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Identifying and assessing complexity emergent behaviour during mega infrastructure construction in Sub-Saharan Africa

Iliyasu Abdullahi, Michal K. Lemanski, Georgios Kapogiannis, Carlos Jimenez-Bescos

ABSTRACT

Objective: The objective of the article is to identify, assess, and classify complexity indicators based on the impact level of their emergence behaviour during mega infrastructure construction.

Research Design & Methods: The study adopted a quantitative methodology: online questionnaire survey to gather data and Exploratory Factor Analysis (EFA) to analyse data.

Findings: Task difficulty, dispersed remote teams, multiple project locations, and project scope were identified as structural complexity indicators that surged extreme difficult to project managers. In comparison, project duration, project tempo, construction method, and uncertainty in methods were found to trigger uncertainty during construction.

Implications & Recommendations: This study lays foundation for theoretical exploration of an important phenomenon in the global economy, *i.e.* the development of mega infrastructure projects in developing countries. The contextualization of the study in Sub-Saharan Africa builds knowledge of such project complexity in an under-researched context. Practically, the results enable managers to create tools and frameworks to assess overall project complexity level and evaluate their competence incongruently to complexity to select appropriate complexity management strategies. Policy makers are informed about factors which can impede execution of mega infrastructure projects, thus they adjust risk assessment in such projects and better allocate resources to facilitate sustainable development of developing economies.

Contribution & Value Added: The study provides a foundation for extensive research into infrastructure complexity in Sub-Saharan Africa. Additionally, it provides insights to parties willing to explore Public-Private infrastructure initiatives in the region.

Article type:	research article
Keywords:	project complexity management; project manager; mega infrastructure construction; complexity; Sub Saharan Africa
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INTRODUCTION

Sub-Saharan Africa has attