complete each form was 20 minutes. Even if the topic chosen for the two researches is considered a more delicate one, the respondents chose to complete the received questionnaire, being sure that all the information provided will be confidential, anonymous and used only for the stated purpose. In any case, the people surveyed could withdraw from participating in one of the studies at any time.

Next, the two research samples will be presented one by one. The first sample is that of people who have or have not benefited from medical services within the public health care system in the North-East region of Romania. No less than 460 people completed this questionnaire. Details about their profile are presented in Table 1.

Of the total, 68% were female, while 31% were male. 1% of the respondents refused to mention their gender. For the majority of respondents (63.4%), the highest level of education refers to high school. When was discussed the permanent residence, most stated that they live in the urban area (62.6%).

Table 1. Sample structure (patients)

Variable		%
Gender	Female	68%
	Male	31%
	I refuse to answer	1%
Residence	Urban	62.6%
	Rural	33.5%
	I refuse to answer	3.9%
Education level	No studies	0.4%
	Gymnasium	0.2%
	High school	63.4%
	Post-secondary school	2.2%
	Undergraduate studies	27.3%
	Master studies	4.7%
	Doctoral studies	1.3%
	I refuse to answer	0.5%

Source: own processing

The analysis of the results collected from the medical staff employed in the public health care system in the North-East region of Romania will be carried out on a number of 53 completed questionnaires. Also, in their case, the details about the socio-demographic profile are centralized in a table (Table 2).

Most respondents were female (84.9%). Regarding the marital status, 58.5% of the respondents were married, 28.3% unmarried, and 11.3% were, at the time of completing the questionnaire, in a relationship. Last but not least, regarding the level of completed studies, 56.6% of them completed their undergraduate studies.

Table 2. Sample structure (medical staff)

Variable	Gender		Marital status			
	<i>Female</i>	<i>Male</i>	<i>Married</i>	<i>Unmarried</i>	<i>In a relationship</i>	<i>I refuse to answer</i>
%	84.9%	15.1%	58.5%	28.3%	11.3%	1.9%
Variable	Education level					<i>I refuse to answer</i>
	<i>Post-secondary school</i>	<i>Undergraduate studies</i>	<i>Master studies</i>	<i>Doctoral studies</i>		
%	11.3%	56.6%	13.2%	17.0%		1.9%

Source: own processing

3. Findings and discussion

In Table 3, can be observed some descriptive statistics about certain topics followed in our parallel marketing research.

Table 3. Descriptive statistics

Items		N	Min.	Max.	Mean
Giving/Accepting 'envelope payments' in the health care system.	Patients	460	1	10	2.88
	Medical staff	53	1	10	2.13
Giving/Accepting valuable gifts in the health care system.	Patients	460	1	10	2.85
	Medical staff	53	1	10	2.00
The use of informal payments after receiving/providing medical care.	Patients	460	1	10	3.23
	Medical staff	53	1	10	2.35
The use of informal payments before receiving/providing medical care.	Patients	460	1	10	2.68
	Medical staff	53	1	8	1.75
Giving/Accepting informal payments because they were asked/requested.	Patients	460	1	10	2.21
	Medical staff	53	1	10	1.77
Giving/Accepting informal payments because they were not asked/didn't ask.	Patients	460	1	10	3.20
	Medical staff	53	1	8	1.84
Giving/Accepting informal payments as a sign of gratitude.	Patients	460	1	10	4.32
	Medical staff	53	1	10	2.66
Giving/Accepting informal payments if the patient suffers from a serious condition.	Patients	460	1	10	2.97
	Medical staff	53	1	8	1.60
Giving/Accepting informal payments if the medical service is of a superior quality.	Patients	460	1	10	4.13
	Medical staff	53	1	10	2.13
Giving/Accepting informal payments if they do not trust the public medical system.	Patients	460	1	10	6.23
	Medical staff	53	1	10	3.30
Giving/Accepting informal payments because the public health system is not sufficient funded.	Patients	460	1	10	7.07
	Medical staff	53	1	10	5.45
Giving/Accepting informal payments to be treated/to treat patients with more respect.	Patients	460	1	10	6.60
	Medical staff	53	1	10	2.92
Giving /Accepting informal payments, because they do not know the sanctions that can be applied to them.	Patients	460	1	10	6.60
	Medical staff	53	1	10	3.86

Source: own processing

A first aspect followed in our study was represented by the way in which the practice of informal payments is perceived in the health care system. Considering the average score obtained for each item, whether we are talking about 'envelope payments' ($M = 2.88$) or valuable gifts ($M = 2.85$), patients do not consider such gestures acceptable. Among the medical staff, whether is discussed the receiving 'envelope payments' ($M = 2.13$) or valuable gifts ($M = 2$), the situation is similar.

If we talk about when informal payments can be offered to medical staff, patients do not have significantly different opinions ($M = 3.23$, after receiving medical care; $M = 2.68$, before receiving medical care). Even if the scores differ, slightly, those among the medical staff maintain their previously presented point of view, regardless of when such actions may take place ($M = 2.35$, after providing the medical service; $M = 1.75$, before providing medical care).

Often, when we talk about the use of informal payments in the health system, the most important role is that of the staff in the related structures. Thus, their attitude can be decisive in accepting or rejecting less legal practices. Even so, the surveyed patients do not consider it acceptable to offer informal payments either to medical staff who request it ($M = 2.21$) or to those who do not request such payments ($M = 3.20$). And in the case of medical personnel, the situation is similar. Whether we are talking about expressly requesting this ($M = 1.77$), or discussing the intention not to request such payments, but the possibility of receiving ($M = 1.84$), the medical staff does not agree with these practices.

The situation changes a little when an act of gratitude towards the medical staff is brought up. For example, with an average score equal to 4.32, patients are almost neutral when asked to evaluate the degree of acceptability of informal payments to medical staff to show their gratitude. These things could be based on a long-term relationship with the medical staff in question, or perhaps the treatment of a more serious illness that the patient has been diagnosed with. Conversely, with an average score equal to 2.66, medical staff do not change their attitude and do not agree with receiving informal payments even when they are made as a sign of gratitude.

In some cases, the severity of a particular patient's illness may be another reason for using informal payments. Even so, the patient respondents do not agree, even this time, with offering any stimulant to the medical staff ($M = 2.97$). This can be attributed to the fact that patients must benefit from the services they would need, because it is their right. At the same time, the medical staff also do not consider it natural to receive informal payments if the patient suffers from a serious condition ($M = 1.60$). This can tell us that the workers in the health system respect their job, the oath taken at the beginning of their career, but also the patients, regardless of their condition.

One reason for using informal payments may be to provide a higher quality medical service. However, it is believed that patients would not fully agree to give "envelope payments" or valuable gifts to the medical staff ($M = 4.13$), if they could benefit from such a service. The medical staff also disagrees with such behaviour. They would not accept any informal payment, just because they provided the best quality service for their patients ($M = 2.13$).

Another topic addressed in the questionnaires was represented by trust in the public health system. Moreover, according to literature, some researchers state this as a reason why informal

payments are made. Partially, the respondents from among the patients who participated in our studies agree that people who practice such habits do not trust the public health care system ($M = 6.23$). On the other hand, with an average score equal to 3.30, the staff from the medical units do not consider the fact that those who receive informal payments, among their colleagues, do not trust the system in which they work. This can also be attributed to the fact that once you don't trust a system, the best choice would be to leave it.

In addition to trust in the public health care system, an equally important weak point is its financing. Both the patients or their representatives who offer informal payments to the staff ($M = 7.07$), but also the representatives of the health system, who receive or can benefit from them ($M = 5.45$), agree with this. Considering these average scores, public authorities should get more involved and adopt strategies to attract funds. A solution, in this case, could be the attraction of European funds, by writing some successful projects.

Also, during the two parallel researches, the issue of how patients are treated by the medical staff and whether this can influence the intention to give or receive informal payments was brought up. Patients considered that those who offer informal payments benefit from more respect from the medical staff ($M = 6.60$). At the same time, the surveyed medical staff considered that those who accept informal payments do not treat patients with more respect ($M = 2.92$). The two opposing views can be quite subjective. On the one hand, patients may have encountered cases where it has been proven that if they offer informal payments, they receive more special attention from medical staff. At the same time, maybe this was the reason for offering informal payments. On the other hand, however, medical staff either try to protect their counterparts, or consider that regardless of the situation they are in, they must offer equal treatment to all patients.

Another topic of interest for researchers was represented by the sanctions that can be applied to those who request or accept informal payments. Thus, an agreement was found among the patients regarding the fact that those patients who offer informal payments to the medical staff do not know the sanctions that can be applied to them ($M = 6.60$). At the same time, the staff from the medical units believe that the correspondents who receive such payments are at least familiar with the sanctions that can be applied to them, in case of requesting or accepting them ($M = 3.86$).

Last but not least, an aspect followed during the two investigations was represented by the previous actions carried out by those surveyed. The majority of patients (86%) stated that they had not made any informal payment in the last five years among the medical staff in the public health system in Romania, North-East region. On the other hand, respondents from the medical staff were put in the position to say if they had knowledge of colleagues receiving informal payments. 28.3%

stated this, while 54.7% of them said they did not know. Being a more sensitive question, 17% of medical staff refused to provide an answer.

Conclusions

Following the study, it was found that, at least at the declarative level, informal payments from the public health system in Romania are not considered to be accepted, neither among patients, nor among medical staff. However, at certain critical moments, patients may be much more vulnerable. If there are difficulties in receiving the necessary treatment, they will eventually find themselves in the situation of having to offer informal payments, either in the form of ‘envelope payments’ or in the form of valuable gifts. Also, among the medical staff, regardless of the situation, they remain decided and will not request or accept unofficial payments, even if they may, as a result, benefit from certain financial or in-kind benefits. Their ethics, integrity and reputation seem to be much more important in the health care system than an additional income from unofficial sources.

Even if certain negative attitudes regarding these practices have been observed, we must be cautious and recommend a series of measures that can reduce the degree of use of informal payments. One of them is to reduce the institutional asymmetry, by changing the attitude of the authorities regarding the approach to the subject of informal payments or organizing public awareness campaigns (Horodnic *et al.*, 2022b). Another measure may consider toughening the penalties for medical staff who accept or request informal payments, in the form of criminal sanctions or public disclosure of their identity and the act committed (Stephens *et al.*, 2017). Last but not least, the rate of use of informal payments can be reduced if certain incentives are offered to medical staff, by increasing salaries, improving working conditions or promoting the quality of the medical act performed (Lewis, 2007).

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Determinants of liquidity in commercial banks: evidence from the Turkish banking sector

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Abstract

Liquidity management has an important place in the asset and liability management of banks. The aim of this study is to empirically investigate the intra-bank and macroeconomic factors that affect liquidity in 20 Turkish commercial banks. Financial data of commercial banks operating in the 2002-2022 period and macroeconomic data for the same period are taken into account. In the panel data analysis where liquidity ratios liquid asset ratio (LAR), acid-test ratio (ATR) and current ratio (CR) were taken as dependent variables, a negative relationship between liquidity ratios and deposits to liabilities ratio (DR), financial asset ratio (FAR), fixed asset ratio (FIXR), economic growth rate (gross domestic products - GDP), central bank interest rate (INT), loans to assets ratio (LR), net interest margin (NIM), non-performing loans ratio (NPL); a positive correlation with liquidity ratios and equity ratio (equities to assets ratio, CAP), inflation rate (INF), natural logarithm of asset size (TA), foreign exchange rate (XR) was found. In the study, no statistically significant relationship was found between foreign exchange liquidity ratio (FXLR) and liquidity ratios. Despite its profitability-reducing effect, banks need to manage their liquidity sensitively and effectively in order to maintain the trust of customers and market, especially during crisis periods.

Keywords: commercial banking, liquidity, Turkey

Introduction

Commercial banks are among the most important actors of the financial system. With an asset size of 6.4 Trillion Turkish Liras (TL) as of 2021, banks constitute 82% of the total 7.8 Trillion TL financial system in Turkey (BAT, 2021a, p. 31). Credit customers, savings deposit customers, stakeholders, creditors, partners, national treasury and central bank generally expect multi-partnered and publicly traded banks to operate on the basis of profitability and efficiency.

While continuing their activities, banks may encounter sector-specific risks as well as macro risks affecting the economy such as market interest rates, inflation rate, and financial crisis. Liquidity

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risk based on maturity mismatch has been among the most important structural problems of the Turkish banking sector for a long time. In addition, credit risk, market risk and operational risks stand out among sectoral risks. The liquidity risk lies at the root of the crisis experienced in Turkey in 2000-2001 and the financial crisis experienced in the USA in 2008 and its effects spread all over the world. With this study, it is aimed to contribute to the academic literature by empirically determining the intra-bank and macroeconomic factors that determine liquidity and to present it to the benefit of the banking sector. For this purpose, firstly, the conceptual framework on the subject was drawn, the relevant literature was examined, information was given about the methodology, the data set and variables were introduced, the method was explained and the findings were evaluated in comparison with the literature.

1. Literature Review

Numerous studies have been conducted on the determinants of liquidity in banks in the national and international literature. Especially the financial crisis in 2008 and the international regulations made in this context have made the liquidity issue an important field of study in the literature. In researches they were taken into account as independent variables such as equity ratio, asset size, capital adequacy ratio, non-performing loans ratio, interest income to total assets ratio, economic growth rate (GDP), inflation rate, foreign exchange rate, interest rate, loans to assets ratio, deposits to liabilities ratio, fixed assets ratio, coverage ratio of foreign exchange assets to foreign exchange liabilities, loans to deposits ratio, consumer loans to total loans ratio, return on assets ratio (ROA), return on equities ratio (ROE), net interest margin (NIM), loans received, deposits growth rate, loans growth rate, deposit and loan interest rates, oil prices, insured deposits to total deposits ratio, off-balance sheet loans, financial crisis, operating expenses to total assets ratio, interest cost to assets ratio, interest income to assets ratio, reserves, public expenditures, public debt, debt to equity ratio, loans to GDP ratio, foreign direct investment ratio, financial leverage ratio, money in circulation (M3), budget deficit, unemployment rate, financial deficit ratio (loans-deposits), operating expenses to total deposits ratio, cost to income ratio, bank ownership structure, interbank interest rates, non-interest income to non-interest expense ratio, cost of liabilities and market capitalization ratio. Below are the researches carried out on the topic in recent years (Table 1).

Table 1. Studies on the relationship between liquidity and intra-bank financial ratios and macroeconomic ratios

Authors and publication years	Research period	Research method	Research content	Findings
Berger and Bouwman (2009)	1993-2000	Panel Data	Banks in the USA	While the liquidity creation effect of capital size is positive in large-scale banks and negative in small-scale banks, it is insignificant in medium-scale banks. Liquidity increases the market value of banks.
Vodova (2011a)	2001-2009	Panel Data	Banks in Czech Republic	There is a negative relationship between LAR and financial crisis, inflation rate, a positive relationship with equity ratio, NPL, loan interest rates. There is a negative interaction between the ATR and the inflation rate, a positive interaction between the equity ratio and the loan interest rate. There is no significant relationship between liquidity and ROE, net interest income, monetary policy interest rate, interbank interest rate and unemployment rate.
Vodova (2011b)	2001-2010	Panel Data	Banks in Slovakia	There is a negative relationship between LAR and financial crisis, ROE, asset size, equity ratio. There is a negative relationship between ATR and financial crisis, ROE, equity ratio. GDP, inflation rate, unemployment rate, monetary policy interest rate, interbank interest rate and NPL does not have a significant effect on liquidity.
Vodova (2011c)	2001-2010	Panel Data	Banks in Poland	There is a negative relationship between LAR and asset size, net interest income, GDP, unemployment rate, financial crises and a positive relationship between equity ratio and inflation rate. There is a negative relationship between ATR and ROE, loan interest rate and a positive relationship with equity ratio. Monetary policy interest rate does not have a significant effect on liquidity.
Deléchat <i>et al.</i> (2012)	2006-2010	Panel Data	96 commercial banks in Central America	There is a positive relationship between ATR and asset size, liquid asset ratio and a negative relationship between NIM, capitalization, NPL.
Munteanu (2012)	2002-2010	Panel Data	27 commercial banks in Romania	There is a positive interaction between ATR and capital adequacy ratio (CAR), NPL, interest expenses, unemployment rate and a negative interaction with the market interest rate.

Tesfaye (2012)	2000-2011	Panel Data	Commercial banks in Ethiopia	There is a positive relationship between LAR and CAR, asset size, NPL, net interest income, inflation rate. There is no significant relationship between LAR and GDP, loan growth rate, short-term interest rates.
Bonfim and Kim (2012)	2002-2009	Panel Data	500 banks in Canada, France, Germany, USA, Russia, Netherland, Italia, Great Britain	There is a negative interaction between ATR and ROA, loans to assets ratio and a positive interaction between loans to deposits ratio, loans to assets ratio.
Cucinelli (2013)		Panel Data	1080 banks in Euro zone	Large-scale banks are exposed to more liquidity risk. There is a linear relationship between banks' capital size and liquidity. Asset quality has an impact on short-term liquidity. In times of crisis, only short-term liquidity becomes important.
Ferrouhi and Lehadiri (2013)	2001-2012	Panel Data	8 banks in Morocco	There is a positive interaction between LAR and asset size, equity ratio, foreign direct investments and a negative interaction with GDP. There is a positive relationship between ATR and GDP, foreign direct investments.
Vodova (2013)	2001-2010	Panel Data	18 banks in Hungary	LAR is negatively related to asset size and positively related to equity ratio, GDP. ATR is interact negatively to interbank interest rate, monetary policy interest rate, net interest income, interact to equity ratio, loan interest rate. Inflation rate, unemployment rate, financial crisis, ROE and NPL have no significant effect on liquidity.
Ayaydın and Karaaslan (2014),	2003-2011	Panel Data	23 banks in Turkey	There is a positive relationship between LAR and equity ratio, asset size, and a negative relationship between ROA, ROE, net interest income, foreign capital, public capital and GDP.
Ben Moussa (2015)	2000-2010	Panel Data	18 commercial banks in Tunisia	There is a negative relationship between LAR and ROA, NIM, equity ratio, operating expenses, inflation rate, and a positive relationship between ROE and GDP.
Berhanu (2015)	2002-2014	Panel Data	8 commercial banks in Ethiopia	There is a negative interaction between LAR and asset size, loan growth rate, a positive interaction between GDP, loan interest rates, policy interest rates, NPL, short-term interest rates, reserve rates.
Ogilo and Mugenyah (2015)	2010-2014	Panel Data	43 bank in Kenya	There is a positive relationship between LDR and CAP, and a negative relationship with financial leverage ratio. There is no significant relationship between liquidity ratio, bank ownership structure, asset size and liquidity.

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Azimova (2016)	2007-2015	Panel Data	Banks of Azerbaijan	There is a positive relationship between liquidity and asset size, ROA, deposit interest rates, NPL, deposit rate, oil prices. The ratio of insured deposits to total deposits, CAR, ROE, NIM, off-balance sheet loans, loan interest rates, policy interest rates and exchange rates do not have a significant effect on liquidity.
Mohamad (2016)	2006-2013	Panel Data	21 banks in Turkey	There is a positive relationship between ATR and equity ratio, NPL, and a negative relationship with asset size. There is a negative relationship between LAR and ROE, financial crisis factor, and a positive relationship with equity ratio. GDP and inflation rate do not have a statistically significant effect on liquidity.
Sheefeni and Nyambe (2016)	2001-2014	Panel Data	Commercial banks in Namibia	There is a positive interaction between liquidity (loans to assets ratio) and GDP, policy interest rate, and a negative interaction with inflation rate.
Sukmana and Suryaningtyas (2016)	2010-2014	Panel Data	8 Islamic and 5 commercial banks in Indonesia	There is a positive relationship between LAR and CAR in Islamic banks, a negative relationship between LAR and ROA, a positive relationship between LAR and ROA, NPL in commercial banks, a negative relationship between LAR and CAR.
Zengin and Yüksel (2016)	2005-2014	Logit Regression	10 commercial banks in Turkey	There is a negative interaction between CR and CAR, and a positive interaction with NIM.
Ahmad and Rasool (2017)	2005-2014	Panel Data	31 commercial banks in Pakistan	There is a positive relationship between LAR and equity ratio, GDP, a negative relationship between asset size and NPL. ROE and inflation do not have a significant effect on liquidity.
Altan (2017)	2009-2014	Panel Data	28 commercial banks in Turkey	There is a positive relationship between LAR and lagged liquidity, deposits to liabilities ratio, loans, ROA, and a negative relationship between asset size and liquidity. There is no significant relationship between bank capital, NPL, ROE, non-interest income, net interest income and liquidity.
Berger and Bouwman (2017)	1984-2008	Panel Data	Banks in the USA	While the need for liquidity in small-scale banks decreases during periods of monetary tightening in the economy during non-crisis periods, it increases during periods of easing. This effect is not seen in medium and large scale banks. In times of financial crisis, the effect of monetary policy on banks' liquidity is weaker. The increase in the level of liquidity creation of banks before the financial crises can be perceived as a sign of the upcoming crisis.

Hasanovic and Latic (2017)	2006-2015	Panel Data	19 commercial banks in Bosnia-Herzegovina	There is a positive interaction between liquidity (available reserves) and NPL, asset size, and a negative interaction with loans to assets ratio, inflation, and market interest rate. ROE, equity ratio and GDP do not have a significant relationship with liquidity.
Kaur and Sharma (2017)	2006-2016	Panel Data	8 banks in India	There is a negative relationship between LAR and ROA, interest expenses, operating expenses to total deposit ratio, and a positive relationship between asset size, equity ratio, acid test ratio, cost income ratio and deposit ratio.
Nguyen and Diep (2017)	2009-2016	Panel Data	32 commercial banks in Vietnam	There is a positive relationship between LAR and asset size, and a negative relationship with loans to deposits ratio and equity ratio. ROA has no significant effect on liquidity.
Bayz (2018)	1999-2017	Panel Data	12 banks in the USA	There is a negative relationship between LAR and ATR, equity ratio, GDP, and a positive relationship with asset size. ROA and NPL have no statistically significant effect on liquidity.
Hailemarim (2018)	2000-2016	Panel Data	7 banks in Ethiopia	There is a positive relationship between ATR and CAR, ROA, and a negative relationship between asset size, loan growth, market interest rate, and net interest income. There is a negative relationship between LAR and asset size, loan growth, net interest income, market interest rate, and a positive relationship with ROA.
Luvuno (2018)	2006-2016	Panel Data	18 commercial banks in the South Africa Republic	There is a negative relationship between LAR and loan growth rate, CAR, NPL, asset size, and a positive relationship with GDP. There is a negative relationship between ATR and loan growth, NPL, and a positive relationship between CAR and asset size. Inflation rate has no statistically significant effect on liquidity.
Ojha (2018)	2010-2017	Panel Data	Commercial banks in Nepal	There is a negative relationship between LAR and ROA, ROE, NPL, interbank interest rates, and a positive relationship between CAR and GDP.
Sayedahmed (2018)	2007-2016	Panel Data	15 Palestinian banks	There is a negative relationship between LAR and CAR, loans to assets ratio, deposits to liabilities ratio, and a positive relationship with bank loans. There is a negative relationship between ATR and CAR, loans to assets ratio, a positive relationship with bank loans, and a negative relationship between loans to deposits ratio, CAR, deposits to liabilities ratio, and a positive relationship with loans to assets ratio.
Sopan and Dutta (2018)	2005-2016	Panel Data	45 banks in India	There is a negative relationship between LAR and asset size, ROA, NPL, funding cost, and a positive relationship with deposits to liabilities ratio, capitalization rate. There is no statistically significant relationship between GDP and inflation rate and liquidity.
Al-Homaidi <i>et al.</i> (2019)	2008-2017	Panel Data	37 commercial banks in India	There is a positive relationship between LAR and asset size, equity ratio, deposits to liabilities ratio, ROA, operating expenses, and a negative relationship between loans to assets ratio, interest income, ROE, NIM.

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Assfaw (2019)	2011-2017	Panel Data	8 commercial banks in Ethiopia	There is a negative relationship between liquidity (liquid assets to deposits ratio and loans to deposits ratio) and asset size, loan growth, deposits to liabilities ratio, and a positive relationship between net interest income, GDP, inflation rate.
El-Chaarani (2019)	2014-2016	Panel Data	183 banks in the Middle East	There is a negative relationship between liquidity (loans to assets ratio and loans to deposits ratio) and asset size, GDP, and a positive relationship with asset quality.
Gockov and Hristovski (2019)		Panel Data	14 commercial banks in Northern Macedonia Republic	There is a positive relationship between LAR and ROA, equity ratio, NPL, policy interest rate, and a negative relationship with asset size.
Gümüş (2019)	2010-2018	Panel Data	7 banks in Turkey	There is a negative relationship between liquidity (loans to deposits ratio) and LAR, and a positive relationship between deposits to liabilities ratio, ROA, NIM.
Gürsoy (2019)	2002-2015	Panel Quantile	9 Turkish banks	There is a negative relationship between liquidity (financial deficit ratio) and LAR, and a positive relationship between asset size and loans received.
Khanal (2019)	2007-2017	Panel Data	10 commercial banks in Nepal	There is a positive relationship between liquidity (loans to deposits ratio) and ROA, and a negative relationship between ROE, assets size, GDP, CAR, inflation rate. NPL has no statistically significant effect on liquidity.
Şimşek (2019)	2002-2017	Panel Data	23 commercial banks in Turkey	There is a positive relationship between LAR and the loans received, CAR, and a negative relationship between NPL, loans to deposits ratio. There is a positive relationship between ATR and loans received, and a negative relationship between NPL, loans to deposits ratio.
Ahi (2020)	2008-2018	Panel Data	18 commercial banks in Turkey	There is a positive relationship between ATR and CAR, and a negative relationship between deposits to liabilities ratio, FX assets to total assets ratio, loans to deposits ratio, consumer loans, ROA, ROE, interest incomes, interest expenses.
Al-Qudah (2020)	2011-2018	Panel Data	13 commercial banks in Jordan	There is a positive relationship between LAR and equity ratio, deposit growth rate, inflation rate, and a negative relationship with GDP, assets size and NPL. There is no statistically significant relationship between liquidity and ROA.
Bista and Basnet (2020)	2004-2015	Time Series	Commercial banks in Nepal	There is a positive relationship between LAR and deposits to liabilities ratio, and a negative relationship between CAR and asset size. Inflation rate, public expenditures and public debt do not have a statistically significant effect on liquidity.
Menteşoğlu (2020)	2006-2019	Panel Data	20 commercial banks in Turkey	There is a negative relationship between LAR and asset size, savings deposits, GDP, and a positive relationship with CAR, NPL. ROA, NIM, inflation rate, interest rates and financial crises do not have a significant effect on liquidity.

2. Data Set and Variables

2.1. Data Set

In the study, 20 Turkish commercial banks operating in the 2002-2022 period were taken into account, and their list is given in Table A1 (Appendix). In the research, the data for the period from the last quarter of 2002 (Q4) to the first quarter of 2022 (Q1) were compiled from the BAT (the Banks Association of Türkiye) data system, in which the quarterly financial data of banks are reported (BAT, 2021b), websites of banks operating in Turkey and national and international academic studies have also been used. Macroeconomic data was compiled and arranged from the CBRT (The Central Bank of the Republic of Turkey) and TURKSTAT (Turkish Statistical Institute) systems (CBRT, 2021a, b; TURKSTAT, 2021). The data have been prepared by considering quarterly periods. Stata and Eviews packet data programs were used in the analysis.

2.2. Variables

In the research, liquid assets ratio (LAR), acid-test ratio (ATR) and current ratio (CR) were taken as dependent variables, which are generally accepted liquidity ratios in banking and related literature. From intra-bank financial data asset size (TA), equity ratio (CAP), FX liquidity ratio (FXLR), deposit ratio (DR), loan ratio (LR), non-performing loans ratio (NPL), fixed assets ratio (FIXR), financial assets ratio (FAR), net interest margin (NIM) were taken as the independent variables. From macroeconomic (external) factors economic growth rate (GDP), consumer price index (INF), value of Turkish Lira against basket exchange (XR), CBRT overnight lending rate (INT) were also taken as the independent variables. Variables and their calculation methods are given in Table A2 (Appendix).

2.2.1. Dependent variables - measuring liquidity

Liquid Assets Ratio

This ratio is calculated with Liquid Assets / Total Assets formula. It shows the share of assets and assets that can be converted into cash in the short term, in the balance sheet shows the ability of banks to easily meet their due liabilities. It is also called liquid asset ratio (IMF, 2019, p. 6), cash

ratio, cash asset ratio and liquidity ratio in the finance literature (The Free Dictionary by Farlex; Pradhan and Shrestha, 2017).

Acid-test Ratio

This ratio, which shows the short-term debt coverage ratio of current assets excluding inventories and prepaid expenses in real sector businesses, is calculated with the formula Liquid Assets / Short-Term Liabilities (CBRT, 2020). It is also called acid-test ratio and quick ratio in the finance literature. The ratio shows the ratio of assets to cover liabilities that will mature within one year. Considering that 61 of the 78 periods within the scope of this study are in 2017 and before, in accordance with BAT's 2017 and earlier reporting, liquid assets are taken into account as "Cash + Deposits in CBRT and Banks + Receivables from Money Markets + Financial Assets at Fair Value Through Profit and Loss + For Sale Available Financial Assets" (BAT, 2021).

Current Ratio

In the international finance literature, the current ratio, which shows the assets to meet the liabilities within a one-year maturity (www.investopedia.com) and is calculated with the formula of Short-Term Assets to Short-Term Liabilities. It is similar to the liquidity adequacy ratio in the BRSA's regulations (Banking Regulation and Supervision Agency), except term definition. Liquidity adequacy ratio shows that assets with maturity of up to one month meet liabilities with maturity of up to one month (BRSA, 2006). In this research, the ability of assets to meet liabilities with a maturity of up to one month is called the current ratio (CR) similar to the international literature (except term criterion). In the literature, loans to deposits ratio, loans to total assets ratio and deposits to total liabilities ratio are also considered as liquidity (risk) criteria.

2.2.2. Explanatory variables

Equity Ratio

Paid-in capital, reserves, past and current period profits are the most important equity elements of banks. The equity ratio, which shows the share of equity in total capital, is also the focus of the profitability expected by the shareholders from the bank. Regulatory and supervisory institutions related to banks determine and supervise the minimum equity ratio in order to prevent the savers from

being harmed, to give confidence to the financial markets, and to prevent the assets of banks from being endangered (Schargrodsky and Sturzenegger, 1998, p. 8; Kim and Santomero, 1988, p. 1219). It is among the ratios frequently used together with the capital adequacy ratio in researches on the factors affecting the liquidity of banks. It is predicted that liquidity ratios and equity ratio are positively related (Hypothesis 1).

Deposit Ratio

While it is possible for banks to obtain funds through different instruments such as borrowing from the central bank and the interbank market and issuing bonds, deposits remain the most important source of funds. While the share of deposits in liabilities in commercial banks in Turkey is 58%, its average maturity is approximately 80 days (BAT, 2021a, pp. 35-39). The maturity mismatch of assets and liabilities is one of the leading risk factors that should be carefully managed by banks. The deposit ratio, which shows the share of deposits in total liabilities, is among the variables frequently used together with the loan ratio in studies on liquidity. It is predicted that liquidity ratios and deposit ratio are positively related (Hypothesis 2).

Financial Assets Ratio

Securities held in the portfolio by banks to earn trading income or interest income are among the items that affect profitability and liquidity. It is predicted that liquidity ratios and financial assets ratio are negatively related (Hypothesis 3).

Fixed Assets Ratio

Assets held for sale, partnership investments, tangible and intangible fixed assets are included in the category of non-income or low-income assets and affect the profitability and liquidity of banks. It is predicted that liquidity ratios and fixed assets ratio are negatively related (Hypothesis 4).

Net Balance Sheet Position and Foreign Exchange Liquidity Ratio

These ratios show the liquidity in FX at banks. FX liquidity management gains importance in banks, which have an important place in their financial assets and liabilities in their balance sheets. It is predicted that liquidity ratios and foreign exchange liquidity ratio are positively related (Hypothesis 5).

Gross Domestic Products

Economic growth rate is one of the factors affecting the liquidity of banks. Economic growth or contraction is a factor in the investment decisions of companies and the increase or decrease in their financing needs. Likewise, it is also effective in saving tendencies of firms and individuals. This situation also affects the tendency and possibilities of banks to extend loans. While banks that do not have difficulty in obtaining funds and do not have liquidity problems during the growth periods of the economy tend to provide more loans to companies and individuals, they reduce their loan disbursements during periods of contraction in the economy (Güneş, 2014, p. 62). On the other hand, businesses that use loans during growth and prosperity periods may have difficulty in repayment of loans during the economic contraction period and the bank's credit facilities may narrow. It is predicted that liquidity ratios and gross domestic products are negatively related (Hypothesis 6).

Inflation Rate

Considering the pricing and maturity structure of banks' assets and liabilities, inflation expectations they need to do. Inflation is among the factors that directly affect the liquidity risk of banks, especially in markets such as the Turkish banking sector, where the liquidity risk arising from the maturity mismatch between assets and liabilities is high. Due to this effect, the inflation rate has been taken into account in many studies on liquidity. It is predicted that liquidity ratios and inflation rate are positively related (Hypothesis 7).

Benchmark Interest Rate

Interest risk of banks among the risks faced. Short-term interest rates fluctuations affect earnings and costs associated with assets and liabilities (Van Greuning and Bratanovic, 2003, p. 249). The high risk of maturity mismatch between assets and liabilities causes increases or decreases in interest rates to directly affect the profitability of banks. It is not possible for banks to reflect the interest changes in the market to all their assets and liabilities in a short time. It is predicted that liquidity ratios and interest rate are positively related (Hypothesis 8).

Loan Ratio

Loans and deposits are among the primary tools used by banks to fulfill their intermediary function. At the beginning of the assets that banks evaluate the funds are loans. The share of loans in assets in commercial banks is 56% and the average maturity is about two years in Turkey (BAT, 2021a, p. 35; BAT, 2021b). The loan ratio, which shows the share of loans in total assets, is one of the important variables used in studies on liquidity. It is predicted that liquidity ratios and loan ratio are negatively related (Hypothesis 9).

Net Interest Margin

Net interest margin, which is calculated with the formula $(\text{Total Interest Income} - \text{Total Interest Expenses}) / \text{Income Generating Assets}$, is one of the leading profitability indicators in banking. The interest margin is a fundamental result of the banks' function of transferring funds from investors with surplus funds to individuals and institutions in need of funds. The margin between the interest income of banks from the assets and the funding cost forms the basis of profitability. Financial assets other than cash and the similar, loans and other financial assets measured at amortized cost have been taken into account in the calculations of income generating assets in the research. Net interest margin is among the important variables included in the research considering its potential to affect the liquidity of banks. It is predicted that liquidity ratios and net interest margin are negatively related (Hypothesis 10).

Non-performing Loans Ratio

Non-performing loans ratio shows the share of non-performing loans in total loans. There is a risk of non-repayment of loans at maturity. For this reason, banks take risks that may occur during the evaluation of loan requests. Banks try to minimize that risk. Accurate lending will ensure more efficient use of funds. Otherwise, non-payment of the credits on due date and problematic is inevitable. The increase in non-performing loans will affect the profitability and liquidity of banks. It is predicted that liquidity ratios and non-performing loans ratio are negatively related (Hypothesis 11).

Asset Size

Asset size may affect the competitiveness of banks in the market in terms of providing funds and extending loans. The scale effect is among the positive factors for banks to reach liquidity more

easily. Therefore, it is predicted that liquidity ratios and asset size are positively related (Hypothesis 12).

Exchange rate

Banks' foreign exchange based assets and liabilities have an impact on liquidity and profitability depending on the exchange rate risk. If liabilities of banks in foreign exchange is more than its assets in foreign exchange (open position), short-term increases or decreases in exchange rates will increase the exchange rate risk. This situation will positively or negatively affect the liquidity of the bank, depending on its position, while increasing or decreasing its profitability. The size of the open position of the banks may even cause the bank to fall into insolvency. It is predicted that liquidity ratios and exchange rate are positively related (Hypothesis 13).

While liquidity ratios protect the reputation and trust of banks in the eyes of customers and other stakeholders, especially in times of crisis, they also have an impact on profitability. On the other hand, liquidity ratios are affected by macroeconomic factors as well as the ratios related to the bank's financial structure. As a matter of fact, as stated in the literature summary section, many studies have been conducted to determine the factors affecting the liquidity ratios, and in these studies, results have been reached regarding the interaction of liquidity ratios with intrabank and macroeconomic factors. In this study, it was predicted that there was a negative relationship between liquidity ratios and FAR, FIXR, GDP, LR, NIM, NPL; there was a positive relationship between CAP, DR, FXLR, INF, INT, TA, XR and these hypotheses were investigated.

3. Methodology and preestimation tests

Three types of data are generally used in econometric analysis. These are time series data, cross-section data, and panel data, which deals with time series data and cross-sectional data. Panel data is formed by bringing together the cross-sectional observations of units such as individuals, countries, businesses, households in a certain period and consists of the combination of time series and cross-section data (Güriş, 2018, p. 3; Yerdelen Tatoğlu, 2020, p. 10).

In the study, the determinants of liquidity were investigated by panel data analysis. Data for 78 periods from the fourth quarter of 2002 to the first quarter of 2022 from 20 banks within the scope of the research were used. The descriptive statistics of the dependent and independent variables (Mean,

Median, Maximum, Minimum, Standard Deviation, Skewness, Kurtosis, Jarque-Bera and Observation) are given in Table A3 (Appendix).

The values of the cross-section units of the data in Table A3 shows the maximum, minimum, mean, standard deviation, skewness and kurtosis coefficients and the distribution of the coefficients (Jarque-Bera value). Since the skewness coefficient of the variables is mostly different from 0 and the kurtosis coefficient is different from 3, the Jarque-Bera values are high (for example, this figure is 598973.50 for the CAP) and this situation indicates that the distribution of the coefficients of the mentioned variables is not normal (heterogeneous) is clearly indicated. The correlation matrices of the cross-section units included in the analysis are given in Table A4 (Appendix).

When Table A4 is examined, it is seen that the correlation coefficients between the variables are below 50%. However, correlation coefficient and descriptive statistics are not sufficient criteria to explain the relationship between variables. In addition to these values, cross-section dependency, stationarity (unit root) and autocorrelation tests are also needed.

One of the problems encountered in panel data analysis is that a shock affecting any of the cross-section units also affects other cross-section units. At the beginning of the analysis, this problem, called cross-section dependency, needs to be tested. In this study, the Breusch-Pagan (1980) LM test, which was developed to determine whether the error terms are dependent across the cross-sectional units, and which gives consistent results, was used by Pesaran *et al.* (2007) LM test was applied (Hoyos and Sarafidis, 2006, pp. 482-496); as well as Pesaran (2004), Baltagi *et al.* (2012) and Pesaran (2004) CD tests were also used (Pesaran, 2004, pp. 1-42; Breusch-Pagan, 1980, pp. 239-253; Baltagi *et al.*, 2012, pp. 1-41; Pesaran (2004) and Pesaran *et al.* (2007). The results are given in Table A5 (Appendix). The test results in Table A5 show that there is a cross-sectional dependency at the 1% significance level in all series and models.

Determining whether some features of the time series data created for a variable are stable in the process comes first in econometric analysis (Acar Boyacıoğlu *et al.*, 2010, p. 202). If all or some of the units in the panel are not stationary, the regression to be established between the panel data will be misleading (fake) (Nargeleçekenler, 2009, p. 3; Acar Boyacıoğlu *et al.*, 2010, p. 202; Uçan ve Koçak, 2014, p. 56). Tests that take into account the correlation between units in panel data are classified as second generation (Şak, 2018, p. 262). In case of cross-section dependency, second generation unit root tests should be used to test whether the series are stationary. In this study, the Pesaran (2007) CIPS test was preferred (Pesaran, 2007), and the test results are given in Table A6 (Appendix). The critical values for the panel are 1%, 5% and 10%, respectively.

Considering that it is -2.70, -2.57 and -2.51, it is understood that all variables are stationary at the level $I(0)$ (Pesaran, 2007).

The correlation of the error term for each cross-sectional unit with the error term in the following period is called autocorrelation. The tests used to investigate this problem are Baltagi-Wu (1999) Locally Best Invariant (LBI) test and Bhargava *et al.* (1982) Durbin-Watson test.

One of the main problems encountered in panel data analysis is that the variances of the error terms are not constant (heteroskedasticity). Since the standard errors obtained in the analyses without considering this problem will be biased, it is necessary to derive the robust standard errors. The modified Wald test (Ün, 2018, p. 75; Yerdelen Tatoğlu, 2020, pp. 228-229), gives effective results in determining the problem of heteroskedasticity.

Table A7 shows the Pesaran-Yamagata (2008) test, modified Wald test (Greene, 2003), Baltagi-Wu (1999) LBI and Bhargava *et al.* (1982) Durbin-Watson test, Breusch-Pagan (1980) LM test, Chow test and Hausman test (1978) results (Appendix). The Pesaran-Yamagata (2008) test results show that the slope parameters for all variables are heterogeneous with a probability of 0.000 (test values; 36.12 / 4.58 / 14.37). The modified Wald test results show that variance of the error terms are not fixed (heteroskedasticity problem) with a probability of 0.000 (test values; 229.03 / 82180.26 / 918.76). Bhargava *et al.* (1982), Durbin Watson test and Baltagi-Wu (1999) LBI test results show autocorrelation between error terms in LAR, ATR and CR models (BFN test values; 0.34 / 1.90 and 1.32, BW test values; 0, 39 / 1.93 / 1.41). Breusch-Pagan LM test indicates that error terms with a probability of 0.000 are correlated between units, and that the common effect estimation model is not suitable for estimation (test values; 1905.72 / 1379.46 / 1473, 19). Chow test results show that the common effect estimation model is not suitable with a probability of 0.000 (test values; 33.29 / 8.82 / 44.97). Hausman test results show fixed effect estimation model are suitable for LAR, ATR and CR (test values; 27.95 / 54.65 / 20.85).

The linear relationship between the independent variables (multicollinearity) in the regression model reduces the estimation efficiency. While the Variance Inflation Factor (VIF) calculated with the formula $1 / (1 - R_i^2)$ is lower than 1.33, it indicates that there is no multicollinearity. While values above 1.33 indicate that there is a multicollinearity (Uçan and Şahin, 2021, p. 242). Variance inflation factor (VIF) values were found to be 5,39 in this study.

4. Results and Discussions

The ordinary least squares method (OLS) used in panel data analysis assumes that the distribution of error terms is normal, the variance of the error terms is constant at each level of the

explanatory variable (homoscedasticity), the error terms is not correlated between cross-section units and in consecutive periods, and there is no multicollinearity between the explanatory variables. In the presence of at least one of the heteroskedasticity, cross-section dependency and autocorrelation, the estimations will be ineffective even if they are consistent. In the presence of these problems, it is necessary to use robust standard errors without touching the parameter estimations or to make estimations with methods that take these problems into account (Yerdelen Tatoğlu, 2020, p. 303). In the tests results in Table A6 varying variance, autocorrelation and correlation problems were detected, analysis was performed with the Driscoll-Kraay method, which is one of the estimators producing robust standard errors with OLS methods (Güriş, 2018, p. 96; Yerdelen Tatoğlu, 2020, p. 335). Estimation results are given in Table 2.

Table 2. Estimation results in relationship of LAR, ATR and CR with intra-bank factors and macroeconomic variables

<i>Variable</i>	Liquid Asset Ratio (LAR)		Acid-Test Ratio (ATR)		Current Ratio (CR)	
	<i>Coefficient</i>	<i>p-value</i>	<i>Coefficient</i>	<i>p-value</i>	<i>Coefficient</i>	<i>p-value</i>
Equity Ratio-Equities to Assets Ratio (CAP)	0,31	0,006	-1,20	0,660	0,77	0,150
Deposits Ratio-Deposits to Liabilities Ratio (DR)	0,01	0,709	-1,03	0,059	-0,04	0,777
Financial Asset Ratio (FAR)	-0,62	0,000	-1,17	0,043	-1,09	0,000
Fixed Asset Ratio (FIXR)	-0,80	0,000	-0,31	0,779	-1,32	0,000
Foreign Exchange Liquidity Ratio (FXLR)	0,01	0,494	0,05	0,707	0,01	0,898
Gross Domestic Products (GDP)	0,00	0,977	0,00	0,994	-0,23	0,048
Consumer Prices Index-Inflation Rate (INF)	-0,09	0,308	0,58	0,484	0,43	0,083
Central Bank Interests Rate (INT)	-0,24	0,000	-0,79	0,269	-0,17	0,205
Loans Ratio-Loans to Assets Ratio (LR)	-0,97	0,000	-1,99	0,000	-0,87	0,000
Net Interest Margin (NIM)	-0,51	0,000	9,68	0,116	0,04	0,935
Non-performing Loans Ratio (NPL)	-0,32	0,000	0,66	0,254	0,15	0,103
Asset Size-Natural Logarithm of Asset Size (TA)	1,82	0,017	-2,30	0,454	3,87	0,479
Foreign Exchange Rate (XR)	0,08	0,002	-0,61	0,121	0,13	0,297
Constant	91,86	0,000	259,88	0,018	100,1	0,008
Estimator	Driscoll-Kraay		Driscoll-Kraay		Driscoll-Kraay	
Number of Banks	20		20		20	
Time Span	2002-2022		2002-2022		2002-2022	
Observations	1560		1560		1560	
R ²	0,660		0,273		0,381	

When the results in Table 2 were examined, it was seen that there was a negative and significant relationship between LAR and FAR, FIXR, INT, LR, NIM and NPL, and a positive and significant relationship with CAP, TA and XR. There was no statistically significant relationship between LAR

and DR, FXLR, GDP, INF. While slope parameters are significant and the effects of other variables are constant, 0.62% in FAR, 0.80% in FIXR, 0.24% in INT, 0.97% in LR, 0.51% in NIM, a 0.32% decrease in NPL resulted in a 1% increase in LAR. It was observed that an increase of 0.31% in CAP, 1.82% in TA and 0.08% in XR caused a 1% increase in LAR. There is a negative and significant relationship between ATR and DR, FAR, LR. There is no statistically significant relationship between ATR and CAP, FIXR, FXLR, GDP, INF, INT, NIM, NPL, TA, XR. While the slope parameters are significant and the effects of other variables are constant, a decrease of 1.03% in DR, 1.17% in FAR and 1.99% in LR leads to a 1% increase in ATR. It was determined that an increase of 2.43% in CAP caused an increase of 1% in ATR. There was a negative and significant relationship between CR and FAR, FIXR, GDP, INF, LR. There was a positive and significant relationship between CR and INF. There was no statistically significant relationship between CAP, DR, FXLR, INT, NIM, NPL, TA, XR and CR. While slope parameters are significant and the effects of other variables are constant, a decrease of 1.09% in FAR, 1.32% in FIXR, 0.23% in GDP and 0.87% in LR leads to a 1% increase in CR. It was observed that an increase of 0.43% in INF caused an increase of 1% in CR. Finally, when the results in Table 2 were evaluated, it was seen that the hypotheses H₁, H₃, H₄, H₆, H₇, H₉, H₁₀, H₁₁, H₁₂ and H₁₃ were confirmed, whereas hypotheses H₂, H₅ and H₈ and were rejected.

When the findings of the study are compared with the literature, positive relationship between LAR and CAP is same with Vodova (2011a), Vodova (2011c), Ferrouhi and Lehadiri (2013), Vodova (2013) Ayaydın and Karaaslan (2014), Mohamad (2016), Ahmad and Rasool (2017), Gockov and Hristovski (2019), Al- Homaidi *et al.* (2019), Al-Qudah (2020), different with Vodova (2011b), Ben Moussa (2015), Nguyen and Diep (2017), Bayz (2018). Negative relationship with LAR and INT is same with Hailemarim (2018), Ojha (2018), different with Berhanu (2015), Gockov and Hristovski (2019). Negative relationship with LAR and LR is same with Sayedahmed (2018) and Al-Homaidi *et al.* (2019). Negative relationship with LAR and NIM is same Ben Moussa (2015) and Al-Homaidi *et al.* (2019). Negative relationship with LAR and NPL is same with Ahmad and Rasool (2017), Luvuno (2018), Ojha (2018), Sopan and Dutta (2018), Şimşek (2019) and Al-Qudah (2020), different with Vodova (2011a), Tesfaye (2012), Berhanu (2015), Sukmana and Suryaningtyas (2016), Gockov and Hristovski (2019), Nazarli (2019). Positive relationship with LAR and TA is same Tesfaye (2012), Ferrouhi and Lehadiri (2013), Ayaydın and Karaaslan (2014), Al-Homaidi *et al.* (2019), Çanakcı (2017), Kaur and Sharma (2017), Nguyen and Diep (2017), different with Vodova (2011b), Vodova (2011c), Vodova (2013), Berhanu (2015), Ahmad and Rasool (2017), Altan (2017), Bista and Bisnet (2020), Luvuno (2018), Hailemarim (2018), Gockov and Hristovski (2019), Al-Qudah (2020), Sopan and Dutta (2018).

The findings of the study are related to the relationship between liquidity, bank-specific internal factors and macroeconomic factors in the literature. It differs according to country, time period, data set and method. For example, while Vodova found a negative relationship between GDP and liquidity in her study on Polish banks, and a positive relationship in her study on Hungarian banks, in her study on Slovakia banks, she found that there was no significant relationship between GDP and liquidity (Vodova, 2011b, 2011c and 2013). Vodova has obtained findings that differ according to countries in the relationships between NPL and interest rates and liquidity in their studies (Vodova, 2011a, b, c, 2013).

When the findings obtained as a result of the study are evaluated together, it is significant that loan disbursements (LR) reduce liquidity. It is understood that the negative relationship between deposits (DR) and liquidity is due to the average maturity of deposits being approximately 80 days. In addition to the liquidity-increasing effect of the inflation rate (INF), the lowering effect of the Central bank interest rate (INT) should be evaluated together. The use of public expenditures and increase in emissions as an economic growth policy tool increases inflation rates and leads banks to act cautiously. However, it is understood that the fall in the policy interest rates, especially in periods when interest rates are weak in parallel with inflation, prompted banks to act prudently and encouraged the policy of increasing liquidity. It is natural for banks to increase their capital (CAP) capacity, increasing the liquid asset ratio. Fixed assets (FIXR) and financial assets (FAR) have a negative relationship with liquidity due to their low income generation capacity compared to other assets. The declining effect of non-performing loans (NPL) on asset quality is one of the factors that increase liquidity needs. However, the positive effect of collecting non-performing loans on interest income should not be overlooked. It is also significant that the increase in the interest margin (NIM) lowers the liquidity prudence. It is understood that the increase in asset size (TA) also increases liquidity due to economies of scale. The lack of a significant relationship between the FX liquidity ratio (FXLR) and liquidity can be explained by the fact that banks are cautious against exchange rate risk due to the volatility of the exchange rate. The negative relationship between the economic growth rate (GDP) and the current ratio can be explained by the fact that banks do not have difficulty in extending their liabilities during growth periods. The positive relationship between the value of TL against the exchange basket (XR) and the LAR ratio is significant. As the value of TL decreases, liquidity also decreases, and in the opposite case, it increases.

Conclusions

Generally, publicly traded banks are expected to operate as profitable and efficient as other commercial enterprises, in line with the expectations of their stakeholders. The ability of banks to manage the risks they face during their activities is of critical importance in achieving their goals. Liquidity risk is among the most important of these risks. The financial crises experienced in Turkey in 2000 and 2001, and in the USA in 2008, which also affected other countries, drew the attention of the financial world to the liquidity risk. The maturity mismatch of liabilities and assets is one of the leading risk factors that put banks in a difficult situation, especially in times of crisis. Micro and macro variables affecting the liquidity of banks have been the subject of many academic studies. It is thought that this study, which investigates 78 quarters of 20 deposit banks operating in the Turkish banking sector with panel data analysis, will contribute to the literature. Considering that the detailed reports of BAT on banks started to be published in the last quarter of 2002, the last quarter of 2002 was taken as the beginning of the research and 78 quarterly data, including the first quarter of 2022, were included in the scope of the study. Twenty commercial banks including three state-owned, eight domestic capital and nine foreign capital operating in the 2002-2022 period were included in the research. Banks operating only in the field of corporate banking, which did not have a widespread branch network, which terminated their operations for various reasons during this period, and banks that started their operations during the research period, as well as development and investment banks were not included in the scope of the study.

In this study, which was carried out using the intra-bank ratios of 20 Turkish commercial banks for the period 2002-2022 and the macroeconomic data of the same period, it was determined that there was a negative relationship between liquidity ratios (liquid assets ratio, acid-test ratio and current ratio) and deposits to liabilities ratio (DR), financial asset ratio (FAR), fixed asset ratio (FIXR), economic growth rate (gross domestic products - GDP), central bank interest rate (INT), loans to assets ratio (LR), net interest margin (NIM), non-performing loans ratio (NPL); a positive relationship between equity ratio (equities to assets ratio, CAP), inflation rate (INF), natural logarithm of asset size (TA), foreign exchange rate (XR). In the study, no statistically significant relationship was found between foreign exchange liquidity ratio (FXLR) and liquidity ratios.

Despite the negative impact of liquidity on profitability due to the fact that liquid assets are interest-free or low-yielding, having sufficient liquid assets is very important for banks to maintain their reputation with the market and customers, especially during crisis periods. The issue of liquidity management has been the focus of academic studies. It is thought that empirical analyzes with

different variables in different markets will contribute to the literature and the banking sector by classifying small, medium and large-scale banks, or banks with public and private capital, or banks with domestic and foreign capital.

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APPENDIX

Table A1. Banks included in the analysis

State Owned Banks	Domestic Capital Banks	Foreign Capital Banks
T.C. Ziraat Bankası A.Ş.	Akbank T.A.Ş.	Alternatif Bank A.Ş.
T. Halk Bankası A.Ş.	Anadolubank A.Ş.	Burgan Bank A.Ş.
T. Vakıflar Bankası T.A.O.	Fibabanka A.Ş.	DenizBank A.Ş.
	Şekerbank T.A.Ş.	HSBC Bank A.Ş.
	Turkish Bank A.Ş.	ICBC Turkey Bank A.Ş.
	Türkiye Ekonomi Bankası A.Ş.	ING Bank Türkiye A.Ş.
	T. İş Bankası A.Ş.	QNB Finansbank A.Ş.
	Yapı Kredi Bankası A.Ş.	Turkland Bank A.Ş.
		T. Garanti Bankası A.Ş.

Table A2. Variable description

Dependent Variables	Definition	Explanation
LAR	Liquid Assets Ratio (Liquid Assets / Total Assets Ratio)	(Cash + Deposits in the CBRT and Banks + Receivables from Money Markets) / Total Assets
ATR	Acid-test Ratio (Liquid Assets / Current Liabilities ratio)	(Cash + Deposits in the CBRT and Banks + Receivables from Money Markets) / Liabilities due up to one month
CR	Current Ratio (Liquidity Adequacy Ratio)	Assets due up to one month / Liabilities due up to one month
Independent Variables	Definition	Explanation
CAP	Equity Ratio	Equity / Total assets
DR	Deposit Ratio	Total deposits / Total liabilities
FAR	Financial Asset Ratio	Financial assets / Total assets
FIXR	Fixed Asset Ratio	Fixed assets / Total assets
FXLR	Foreign Exchange Liquidity Ratio	FX Assets / FX Liabilities ratio
GDP	Gross Domestic Products	Change in GDP compared to the previous year
INF	Annual Inflation Rate	Change in consumer price index compared to the previous year
INT	CBRT Interest Rate	CBRT overnight lending rate
LR	Loan Ratio	Total loans / Total assets ratio
NIM	Net Interest Margin	The ratio of the last four quarters net interest income to the last four quarters income generating assets average
NPL	Non-performing Loans Ratio	Non-performing loans and receivables / Total assets
TA	Asset Size	Natural logarithm of asset size
XR	Foreign Exchange Rate	Value of Turkish Lira against basket exchange (0,5 Euro + 0,5 Usd)

Table A3. Descriptive statistics

Variable	Mean	Median	Max.	Min.	Std. Dev.	Skewness	Kurtosis	Jarque-Bera	Obs.
LAR	28,34	26,09	85,28	2,90	11,45	1,47	6,68	1441,90	1560
ATR	53,98	46,55	2749,40	4,81	73,25	32,11	1176,9	89843209	1560
CR	53,91	48,77	304,13	5,92	27,59	2,75	18,97	18537,96	1560
CAP	11,65	11,08	91,61	2,88	4,76	6,85	98,01	598973,5	1560
DR	63,01	62,12	87,53	1,15	9,06	-0,42	6,47	830,16	1560
FAR	20,35	17,20	77,38	0,61	12,52	1,43	5,45	919,63	1560
FIXR	4,21	3,24	51,60	0,45	3,57	4,63	39,75	93387,79	1560
FXLR	79,96	83,54	156,73	12,53	17,05	-0,82	3,97	234,48	1560
GDP	5,62	6,41	21,89	-14,54	5,17	-1,09	6,68	1191,91	1560
INF	11,07	8,81	29,88	6,00	5,46	2,08	6,81	2069,48	1560
INT	16,56	12,75	51,00	6,50	9,18	1,79	6,87	1801,01	1560
LR	57,26	61,76	87,84	0,08	15,12	-1,23	4,26	498,72	1560
NIM	4,96	4,84	56,82	-8,32	3,34	6,08	85,22	448981,8	1560
NPL	5,24	3,81	94,62	0,00	6,95	6,20	56,21	194032,8	1560
TA	4,34	4,40	6,18	1,39	0,85	-0,29	2,47	39,45	1560
XR	43,13	48,30	69,39	6,46	19,40	-0,38	1,79	132,76	1560

Table A4. Correlation matrix

	ATR	CAP	CR	DR	FAR	FIXR	FXLR	GDP	INF	INT	LAR	LR	NIM	NPL	TA	XR
ATR	1.00	0.26	0.21	-0.20	0.04	0.15	0.09	0.02	0.11	0.14	0.25	-0.26	0.41	0.12	-0.14	0.08
CAP	0.26	1.00	0.29	-0.22	-0.07	0.50	0.02	0.01	0.06	0.17	0.19	-0.23	0.57	0.09	-0.39	0.28
CR	0.21	0.29	1.00	-0.12	-0.33	0.02	-0.04	-0.04	0.08	0.06	0.26	-0.05	0.10	0.03	-0.41	0.02
DR	-0.20	-0.22	-0.12	1.00	0.20	-0.04	0.05	0.02	0.14	0.15	-0.04	-0.11	-0.19	0.16	-0.05	0.06
FAR	0.04	-0.07	-0.33	0.20	1.00	0.09	0.23	0.06	0.12	0.32	0.13	-0.70	0.11	0.30	0.14	0.39
FIXR	0.15	0.50	0.02	-0.04	0.09	1.00	0.14	0.08	0.27	0.41	0.07	-0.37	0.24	0.18	-0.23	0.22
FXLR	0.09	0.02	-0.04	0.05	0.23	0.14	1.00	0.02	0.21	0.15	0.27	-0.36	-0.08	0.10	0.24	-0.14
GDP	0.02	0.01	-0.04	0.02	0.06	0.08	0.02	1.00	-0.07	0.05	0.08	-0.11	0.04	-0.01	-0.06	0.10
INF	0.11	0.06	0.08	0.14	0.12	0.27	0.21	-0.07	1.00	0.71	-0.03	-0.30	0.00	0.32	0.01	-0.24
INT	0.14	0.17	0.06	0.15	0.32	0.41	0.15	0.05	0.71	1.00	0.10	-0.55	0.23	0.30	-0.28	0.28
LAR	0.25	0.19	0.26	-0.04	0.13	0.07	0.27	0.08	-0.03	0.10	1.00	-0.57	0.06	-0.13	-0.21	0.26
LR	-0.26	-0.23	-0.05	-0.11	-0.70	-0.37	-0.36	-0.11	-0.30	-0.55	-0.57	1.00	-0.24	-0.30	0.24	-0.45
NIM	0.41	0.57	0.10	-0.19	0.11	0.24	-0.08	0.04	0.00	0.23	0.06	-0.24	1.00	0.08	-0.30	0.44
NPL	0.12	0.09	0.03	0.16	0.30	0.18	0.10	-0.01	0.32	0.30	-0.13	-0.30	0.08	1.00	-0.07	-0.02
TA	-0.14	-0.39	-0.41	-0.05	0.14	-0.23	0.24	-0.06	0.01	-0.28	-0.21	0.24	-0.30	-0.07	1.00	-0.50
XR	0.08	0.28	0.02	0.06	0.39	0.22	-0.14	0.10	-0.24	0.28	0.26	-0.45	0.44	-0.02	-0.50	1.00

Table A5. Cross-section dependency test results

Variables	Breusch-Pagan LM test	Stats	Pesaran scaled LM test	Stats	Pesaran CD test	Stats	Bias-corrected scaled LM test	Stats	Pesaran-Ullah-Yamagata (PUY) test	Stats
ATR	1591,00	0,000***	71,87	0,000***	20,59	0,000***	71,74	0,000***		
ATR MOD	1379,46	0,000***	61,02	0,000***	15,83	0,000***			466,60	0,000***
CAP	2469,21	0,000***	116,92	0,000***	27,01	0,000***	116,79	0,000***		
CR	1530,00	0,000***	68,74	0,000***	25,65	0,000***	68,61	0,000***		
CR MODEL	1473,19	0,000***	65,83	0,000***	25,22	0,000***			490,00	0,000***
DR	2232,68	0,000***	104,79	0,000***	16,35	0,000***	104,66	0,000***		
FAR	4527,08	0,000***	222,49	0,000***	52,03	0,000***	222,36	0,000***		
FIXR	4817,33	0,000***	237,38	0,000***	50,96	0,000***	237,25	0,000***		
FXLR	2626,64	0,000***	125,00	0,000***	9,46	0,000***	124,87	0,000***		
GDP	14820,00	0,000***	750,50	0,000***	121,74	0,000***	750,37	0,000***		
NIM	5518,15	0,000***	273,33	0,000***	60,60	0,000***	273,20	0,000***		
INF	14820,00	0,000***	750,50	0,000***	121,74	0,000***	750,37	0,000***		
INT	14820,00	0,000***	750,50	0,000***	121,74	0,000***	750,37	0,000***		
LAR	2427,43	0,000***	114,78	0,000***	10,84	0,000***	114,65	0,000***		
LAR MOD	1798,96	0,000***	82,54	0,000***	8,49	0,000***			152,10	0,000***
LR	7446,95	0,000***	372,27	0,000***	77,43	0,000***	372,14	0,000***		
NPL	3477,52	0,000***	168,65	0,000***	33,16	0,000***	168,52	0,000***		
TA	13792,07	0,000***	697,77	0,000***	117,37	0,000***	697,64	0,000***		
XR	14820,00	0,000***	750,50	0,000***	121,74	0,000***	750,37	0,000***		

*** Statistically significant at the 1% level.

Table A6. CIPS unit root test results

<i>Variables</i>	<i>CIPS</i>		<i>P Value Critical Values</i>		
			<i>1%</i>	<i>5%</i>	<i>10%</i>
	<i>(Intercept, Trend)</i>				
ATR	-5,22	***	-2,70	-2,57	-2,51
CAP	-3,33	***	-2,70	-2,57	-2,51
CR	-5,15	***	-2,70	-2,57	-2,51
DR	-3,37	***	-2,70	-2,57	-2,51
FAR	-3,23	***	-2,70	-2,57	-2,51
FIXR	-3,15	***	-2,70	-2,57	-2,51
FXLR	-3,62	***	-2,70	-2,57	-2,51
GDP	2,61	**	-2,70	-2,57	-2,51
NIM	-2,89	***	-2,70	-2,57	-2,51
INF	2,61	**	-2,70	-2,57	-2,51
INT	2,61	**	-2,70	-2,57	-2,51
LAR	-3,30	***	-2,70	-2,57	-2,51
LR	-2,95	***	-2,70	-2,57	-2,51
NIM	-2,89	***	-2,70	-2,57	-2,51
NPL	-2,94	***	-2,70	-2,57	-2,51
TA	-2,58	**	-2,70	-2,57	-2,51
XR	2,61	**	-2,70	-2,57	-2,51

*** and ** are statistically significant at the 1% and 5% level, respectively.

Table A7. Correlation, autocorrelation and varying variance test results

Dependent variables	Independent variables	Test	P Value	Test Statistics	Conclusion
LAR	CAP, DR, FAR, FIXR, FXLR, GDP, INF, INT, LR, NIM, NPL, TA, XR	Pesaran-Yamagata (2008) test	0,000***	36,12	H0 is rejected. The slope parameters are heterogeneous.
		Modified Wald test	0,000***	229,03	H0 is rejected. Error terms variance are variable by units.
		Bhargava <i>et al.</i> (1982) Durbin Watson test and Baltagi-Wu (1999) LBI test	0,002**	BFN=0,34 BW= 0,39	H0 is rejected because the test statistic results are much smaller than 2 and the p value is less than 0.05. There is autocorrelation between the error terms.
		Breusch-Pagan (1980) LM test	0,000***	1905,72	1) H0 is rejected. Error terms are correlated between units. 2) H0 is rejected. The common effect model is not suitable.
		Chow test	0,000***	33,29	H0 is rejected. The common effect model is not suitable.
		Hausman test	0,006*	27,95	H0 is rejected. The fixed effects method is suitable.
		Pesaran-Yamagata (2008) test	0,000***	4,58	H0 rejected. The slope parameters are heterogeneous.
ATR	CAP, DR, FAR, FIXR, FXLR, GDP, INF, INT, LR, NIM, NPL, TA, XR	Modified Wald test	0,000***	82180,26	H0 is rejected, error terms variance are variable by units.
		Bhargava <i>et al.</i> (1982) Durbin Watson test and Baltagi-Wu (1999) LBI test	0,002**	BFN= 1,90 BW = 1,93	H0 is rejected because the test statistic results are smaller than 2 and the p value is less than 0,05. There is autocorrelation between the error terms.
		Breusch-Pagan LM test	0,000***	1379,46	1) H0 is rejected. Error terms are correlated between units. 2) H0 is rejected. The common effect model is not suitable.
		Chow test	0,000***	8,82	H0 is rejected. The common effect model is not suitable.
		Hausman test	0,000***	54,65	H0 is rejected. The fixed effects method is suitable.
		Pesaran-Yamagata (2008) test	0,000***	14,37	H0 rejected. The slope parameters are heterogeneous.
		Modified Wald test	0,000***	918,76	H0 is rejected. Error terms variance are variable by units.
CR	CAP, DR, FAR, FIXR, FXLR, GDP, INF, INT, LR, NIM, NPL, TA, XR	Bhargava <i>et al.</i> (1982) Durbin Watson test and Baltagi-Wu (1999) LBI test	0,000***	BFN= 1,32 BW= 1,41	H0 is rejected because the test statistic results are much smaller than 2 and the p value is less than 0,05. There is autocorrelation between the error terms.
		Breusch-Pagan LM test	0,000***	1473,19	1) H0 is rejected. Error terms are correlated between units. 2) H0 is rejected. The common effect model is not suitable.
		Chow test	0,000***	44,97	H0 is rejected. The common effect model is not suitable.
		Hausman test	0,053	20,85	H0 is rejected. The fixed effects method is suitable.

***, ** and * are statistically significant at the 1%, 5% and 10% levels, respectively.

The increasing importance of teaching and learning geoeconomics in a meaningful context

Nicoleta VASILCOVSCHI*

Abstract

Significant changes of national and global events require adequate responses not just from governments, but as well from the educational areas. The end of the Cold War in 1990, followed by the Economic Crisis of 2007-2008, and the Pandemic Crisis of 2020 were global challenges that increased the importance of geoeconomic field and the need to study Geoeconomics nowadays as an interdisciplinary subject, as a discipline that exercises crucial roles internationally, requiring learners to study it in a meaningful context. In the future, present learners of Geoeconomics will work for countries that will use their strategic positions to access resources and promote their economic interests. They will analyze different interconnections between geography and economics that are transforming the world and promoting a global demand for labour force flexibility. They will be workers that will migrate and study to find their place and role in this evolving geoeconomic system. In the present dynamic geoeconomic context, the field of education remains the key to prepare future generations to use a critical thinking approach when deciding how to apply internationally geoeconomic knowledge and skills. This research paper presents different aspects of Geoeconomics as a discipline and shows several steps that can be followed in order to teach and learn an interdisciplinary subject in a meaningful context, using an inclusive education and a cooperative learning approach. In fact, this research paper contains several authentic activities that can be used in the process of teaching and learning Geoeconomics, online or offline, and, more broadly, evaluates the needs of students and the role of lecturers in the process of international education, showing as well different techniques that can be used to prevent plagiarism. This research paper also includes an analysis of the process of meaningful teaching, its features, and the challenges that students can have with studying interdisciplinary subjects within the Social Sciences area.

Keywords: Geoeconomics, meaningful teaching context, cooperative learning, plagiarism prevention, inclusive education, authentic learning activities, knowledge power

Introduction

Globalization and its changes after the Cold War made countries around the world to adjust their main interests concerning conducting international relations, organizing their regional and

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global involvement and coordinating internationally their geoeconomic strategies. In this sense, nowadays, countries focus on promoting geopolitical interests combined with a geoeconomic approach. More regional powers have a dominant impact on shaping international relations and their regional involvement increased after pandemic period of 2020. Geoeconomics is well-known as a group of international events that present changing aspects of international relations through geoeconomic strategies, but it's not enough analyzed as a Social Studies discipline.

There is still a lack concerning academic analysis of teaching Geoeconomics as a discipline and of identifying how can instructors help new learners to understand all the global changes and the behavior of different actors, represented by states, regional or global organizations. Therefore, there is an increasing need for more learners to use a critical thinking approach when studying changing characteristics of Geoeconomics as a discipline. Meanwhile nowadays, the teaching approach has to be focused on learners and their needs, providing them with the necessary tools in order to be able to apply in the real life what they learned in class. Consequently, internationally, a common goal on improving education is centered more and more around learners and it's perceived around the world as preparing students for an active learning role, able to use critical thinking when studying new subjects and ready to connect what they learned with experiences from their daily lives.

This research paper offers a general description of the development of Geoeconomics as a discipline that includes geoeconomic and geopolitical strategies, with changes after the end of Cold War in both Geopolitics and Geoeconomy. Then, emphasizes different learning problems that can arise when studying Social Studies in general and a discipline from this field in particular, and also describes general aspects of plagiarism as a learning problem, its causes and how it can be avoided, and presents different techniques that can be used by instructors to prevent plagiarism when teaching or preparing different assignments.

The second part of this research paper discusses the main challenges that can arise when teaching and learning Geoeconomics, online and offline, and continues with describing different skills, attitudes that are addressed in the process of teaching.

The purpose of this article is merely to offer a general description of the main aspects studied for Geoeconomics and to illustrate how the process of teaching can be organized in a meaningful context, where authentic studying and research activities are used for the promotion of a collaborative learning approach, completed by an inclusive education, able to prepare active learners of the present as future successful professionals.

1. Literature review concerning the development of Geoeconomics as a discipline, learning problems and solutions

Recent global events, after the Cold War in 1990, the Economic Crisis of 2007-2008 and the Pandemic Crisis of 2020 generated new challenges that increased the importance of studying Geoeconomics as an interdisciplinary subject that exercises crucial roles internationally, requiring learners to study this subject in a meaningful context. Meaningful learning is supposed to play a central role during the teaching process, offering learners the possibility to not just receive information, but to be able to understand and participate in the learning process.

Concerning teaching internationally or preparing different students from Europe, Asia, Africa, America or Australia to compete for jobs not just locally but outside the national borders, meaningful learning is very important when teaching different subjects, especially because a large number of learners may not be familiar with the content of different disciplines and subjects. For instance, in the case of teaching Mathematics, many students have basic knowledge from their previous mathematics classes, but teaching subjects like Geoeconomics, which is considered an interdisciplinary subject from the Social Science field, can be challenging because many students often have no prior contact with the content of the curriculum and have no prerequisite knowledge of the main concepts that they need to learn. At the same time, Geoeconomics as a discipline is based on the international changes of the global geoeconomic context and those changes cannot be always predicted or are not following a linear trend.

The term Geoeconomics was coined in 1990 by the American strategist with Romanian origin, Edward Nicolae Luttwak, in the article "From Geopolitics to Geo-Economics: Logic of Conflict, Grammar of Commerce" published in "The National Interest", No 20 (Summer 1990). Luttwak explains that geoeconomics focuses on promoting internationally economic interest, showing that Geoeconomics follows the logic of strategy by using the grammar of commerce. In fact, this is described as replacing the invasion of a specific place, with the conquest of a specific industry (Luttwak, 2021, Speech). In this sense, it's argued that today's power is no longer related to military control over an area, but mainly to the "capacity to integrate into the global economy". This fundamental international change creates more changes into the global "identity cards" with a business-trade world, where a win-win concept is applied in the context of a free trade (Neguț, 2016, p. 9).

In the research field, there are many descriptions of Geoeconomics as an important aspect that shaped the international relations after the end of Cold War, but there are relatively very few descriptions of Geoeconomics as a discipline. Geoeconomics is described as being based on both a

"strategic practice and an analytical framework". In this sense, geoeconomics can influence international distribution of power between states, shaping International Relations and determining the national interest and national power as well. On the global stage, there is the need for economic actors to develop a geoeconomic vision that follows integration and cooperation and not conflict (Wigell *et al.* 2018, p. 3).

Geoeconomics as a discipline was born after the Cold War and it can be depicted as an analysis of the general structure and global effects of the new application of Geopolitics with a new balance of power. In this new context, the field of economics plays a central role and this increasing of global economic interdependence opened new opportunities of collaboration for European Union, North American Free Trade Agreement and The Southern Cone Common Market. States, therefore, need to play their role internationally and cannot isolate themselves because there is the increasing need to benefit from international trade, to find and apply a geopolitical vision for promoting geoeconomic strategies for maintaining present or preparing future global economic collaborations (Csurgai, 1998, p. 2).

As discipline, Geoeconomics is described as being related to "the study of spatial, cultural, and strategic aspects of resources, with the aim of gaining sustainable competitive advantage" (Søilen, 2012, p. 8). When students need to study about a discipline like Geoeconomics, a learning problem that is considered to be a meaningful learning problem is related to their lack of ability to understand the multiple dimensions of this area and its impact from both economic and geographic perspectives. The problem can be related to a previous lack of information or the difficulty to find relevant data or to understand it. Learners are usually more familiar with geography or economics, but not with a concept like Geoeconomics that combines the two disciplines and includes different international strategies, containing general similarities and particular differences with Geopolitics. Therefore, when studying Geoeconomics, students need to learn how to differentiate between Geoeconomics and Geopolitics, to identify the main actors in both sides and their main goals. Examples of such actors can be corporations, state powers, non-governmental organizations, and international organizations. Generally, both Geoeconomics and geopolitics follow the same general goal: both of them "study power derived from the management of natural resources" (Søilen, 2012, p. 11).

The main misconception from learners in the process of studying Geoeconomics can be related to the perspective that for subjects like Geoeconomics students just need to listen during lessons and just memorize some texts in order to pass final exams. Trying to help them to understand what they are learning and to connect it with their involvement, is challenging. Therefore, in order to teach and learn a new subject, like Geoeconomics, it is very important to have a constructive approach.

One researcher who analyzed the role of constructive approach for the improvement of skills in Social Studies concluded that “learning is building upon students’ prior knowledge, and learning constructs meaning from experience” (McCray, 2007, p. 51). This view reflects the necessity to connect new information they received during a lesson with students’ prior knowledge about the subject. They can learn in a meaningful context, based on examples, following the history of a concept, starting from its definition and its role, and analyzing different sources related to the subject studied.

When starting to study and research about Geoeconomics, some students have prior theoretical knowledge concerning this subject. Students may be familiar with some concepts that in general relate with global geoeconomic events, like historical events that came with the changes after World War I, World War II, the Cold War, or the present pandemic and the research studies on the future aspects of access and distribution of strategic resources. The problem is that many of them do not receive any authentic learning concerning the history or aspects of Geoeconomics before learning the subject in a multidisciplinary context, and they need more time to research and reflect on the main aspects studied. In this sense, some studies argue that Social Studies instructors and researchers involved in the academic field need to go out of their desks and study the real economic changes from experience and direct observations in order to be able to present students with concrete solutions. Students need to be helped to understand how the factors of power are connected with the Competitive Advantage of a state, with its capacity to follow its national interest at international level through an active diplomacy, its strategies to keep a stable currency and to promote an economic growth that will build its capacity to attract in-migration of well-educated human resources (Søilen, 2010).

Another problem identified here is that some students are used to listen to lecturers and to prepare just to pass exams, playing the role of simple receivers of information and not of knowledge. Therefore, when they start learning a new concept in an international context, many of them are not prepared to use a critical thinking approach. Students from different cultures can have this problem and in order to avoid such circumstances it is necessary to adjust diverse teaching methods to the students’ needs, giving them the chance to reflect and share ideas or ask written questions. Gradually, students can start asking questions at the end of a lesson and also present different opinions in front of their peers if they are given the opportunity to reflect on the importance of understanding their role of an active learner able to influence the process of learning. Another strategy that can be used to solve this problem in the learning process is the use of a group work, where students with previous experience concerning different aspects studied can share their knowledge with other students helping them to receive additional expertise and to gain confidence during their learning process.

Another problem identified in the process of learning and researching for Geoeconomics is the problem of plagiarism. It's therefore, necessary to present an overview over plagiarism prevention. Plagiarism is not an isolated problem for a specific discipline, but a general problem for research, a problem that is arising around the world due to the easy access to internet data and the development of online teaching materials. In order to understand how to prevent it, it's important to observe what are the causes of plagiarism.

General causes of plagiarism include: studying under pressure; lack of maturity, experience; difficulty to understand the consequences that can arise from plagiarizing, insufficient training concerning the ethics of research or the research citing and referencing, lack of English writing skills, cultural differences, or the missing of time management skills. In this sense, causes of plagiarism are presented as being related to the technology and academic pressure, lack of knowledge, a collective cultural approach in Asian countries that makes learners to think that memorizing, reproducing and sharing ideas of others is a “good practice” (Sadrudin, 2021, p. 297).

Some observations from different studies on plagiarism showed that in order to prevent plagiarism it's necessary to observe the perspective of students on different aspects of plagiarism. In many cases it's not just an issue of ethics, but mostly this problem is related to their educational background. In fact, for many students when asked to present a description of acceptable paraphrasing, they mainly focus on trying to rewrite the original text rather than summarize it in using their own words in writing. Many of them mainly consider that using directly the writing of others is a method to better present their own ideas. This aspect indicates that some students "have a complete lack of ability in the practical application of paraphrasing" and it's implying that they need to be instructed and practice on proper ways of paraphrasing (Jackson, 2006, p. 425).

In order to help with plagiarism prevention not just instructors, but as well the students, need to understand what plagiarism is, to understand how to identify different plagiarized texts and to learn different ways to avoid plagiarism. A decisive step is to have instructors to write assignment specifications, including different alternatives to standard essays. Therefore, instead of using standard essays for assignments, students can be asked to work on case studies that can make it more difficult for them to plagiarize. (Culwin and Lancaster, 2001).

Teaching a Social Studies discipline, like Geoeconomics, involves having international students from different countries. From the introduction of this course, students need to receive information about research ethics, about how to properly use both citations and referencing in a research paper, and how to observe the structure of a properly organized research paper in any discipline of the Social Studies field. By instructing students from the beginning how to use sources in a proper way and how

to organize a research paper, it's most likely to help to avoid plagiarism to occur later during the semester. Consequently, the initial part of a course can include not just information about avoiding plagiarism, but as well a guide of how to correctly use references, how to organize ideas in completed paragraphs and how to find and filter information from online or printed sources. Students also learn the methodology of research, organizing a topic and a research thesis, presenting hypothesis of research and observing their outcomes. In fact, many research papers show that in order to teach skills and knowledge for avoiding plagiarism, it's mandatory to not just include a presentation on how to write and organize a research paper, but mainly to help students to learn the research methodology that can also help to prove initial hypothesis through the use of a suitable research method. Students are given the opportunity to learn how to use scientific methods when completing a project or a case study. They also can work for different group projects. Every week, students can prepare a draft that includes their project plans, objectives and tasks. Then, after presenting their first draft, the progress of research is followed with weekly project reports that can help students to work progressively on their research, can allow them to have enough time to consult different materials and select relevant information for their work and to build their work on constructive feedback. In this way, any motivation for plagiarism is reduced and students are helped to complete their work before the final deadline (Gunnarsson, Kulesza, Pettersson, 2014. p. 6).

Teaching Geoeconomics as a discipline in a meaningful context can build confidence on learning and academic research and can provide instructors with the chance to build courses that allow students to understand the important role that the studies have for their future working sphere in the context of international economic relations.

2. Authentic activities, attitudes and skills addressed when teaching and learning Geoeconomics in a meaningful context

After the pandemic crisis of 2020, it was mandatory for lecturers to provide their classes, combining online and offline strategies. The second part of this research paper seeks to present different aspects included when students need to learn Geoeconomics and to show the skills and attitudes that are addressed when teaching this subject in a meaningful interdisciplinary context. Here are described several approaches of the process of teaching Geoeconomics and how it can be applied to the needs of students, with specific attitudes and skills addressed in the process of teaching.

The authentic activities that work in an actual teaching context that combine online and face-to-face teaching are related to the use of modern technology. Therefore, many online programs were

developed and used worldwide and lecturers started to use more online platforms and to adjust them to the needs of their students. There are numerous studying platforms that can help to improve instructors' role in teaching Geoeconomics or other disciplines related to Social Studies area. Those platforms provide information for students before and after courses, allowing them to check their grades and allowing the instructor to observe, analyze and adjust the quality of materials that are delivered during lessons. It is also helpful for marking students' papers, providing feedback for their work, and keeping the attendance list updated.

Likewise, before 2020, regarding the process of online teaching and the use of modern technology in a Social Studies discipline, some authors believed that even if this process of teaching was criticized, it can provide different opportunities for lecturers and learners. For instance, Timothy Jenks (2018) presents the ways that can be used to deliver a history course face-to-face and online, by knowing how to adapt the online methods. Jenks affirms that he found out that “the reduction of the instructor’s personality interface equally permits students a more direct and unmediated relationship with the course material” (p. 605).

In the case of teaching Geoconomics as a subject that students need to understand in the context of different historical, political, and economic changes, the courses can be delivered nowadays both in class and online with the online learning being for the students to review the material and to contact their lecturer with questions. Knowing that they are ready to get involved in online debate and asking online questions, they are provided with materials that can help them to select the information they consider relevant for their research interest. By having students involved in online discussions, it can help their instructor to observe if they understood what they learned in class and to receive and provide constructive feedback.

Meanwhile, it is crucial nowadays to consider the importance of teaching and learning in a meaningful interdisciplinary context and to allow students to receive different skills that can be applied in the context of the XXI century. The traditional ways of teaching that promote memorization and the simple application of short-term learning cannot help students to achieve an efficient learning approach where they can use critical thinking methods in the context of an interdisciplinary education. The importance of interdisciplinary studies is presented by Repko *et al.* (2017) showing that in order to get ready to make a change in our society, to be an active role player, we need to “develop the skills to make connections, solve complex problems, develop leadership skills, engage in strategic thinking, communicate effectively, practice analytical thinking, and work collaboratively” (pp. 3-4).

The main role of the subjects from Social Studies domain, such as Geoeconomics, Economics, and History, is to give students the chance to study in a meaningful context and discover their role in society,

to change or adapt their attitudes, to develop strong and successful beliefs that connect them with their identities and help them to understand other cultures or economic backgrounds in global context.

Learning attitudes addressed in Social Studies courses, like Geoeconomics, Economics, Geography or History are related to the ability to understand theoretical concepts and the ability to connect their knowledge with their daily life, the capacity to analyze different events and compare divergent points of view, and to give and receive constructive feedback. Different beliefs that are considered refer to understanding what are the beliefs and values of a multicultural society, to identify connections between the history of a nation and the construction of its economic system and to analyze its national and international perspectives.

The skills that students usually receive after successfully completing classes are the capacity to connect what they learned in class with what they already experienced and the ability to find similarities and differences between geoeconomic visions of different countries around the world. For example, for different assignments, students are invited to do research, to read more materials in order to better understand and develop their critical thinking abilities and to improve their skills related to “comprehension, application, analysis, evaluation and synthesis, creativity” (Dhandhanian, 2016). Through developing those skills, students can be more confident on learning and are better prepared to practice their knowledge.

A central instructional objective that has to be included in the teaching process is cooperative learning that allows students to have the chance to work in small groups and to receive and provide feedback by building collaborative relationships with the others (Doty *et al.*, 2003, p. 15). The relevance of teamwork is also presented by Adeyemi and shows the importance of cooperative learning and relevant strategies that can be used for problem-solving approaches (2008).

Other instructional objectives that can be included are the use of any previous knowledge and its adaption to the new context of learning; the concept map that is presented face-to-face, on the white board, and online, sharing white board of an online platform; in the review paper of each chapter; the adaptation of teaching methods to the learners’ abilities and cultural backgrounds; the presentation and reinforcement of different concepts; and the research that students can do to find more details about the concepts, events and perspectives they learned during courses.

All these activities also relate to the process of inclusive education. An inclusive education involves giving same chances to all learners during the educational process. A meaningful learning plays a very important role during the teaching process. Therefore, when having a group of students around, each instructor should find information about the particular needs of each group of students. Many students that learn new subjects have different learning problems that can affect their

performance, involvement in the course and learning process. In this case, they need to receive educational tools adapted to their situation. When teaching different disciplines is important to combine a collaborative learning and teaching approach with the process of an inclusive education.

Mel Ainscow (2005) identified four aspects of the inclusive education. The first aspect is to have inclusion as a process, is what the author calls a "never-ending search to find better ways of responding to diversity", involving to learn how to live with difference and how to learn from it. The second aspect is to have inclusion with both identification and removal of barriers. In this sense, Ainscow sustains that inclusion involves, on one side, collecting and evaluating information from many sources and, on the other side, the use of evidence that can help to stimulate creativity and the problem-solving process. The third aspect presents inclusion not just as presence and participation, but as well as achievement of all students. Presence is related to the place where learners receive education, while participation is related to the quality of their experiences and the sharing of the view of learners. Concerning the achievement, Ainscow emphasis that this is about the outcomes of learning across the curriculum, not just the results of exams or tests. The fourth and as well important aspect of inclusion mainly relates to a particular importance given to more specific groups of learners that are at risk of being marginalized, of feeling excluded or being underachievement. This should determine instructors to closely monitor those groups and to ensure the presence, participation and achievement of each student in the education process (p. 15).

The following description includes a general overview of the particular understanding of an inclusive education and the Individual Model and Social Model as approaches to education. This description was made by Stubbs in 2008, in his research "Inclusive Education: Where there are few resources 2008". According to Stubbs, the first step is to identify why a student is seen as a problem. It can be due to the lack of language knowledge, or it can be due to the fact that a particular student feels different when compared with "normal" people, or has special needs, or is not responding during the instructional process, or is not able to learn, or needs special equipment, or "cannot get to school", "cannot cope", or it's too poor, or feels that has no need to learn, or feels to young or old to learn (From Figure 1, *Individual Model*, p. 15).

Second step includes solutions, that are able to help or fail that student. In this case, Stubbs (2008) argues that students can receive education if there are few conditions respected, in this sense they are seen as:

- are able to "cope" with their peers,
- receive special equipment,
- receive one-to-one support,

- can have a "special teacher",
- can follow the curriculum,
- can have a special environment,
- are taught with special techniques that meet their special needs,
- can received extra resources adjusted to particular needs,
- can arrive to school and are able to communicate and speak the language in which they learn,
- they receive more help because they are different,
- they are at the right age or they feel being at the right age to learn (Adapted from *Solutions*, p. 15).

Concerning social interaction and an inclusive education with an education for all, Stubbs (2008) includes a social model that perceives the system of Education as a problem, as a rigid and an exclusive system. The several aspects of this problem presented by Stubbs refer to: a rigid curriculum or methods; discrimination of prejudice against an individual or a group; inaccessible environment; lack of hygiene, safety; teachers and schools unsupported; not enough use of local resources and lack of appropriate teaching equipment, not enough involvement of families and communities; stereotypes of marginalized groups, not enough use of local languages; no links between different forms of education; "lack of overall education strategy in the community, no early childhood education provision or no provision for older learners" (From Figure 2. *Social Model*, p. 16).

For this problem, Stubbs (2008) also includes solutions with the development of an inclusive education system through:

- a strong collaboration between stakeholders to develop a strategy for long life learning;
- collaboration between different forms of education, as formal, non-formal and alternative;
- creation of community centres of learning that meet the needs of all community;
- communication and involvement of all learners and marginalized groups in the process of searching for a strategy that satisfies their needs and its implementation;
- specific use of resources from the community;
- promotion of team teaching and offer training for teachers;
- accommodation of the environment to the needs of learners, making it welcoming and safe;
- development and implementation of policies to combat discrimination and allow diversity;
- development of "child-to-child and peer tutoring approaches";
- creation of links in the community;
- having school involved in taking responsibility and solving problems (Adapted from *Solutions*, pp. 16-17).

The benefits of authentic learning combined with the increasing importance of engaging students in more dynamic courses with sustainable learning tasks, has determined instructors of different educational levels to include into their curriculum an inquiry based learning approach that allows learners to be actively involved in the learning process.

Learning from participation enables students to be more involved in the learning process and facilitates for instructors to prepare and integrate new courses with online or offline participation. Therefore, when learning about the components of Geoeconomics, students are prepared to connect their knowledge with previous knowledge concerning national and international factors that affect international economic strategies and learn to analyze how nations are shaping their interest for promoting different strategic resources. To adapt the curriculum to their knowledge, they are taught to compare different systems and to find the similarities and differences between them. When modeling trade data during a research project, they can focus on: "gross basis, value-added basis, economic agent basis and game theory basis" (Chakrabarty, 2017, p. 24).

Different aspects when learning Geoeconomics also include the explanation of the theoretical aspects of international trade combined with various examples of geoeconomics and geostrategies tools used internationally for promoting or accessing different types of resources; the presentation of the list of factors that affect national interest and the involvement in international trade; the change in the role of different geoeconomic actors, that can be represented by individual countries and corporations or regional and international economic organizations. Students also learn to compare different visions, strategies and ways of shaping geoeconomic interests around the world.

Concerning the theoretical knowledge, students also can review about geoeconomic strategies of regional powers, with the distribution of economic power in the context of a strategic goal, based on cooperation or competition. Geoeconomic strategies include: liberal institutionalism, hegemony, neo-mercantilism and neo-imperialism. Neo-mercantilist and neo-imperialist strategies represent "a competitive frame in which foreign relations are treated as a zero-sum game in which one side's gain is another's relative loss", in this context being the use of economic power for the unilateral benefit of one of the countries national interests. The other two strategic goals represented by liberal institutionalist and hegemony strategies are based on a "cooperative strategic frame" where more countries gain mutual gains and benefits with a long-term collaboration at the regional level (Wigell, 2016, p. 141).

After studying a subject like Geoeconomics, students need to also be provided with the necessary skills and authentic activities that can help them to be active players in their society. In order to develop new skills, students should be engaged in meaningful projects that involve a long

term collaboration, that help them to understand the distribution of different tasks and resources, that provide them with a sustained implication and the possibility to connect what they learned with real life. Therefore, students are better to be actively learning if they are provided with a dynamic participation for different lessons that can help them to apply their knowledge, organize their ideas and compare different perspectives in a complex research that allow them not just to receive information, but as well to select data, write and analyze different sources that will later be presented online or offline. For instance, a research on more than 2100 students from 23 schools found a better achievement on challenging performance tasks for students who received this type of "authentic pedagogy". This "authentic pedagogy" includes standards for assessment tasks and for teaching methodology. The standards for assessment tasks include five categories, as the following: "organization of information, consideration of alternatives, disciplinary content, disciplinary process, elaborated written communication", where the teaching methodology is connected with the classroom instruction and stands for "higher order thinking, substantive conversation, deep knowledge, connection to the world beyond the classroom, problem connected to the world" and outside audience (Newman, Marks, Gamoran, 1995, p. 3).

Education facilitates a fast distribution of the "knowledge power" that can contribute as a long-term factor to the promotion country's geoeconomic power that leads to the increasing importance of investment in the "human capabilities", perceived as being the most significant aspect of power in the present world, due to the changes in demographic structure in Europe and Asia. Therefore, the investment in human capital is central for the development of future economies and the migration of human capital should be considered in this context (Baru, 2012, p. 54).

Education plays a more important role on preparing human capital ready to work on the requirements of international markets. Building skills on critical thinking, Geoeconomics as a discipline can help to have human resources ready to apply a complex knowledge in the future working fields.

Conclusions

In summary, in the dynamic geoeconomic context of nowadays, major economic actors are playing a decessive role regionally and globally. In this context, Geoeconomics as a discipline should be analyzed and studied in a meaningful context because education remains the key of preparing generations of the future as active citizens, able to use a critical thinking approach when deciding how to apply their geoeconomic knowledge and skills at local or global levels.

Understanding the main aspects of teaching Geoeconomics as a discipline is mandatory in connection with the dynamic influential change of international relations and it can be completed with a successful collaboration between the theory of the academic field and the use of real world examples. This implies having instructors to provide the adequate information that can help learners to be able to understand those changes, to analyze and research them and to use a critical thinking approach during their entire learning process.

The process of teaching and learning in a meaningful context involves authentic activities and an instruction based on collaborative learning. This model of teaching and learning can be included in different classes when teaching *Geoeconomics* or other discipline from the field of Social Studies. For instance, there is evidence that using an inclusive education with a collaborative learning approach can help students to gain confidence and take role of active learners. In this context, before, during, and after classes, students are guided to learn in a meaningful context where they can start to develop critical skills for organizing research in an interdisciplinary framework, to use arguments in debates, and to assume present and future active roles in their communities.

The fundamental skills that students receive after successfully completing classes taught in a meaningful context are related to the capacity to connect what they learned in class with what they recognize from their experience, or learning from the experience of others through group sharing activities; the development of different research skills in order to find similarities, differences and future opportunities between different countries, regions, or cities around the world; the ability to avoid plagiarism and to explore in their future research what they learned; and the achievement of the necessary skills that can allow them to use the knowledge power in the geoeconomic environment of their future jobs.

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The competitive advantages in the construction industry - a theoretical approach

Vlad LEONTIE*

Abstract

Because the construction industry is widely viewed as the engine that drives economies around the world, understanding how companies achieve their competitive advantages through innovation, the use of information technologies, strategies, business models, or human resources is vital. The current paper aims to identify and categorize the types of competitive advantages that exist, ranging from pure technological advantages such as information storage, coordination, and electronic communication to organizational and management advantages. In terms of methodological approach, performing a quality analysis of the existent literature regarding competitive advantages consists the best tool due to its wide spectrum of gathering the data. The research will be structured in 3 steps, respectively problem formulation, gathering of the data and title, abstract and full-text review. A complex perspective of the competitive advantages can be therefore obtained which can be a valuable asset in helping a construction enterprise in selecting its long-time strategy for becoming more competitive, efficient and sustainable. Through the main findings, innovation, usage of the informational technologies, initial conditions, environment understanding, safety culture or management practices of the human resources can be counted.

Keywords: competitive advantage, construction industry, innovations, sustainability

Introduction

As Porter himself mentions in his book "Competitive Advantage" (Porter, 1985), the notion of competitive advantage resonates with the concept of value chain, respectively the general framework of strategic thinking in which a company's activities produce relative costs and differentiation. The path to profit is defined by Porter as being the difference between what the buyer is willing to pay for a product or service and the cost of performing that activity.

Thus, the customer of the construction sector and his needs occupy a central position in the front industry, being the one who is willing to pay the price of the product or service. At the same time, the activities within the construction value chain are the basic tools to be able to examine the

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competitive advantages or disadvantages (Porter, 1985). For the sustainable development of the companies and of the present sector, sustainability plays an important role, and the long-term goal becomes the sustainable competitive advantage. These sources and roots are directly related to the notions of cost and differentiation that can explain the key differences between firms in a competitive environment.

Competitive advantages are generated from a multitude of sources and among them, the way of connecting and coupling the different activities within a company, the types of relationship between them and the connections with suppliers and customers may be counted (Porter, 1985). By implementing the right strategies, a firm can move faster towards the reduced cost and increased products value path, which leads in a later step to profit.

Understanding and determining the sources of competitive advantage is the solution for companies in the construction industry to exceed the performance of competitors in the field. Gaining and creating competitive advantage by using information technologies is becoming increasingly important in a rapidly changing and transitioning industry, which still has a strong "traditional" character. The construction market is extremely large, with a variety of actors and a high level of competition (Bellochi and Travaglini, 2021), so the effects produced by existing technologies are a source of value.

Competitive advantages are generated by the extra value that a company can produce for its customers. It can take the form of prices, premium products or timesaving construction. The competitive strategy that any entity adopts is one of the basic pillars of success, which carefully chosen and regulated can lead to economic prosperity. The latter is the pursuit of a competitive position within the industry and aims at profitability and sustainability against the forces exerted by competitors (Porter, 1985).

Methods

In terms of methodological approach, performing a quality analysis of the existent literature regarding competitive advantages consists the best tool due to its wide spectrum of gathering the data. The research will be structured in three steps, respectively problem formulation, gathering of the data and title, abstract and full-text review.

The research problem has been carefully formulated and it is represented by the determination of the different competitive advantages, which exist in the construction industry. The gathering of the data took place using search strings applied on two different databases: Google Scholar and Science Direct.

The search strings included the following terms: “competitive advantages” and “construction sector” or “construction industry” and the subsequent criteria were included when performing the research:

- All articles must be written in English;
- The results of bachelor and master thesis research have not been used;
- The time frame spanned between 1980-present.

After applying the search strings on the above-mentioned databases, the author firstly conducted a title and abstract analysis, followed up by a whole text analysis, depending on how appropriate the topic was. Following these steps, the main competitive advantages have been firstly gathered and afterwards categorized.

Before starting with the 3 steps analysis, a prior vision of the construction value chain is required, to observe the complicated construction industry, to understand its complexity and its relationships between the actors. Therefore, the first prerequisite is the presentation of the construction value chain.

Construction value chain

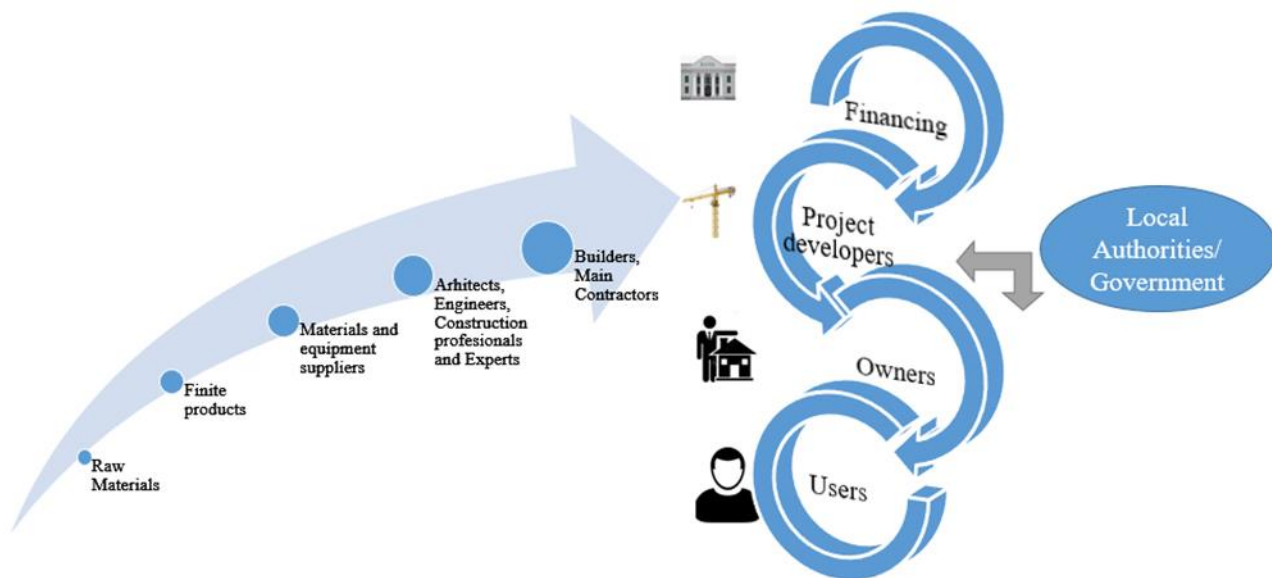
Construction projects differ considerably based on their location and category, such as residential, non-residential, civil engineering, and renovation projects. They also vary in scope, from small projects to giant structures (such as infrastructure), and are subject to national and international laws, regulations, and conditions. As such, the specific contexts of construction projects have a major impact on the requirements, composition and significance of the different stages and the different participants in the value chains (International Finance Corporation/World Bank Group, 2021).

The value chain of any construction project consists of a variety of different stages within a fixed framework that includes the design, production and conversion of raw construction materials into finished manufacturing products that are embedded in the actual construction. Each of these stages contains its own processes, its own actors and specific interrelationships. This, combined with all the complex relationships between the stages and the nature of the links in the construction value chain, reveals the fragmentation of the current construction industry (International Finance Corporation/World Bank Group, 2021).

From the outset, one can see the central role that information technology plays in acting as a link between customer specifications, needs and the nature of each construction project. Figure 1 depicts a complex value chain of constructions, with the main actors identified as financiers,

developers, owners and consumers; the whole process is governed by local authorities and the national and international legal framework governing the construction industry. It should be noted that Figure 1 is representative for the value chain of the new construction projects or renovations. In the demolition or decommissioning of old buildings or constructions, although they also belong to the construction industry, the value chain takes a different shape. The deconstruction process appears after 20-100 years, the participants are made up of other entities, the necessary set of activities has other links and other features compared to the new construction process. In addition, the entire line of raw materials, their processing, their supply and consultation with specialized personnel disappears (Chen *et al.*, 2020).

Figure 1. Construction value chain



Source: International Finance Corporation/World Bank Group, 2021

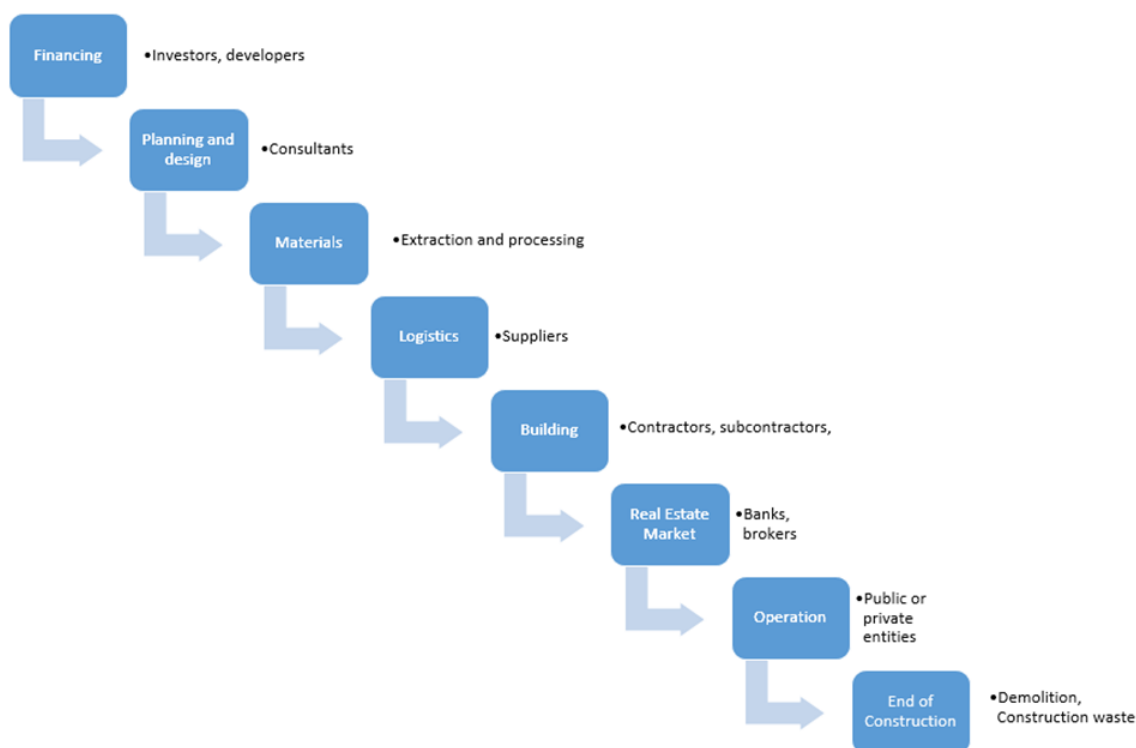
A specific need of the current sector is to use ecological materials, which are at the same time environment friendly and sustainable in order to achieve substantial Green House emissions reductions up to 2052 (European Commission-Green Deal, 2021).

The whole construction Value Chain takes place under the umbrella of the European Green Deal (European Commission-Green Deal, 2021) and under the Sustainable Development Goals of the United Nations. The Goal number 9 is focused exclusively on industries, innovation and infrastructure, the construction industry being impacted by it. Through its main targets, the development of resilient infrastructure to support economic development, and the promotion of sustainable industrialization up to 2030 may be mentioned. At the same time, the Sustainable

Development Goals target to increase the access of the small industrial enterprises to financing, to increase the scientific research, and to upgrade the technological capabilities encouraging innovation. The support for domestic technology development and research in developing countries is high, and all these may be obtained through the ensuring of a proper political environment. In order to create a sustainable infrastructure and industry by 2030, the countries will need to increase resource efficiency and adopt clean and environmentally sound technologies and industrial processes (UN, 2020).

Also, an interesting and complex representation, in the form of a linear sequence of the value chain of constructions is provided by the experts of One Planet Organization (Network Task Group, 2020) as can be seen in Figure 2.

Figure 2. Construction value chain and its steps



Source: Network Task Group, 2020

It should be noted that some stages may vary, may occur simultaneously or may be slightly delayed, as is the case with the construction and real estate market stages. The number and complexity of the processes together with the participants in the whole construction process reach high values and they can be spread in different parts of the world (marble extraction takes place in India, processing in China, supply in the Netherlands, use in the construction process in Bulgaria).

A special role along the value chain of constructions is the consumption of natural resources necessary for the realization of any construction of any kind. A strong connection between building materials, natural resources and environmental impact can be seen from the outset.

The building materials used in construction are obtained using combined natural resources such as iron which is produced from the combination of iron ore, carbon and energy (Network Task Group, 2020). The building materials of particular relevance to the construction industry are concrete, cement, asphalt / bitumen, metals, glass, chemicals and wood. It should be noted that in the European construction industry, the slope and direction of the industry towards low CO₂ consumption (European Commission - Co₂, 2011), reduced emissions and greenhouse gases (European Commission, 2012) lead to a major switch in the use of construction materials.

Natural resources are used to a large extent in the value chain of constructions, throughout several stages and processes. However, their most frequent uses are found in the processes of production of building materials, construction and during the period of operation of the building. Among the most common resources in the value chain of construction land, water, minerals and fossil fuels may be counted (Network Task Group, 2020). The land is needed for the manufacturing and extraction of materials, while in the same time can serve as a site for the new building. Water is an indispensable element of the construction industry, with 25% of drinking water being absorbed by the construction industry (Network Task Group, 2020). From the metals, about 10% of the global extraction is used for the construction industry (IRP, 2016).

The impact on the environment is major and the way natural resources are exploited must be as minimally invasive as possible for the environment and their use to reach the sustainable side. Greenhouse gas pollution and emissions are among the most documented effects on the environment. Also, deforestation and huge water consumption lead to major deficits over time of these resources if not properly exploited (IRP, 2016).

The value chain of constructions is shaped by a series of factors (drivers) that influence the behavior of participants and actors involved in the construction industry. These drivers can intervene at any stage and can make a strong positive contribution. Among the main drivers that influence the value chain, we can list:

- Demography - population growth, urbanization or depopulation (Network Task Group, 2020);
- Real estate market forces - property price, level of lending and indebtedness, opportunities (UNEP, 2019);
- Environment - natural resources, ecosystem of services, biodiversity (IRP, 2016);

- Fiscal policy - the regulatory system and incentives from governments (Network Task Group, 2020);
- Infrastructure - roads, ports and communication and energy systems (OECD, 2018);
- Policies and standards - Taxes, their level, construction, safety and financial rules (UNEP, 2019);
- Socio-cultural character of the region - the social values that determine a certain time of consumer behavior (OECD, 2018);
- Technologies - research and developments in the sector, innovations, information flow (Network Task Group, 2020).

Since there are countless activities involved in construction throughout the construction process, as well as a variety of actors involved, it is important to comprehend the value chain of construction so that those “optimizations” which can be synonymous with competitive advantages can be observed.

Types of competitive advantages in the construction industry

After introducing the search strings: “competitive advantages” and “construction industry” to be included in the title of the papers from Google Scholar Database, 82 articles were found. After restraining the searched period, from 1980 up to present, only 71 papers remained and after removing the citations, only 45 works have been selected. These remained works were analysed using, title, abstract and full text review.

After introducing “competitive advantages” and “construction sector” to be searched for in the titles of Google scholar database, starting from 1980 to present, 24 papers remained. After removing the citations, only 9 papers remained.

When using the Science Direct database, after introducing “competitive advantages” and “construction industry” as research strings to be included in the title, abstract or keywords, a number of 72 research papers in the time frame from 1980 up to present, were found. After including “competitive advantages” and “construction sector”, a totally of 47 research papers came out. All these findings were analysed and finally, a number of 23 papers offered consistent results.

The main purpose of any strategy of a company is to create a competitive advantage over the competitors in the guild and to maintain it. To understand this, the competitive advantage can usually be obtained from two basic sources:

- Lower cost than competitors;
- The ability to order a premium price.

The firm must find a different position from its rivals, insofar as imitation or copying ensures the disappearance of competitive advantage and leads to mediocrity (Ngowi and Rwelamila, 1999). The strategy of the companies defines the inter-relationship of the activities and how they are configured, the competitive advantage having its source from the capacity to perform certain activities at a lower collective cost than that of the competitors. Another source also arises from the mastery of creating superior value for a product or service through the unique performance of an activity. (Porter, 1985).

Among the reasons that lead to a competitive advantage, the initial conditions and managerial decisions can be listed. The initial conditions may include pre-existing reputation, well-regulated activities within the own value chain and existing links formed (suppliers, customers). These conditions have their origin either in the company or in the environment in which it operates (Ngowi and Rwelamila, 1999).

Managerial decisions define the concept of competitiveness within the company and configure its spectrum of activities. They are of great importance in that the skill of the company and the skills that have been “passed on / inherited” and may or may not be valuable in the competitive context. A multitude of skills, knowledge and resources are nothing if they are not necessary for the existing competitive environment. Therefore, first, understanding the environment in which a company operates is an essential element for a company to obtain a favourable position compared to competitors (Porter, 1996).

In the case of the construction industry, the value chain is extremely complicated and the development time of a typical construction project is particularly long. Whether it is in the field of extraction and processing of materials or in the field of actual construction, any company that gains a competitive advantage must continually improve it in order to be able to constantly take advantage of it.

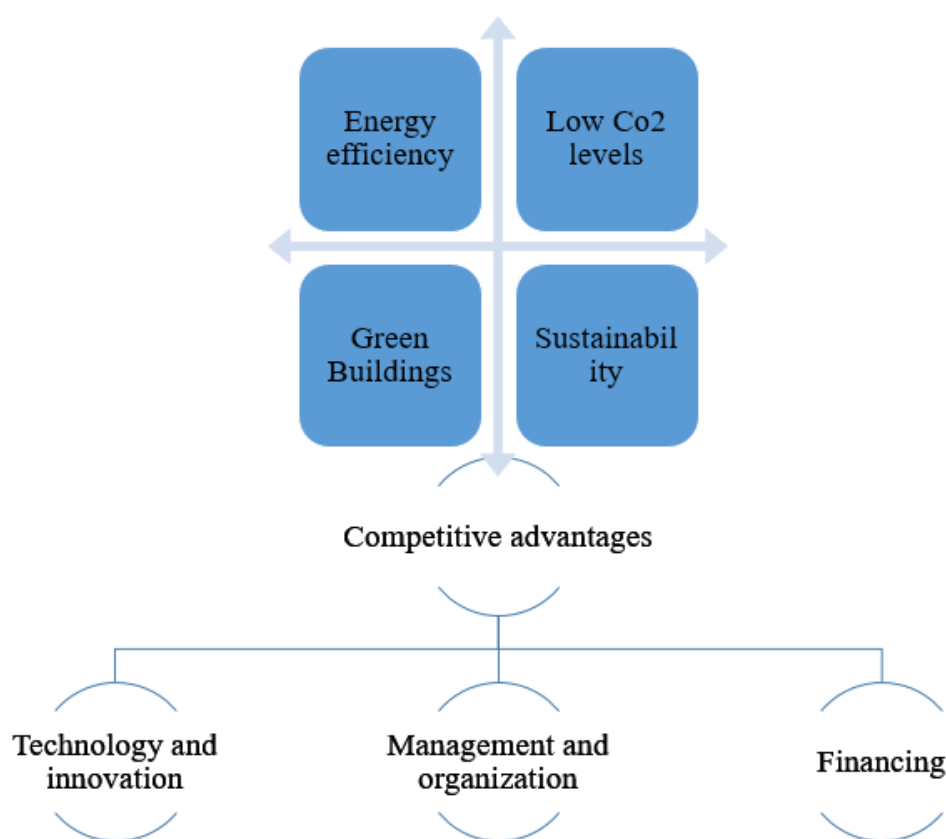
A prerequisite for sustaining a competitive advantage is the global approach of any firm (offering services anywhere in the world under its own brand) (Porter, 1990). Approaching a global strategy can lead to long-term profitability and growth. Companies that have an integrated global view and approach the whole globe as a single market perceive national borders as just an artificial demarcation (Abdul-Aziz and Abdul-Rashid, 1994).

As it can be seen on figure 3, the competitive advantages in the construction industry have their sources in the following elements (Ngowi and Rwelamila, 1999): technology and innovation (owning one or more special technologies that can make a difference (Strassmann, 1988; Afraz *et al.*, 2021), management and organization (the way the activities are coordinated and coagulated - an example of this would be a contractor who has a computer program to control time, materials and subcontractors, (Afraz *et al.*, 2021) and financing (obtaining financing can be a competitive advantage, especially in

developing countries, companies that prepare the most attractive financing proposals may obtain a favourable position (Soubra, 1989).

These benefits, on the other hand, do not independently develop the sustainable side that is needed to achieve that long-term plus. They are based on resources that are scarce and difficult to reproduce, but at some point in time, a similar technology may be developed or a company may obtain funding. Often, companies that want to make a profit group together in strategic alliances and access financing programs to obtain the necessary resources (Ngowi and Rwelamila, 1999).

Figure 3. Sources of competitive advantages in the construction industry



Source: Ngowi and Rwelamila, 1999

Thus, in order to sustain the long-term competitive advantage, companies need to develop organizational structures capable of producing rapid innovations. Several authors have argued over time that organizational routines can create sustainable competitive advantages, such as Barney (1992) or Peteraf (1993).

The European construction sector is currently changing, being subjected to the legal framework and European policies pushing for energy efficiency, green buildings (European Commission-Zero

pollution plan, 2021), low CO₂ levels (European Commission - Co₂, 2011), security, digitization (European Commission, 19/02/2020) and sustainability (European Commission-Green Deal, 2021). Given this context, the question of how one entity might outperform another in terms of performance arises. Choosing a strategy is often insufficient and directing companies to new technologies is imperative in order to develop a sustainable competitive advantage (Marichova, 2013).

Large companies (with over 250 employees) in the construction industry account for about 20% of European turnover, while small and medium-sized companies account for about 80% (Allianz and Euler Hermes, 2020). The European construction market in terms of construction companies is divided into 4 areas of activity: civil engineering (18.6% of total investment), non-residential construction (31.6%), residential (21.6%) and rehabilitation and maintenance (28.6%) (FIEC - European Construction Industry Federation, 2020). Along these spheres, the percentage of firms varies according to the number of employees, reaching that in large civil engineering projects, about 45% of companies are large entities (Allianz and Euler Hermes, 2020). Representing a high percentage, companies with specialized goods, high-performance finished products and high fixed costs impose very high barriers to entry, gaining competitive advantages from high uses of information and digital technologies, good management qualities, high human and capital resources, and through economies of scale.

In addition, another source of competitive advantage is the reputation of the company, the tradition and the image of the companies. Enterprises such as Bilfinger und Berger – founded in 1880, Strabag in 1835 or Hochtief in 1875 all from Germany, have their roots deeply rooted in the building industry (Marichova, 2013).

Where a relatively high number of large companies are found, the oligopoly appears. In the sub-market of civil engineering works, this character of the market appears, and the company's strategy becomes a determining factor in obtaining profit. The two possibilities that most large companies adopt are either coming in groups to get more profit or developing an aggressive competitive character. That is why every company must carefully weigh its position regarding the two competitive forces: competition with rivals or cooperation. Partial agreements for profit maximization are quite common in these types of markets (Marichova, 2013). The public sector is one of the main customers of this construction sub-sector and it can boost competitiveness by achieving the optimal combination of resource use, technology and social benefits.

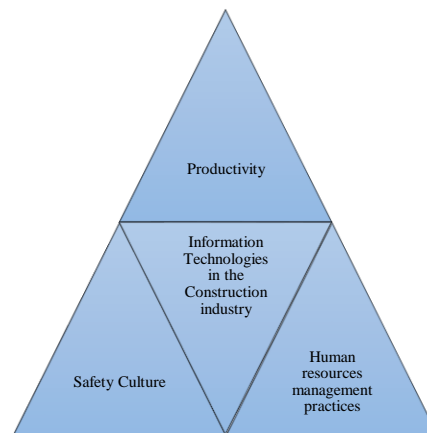
Another type of competitive advantage that can be obtained in the construction industry is that which comes from human resource management practices that support the development of skills and motivation of employees (Widyanty and Mahfudz, 2020). The results of these types of practices lead to high productivity and creativity and improved performance can be recorded. Human resource

management practices can be defined as the set of practices of a well-defined strategy, designed to attract, develop, motivate and retain employees for them to perform services to achieve the company's objectives (Widyanty and Mahfudz, 2020). Over time, researchers have shown that human resource management practices within a company can positively influence turnover (Guthrie and Datta, 2004), labor and business productivity, and financial performance (Huselid, 1995). The results of these studies indicate that these practices are sources of competitive advantage and that human resources can add value to the organization. They cannot be copied or reproduced and are therefore one of the main contributors to success. Investing in this resource increases the skills, awareness and commitment to the firm, which reduces the chances of them being replicated (Huselid, 1995).

Safety culture is a concept that describes the atmosphere inside a company where safety is understood and assimilated, being the primary property in obtaining the competitive advantage (Widyanty and Mahfudz, 2020). The construction sector is at high risk from the point of view of safety at work and for this reason, the culture of safety at work is an important aspect that helps to prevent risks and dangers. The implementation of various information technologies such as sensors (Smart cap or Blackberry Radar) connected to the Internet of Things leads to a safe climate that can create value for construction companies. This creates a secure environment that influences job satisfaction and commitment to the company and thus a transition to high efficiency and productivity is ensured (Randhawa and Kaur, 2014).

Productivity is defined as the relationship between input and output, respectively the ratio between results and sacrifice (Kale, 2016). High productivity aims for improved efficiency, which is reflected in the production of goods and services. It is thus a way to maximize the use of existing resources, including human capital, and can produce long-term competitive advantages (Widyanty and Mahfudz, 2020). One of the most common ways to increase productivity, efficiency and quality is to use digital technologies such as BIM, the Internet of Things, sensors or drones. They have a huge potential to increase the performance of any construction project and by using them, an increased work efficiency can be observed (European Construction Sector Observatory, 2021). The implementation and adoption of these digital media and the transition to digitalization of a rigid, traditional, strong sector locked in old patterns of work organization and processes can be the path to high productivity in the sector. A firm can also increase its competitiveness by increasing productivity and thus adding value to its products and services (Widyanty and Mahfudz, 2020). In the triangle of productivity, safety culture and human resource management practices, information technologies play a decisive role, as it can be seen in figure 4.

Figure 4. The role of the different information technologies in the different competitive advantages sources



Source: author's representation

In terms of resource management practices, the use of information technology has a positive effect on attracting labour as far as any employee wants to work in a more efficient environment, where he has the chance to develop his skills. Employee motivation also occurs when the individual uses high-performance software and hardware based on digital tools to carry out their work. Thus, an eloquent example is the site manager who has to prepare the necessary materials for different stages in a construction project: he does not have to travel in the field to keep track of materials and equipment, but with the help of drones, his work it is visibly facilitated.

Technological innovation is one of the main forces in the competition acting as a catalyst in those companies that implement it and over time can change the laws of competition (Răilean, 2011). Innovation is achieved by transforming knowledge into economic and social benefits because of complex interactions between a multitude of participants in the construction value chain, such as companies, research institutes, governments and local authorities.

A study of Nicolescu *et al.* (2010) in the White Paper on SMEs in Romania shows that in the domestic construction sector, the main competitive advantages of small and medium enterprises identified inside the industry are: quality of services (over 50% of participants), price/quality ratio (43%), low price of products or services (26.37%) and reputation.

Technological innovation and technology implementation are one of the main sources of competitive advantage, which is also confirmed by Răilean (2011) and Gumba *et al.* (2021). This is the pillar of the differentiation strategy, which is one of the two basic methods of obtaining competitive advantage (differentiation or cost (Porter, 1985)). Construction projects are becoming more and more voluminous and detailed in terms of information and their management can be made

easier by using information and computer technologies. Thus, steps such as design, planning and construction can be easily monitored and streamlined. The speed and accuracy of work is increasing and digital tools such as BIM or the Internet of Things (IoT) provide clear answers to current industry problems. The general European context also pushes for digitization and automation, the common goal being the development of energy-efficient, self-regulating buildings capable of self-regulation in terms of energy and resource consumption (Center for Digital Technology and Management München, 2018). Investing in innovation is risky, especially for small and medium-sized companies, because of the financial requirements, but the profitability over time is far superior to current investments. Also, a more competitive position of the company can be obtained and both the costs and the quality have to be gained.

Sustainability is a complex concept that manages to combine different spheres of human life and activities, in order to achieve a well-proportioned relationship between economic, social and environmental. This is a crucial element in the construction sector as it can provide a concrete solution between the above-mentioned issues. A high degree of fragmentation in this sector due to the variety of subcontractors existing in the projects, the fact that construction is responsible for more than 1/3 of the world's waste and produces more than 35% of spherical gases are just some of the peculiarities that the construction industry needs to take into account in order to be sustainable (Liu, 2020). Sustainable construction is a real source of competitive advantage and in the construction industry, the following elements of sustainable development can be observed (Liu, 2020):

- Economic (life cycle costs, low operating costs, nature and greening of spaces);
- Environment (limited use of raw materials and natural resources, protection of the ecosystem);
- Society (improved quality of life, safe work environment).

Sustainable construction can be defined as the process that is carried out using the basic objectives of sustainable development presented above. Project management faces various obstacles in its implementation process and the application of green building standards becomes part of the company's marketing strategy. Green Buildings is a new stage in the development of construction technologies and for these, a number of European standards have been developed: BREEAM (Building Research Establishment's Environmental Assessment Method), LEED (Leadership in Energy and Environmental Design) or DGNB (Deutsche Gesellschaft für Nachhaltiges Bauen) (Liu, 2020). All these standards regulate a multitude of aspects related to construction and various environmental aspects such as energy, transport, water, material and resources, air quality and innovation.

The COVID-19 disease challenged several sectors and areas of the industry. Because of the pandemic, nations, regions, and localities have implemented lockdowns and restrictions regarding human movement in order to slow the spread of the disease. It is not surprising that the authorities imposed restrictive measures on such an important industry as construction, resulting in the postponement, delaying, or cancellation of current projects. In addition to the negative aspects brought by pandemics, there have also been a number of positive ones. Several competitive advantages in overcoming the pandemic challenges have been spotted in the studies of Leontie *et al.*, (2022) through them digitalization or increased technology usage being counted. Turning on to digital is one of the main competitive advantages, which exists nowadays, and along with technology usage, could change the whole face of the industry (Foracel *et al.*, 2020).

The main findings of the current section may be seen in Table 1, which summarises the main findings in an easy accessible and understandable manner.

Table 1. Main competitive advantages in the construction industry

Categories of competitive advantages	Source
Technology and Innovation	(Strassmann, 1988)
Producer of rapid innovations	(Ngowi and Rwelamila, 1999)
Safety culture through usage of digital technologies as smart cap or Blackberry Radar	(Widyanty and Mahfudz, 2020)
Productivity through usage of the latest technologies	(European Construction Sector Observatory, 2021)
Technological innovation and technology implementation	(Răilean, 2011)
Management and Organization	(Ngowi and Rwelamila, 1999)
Development of organizational structures capable of producing innovation	(Ngowi and Rwelamila, 1999), (Afraz <i>et. al.</i> , 2021)
Activities control and management- organizational routines	(Barney, 1992)
Forming strategic alliances between companies	(Marichova, 2013)
Human resources management practices as: investment in the skills, trainings, improving the commitment of the employees to the firm	(Widyanty and Mahfudz, 2020) and (Huselid, 1995)
Safety culture	(Widyanty and Mahfudz, 2020)
Sustainable construction	(Liu, 2020)
Financing	(Soubra, 1989)
Finding funding for specific projects	(Soubra, 1989)
Big companies have resources and invest in the use of digital technologies	(Widyanty and Mahfudz, 2020)
Size of the entity	(Allianz and Euler Hermes, 2020)
Large companies impose high entry conditions	(Allianz and Euler Hermes, 2020)
Large companies create oligopoly in specific market segments	(Marichova, 2013)
Reputation	(Nicolescu <i>et al.</i> , 2010)

Discussion

Determination and identification of the competitive advantages, which exist in the construction sector, is the main goal of the current research. Choosing the proper practices to obtain competitive advantages helps in setting the long-term strategy for the companies, which can lead to profitability and efficiency.

The construction process is extremely complicated and the number of actors and processes, which are required to build a structure, reach high levels. Porter himself states in his book "Competitive Advantage" that the notion of competitive advantage resonates with that of the value chain: the framework of strategic thinking under which a company's activities produce relative costs and differentiation (Porter, 1985). In order to understand and observe better the competitive advantages, respectively the points along the value chain where they might arise, an analysis of the construction value chain has been performed.

Depending on their location and category, construction projects can be divided into residential, non-residential, civil engineering, or renovation projects. As well as varying in scope, they can be small projects or giant structures (like infrastructure), and are subject to national and international laws, regulations, and conditions. Thus, the specific contexts of construction projects have a major impact on the requirements, composition and significance of the various stages and participants in the value chains. The location plays an essential role in the case of the construction industry and depending on it, several competitive advantages can emerge as finding financing (especially in the developing countries) or human resources existence. At the same time, depending on location, activity sector and type of construction project, the structure of the construction market triggers several competitive advantages, which apply only to the big entities, such as creating alliances or the creation of oligopoly. For a small company trying to penetrate a new construction subsector, competitive disadvantages appear, as finding high entry conditions or the lack of reputation.

Located in an environment regulated by local authorities, governments and national and international legislation frameworks, the construction value chain includes four types of actors: financiers, developers, users, and owners. The construction process consists of several steps and involves the conversion of raw materials into finite products, which are then assembled into complex structures by builders under the supervision of field professionals.

A number of factors (drivers) shape the value chain of the construction industry, which influences the behaviour of participants and actors. Demography, real estate market forces,

environment, policies, infrastructure or technologies are among these drivers. Regardless of the stage, they can make a significant positive contribution.

Through the general competitive advantages, which can be obtained, cost advantage or differentiation can be counted. They must be implemented in the firm strategy on the long term and represents the capacity of either building with lower cost or building premium assets which other competitors are not able to produce.

In the complicated value chain of constructions, the initial conditions and the managerial decisions play a specific role. Through initial conditions items like pre-existing reputation, existing links between suppliers or pre-defined processes can be mentioned.

As shown in Table 1, construction companies can obtain specific competitive advantages by acting in the construction industry that fall into four categories. Technology and Innovation, Management and Organization, Financing and Aspects depending on the size of the entity represent the four main categories, which had been found inside the construction industry.

In the current paradigm switch of the construction industry (Foracel *et al.*, 2020) technology and innovation through implementation and usage of the different digital technologies and assets plays a central role in terms of competitive advantage. Digitalization, along with its technologies and benefits can improve in a decisive manner the performances of the companies, especially in very difficult circumstances as pandemics or supply chain short comes (Leontie *et al.*, 2022). The management and organization of the companies, respectively their strategies are of essential importance and through human resources practices, safety culture or sustainable constructions several competitive advantages can be obtain. The financing item becomes essential in the developing countries and the one who is able to find resources for building a project definitely gains an advantage.

Conclusions

Based on quality analysis of the specialized existing literature, the identification of the main types of competitive advantages that exist within the construction sector was realized. A presentation of the construction value chain has been drawn up as far as its knowledge constitutes a genuine source of competitive advantage. Understanding it is also essential because from the multitude of activities, processes and actors, the interrelationship between them can generate additional value and potential optimizations can take place.

The sources that generate competitive advantages in the construction industry are multiple, starting from initial conditions such as reputation or existing ties formed, to financing or management and organization. The identified competitive advantages are also numerous, starting from the

company's strategy, high utilization of information technologies or human resources management practices, to productivity, technological innovation and sustainable constructions.

A classification of the competitive advantages was conducted and four different categories have been identified: Technology and Innovation, Management and Organization, Financing and Size of the Entity.

Choosing the construction enterprise's long-term strategy for becoming more efficient, sustainable, and competitive represents indeed a difficult task, for which the current study tries to offer solutions. In the first step, the size of the entity is important along with its region where it is active. Depending on these two variables, the proper strategy should be carefully chosen. General findings, which apply to all companies of all construction industry's subsectors, are represented by the several competitive advantages, which emerge, from digitalization and the usage of the existing technologies in the sector. At the same time, competitive advantages as safety culture, development of organizational structures, which are able to produce innovations and technological improvements, offer various benefits and attract at the same time the human resources from the field.

Several of the competitive advantages identified in the specialized literature highlighted the central and extremely valuable role that information technologies occupy in the construction industry, especially in the context of the current European construction industry that offers green, energy efficient buildings built with low CO2 emissions.

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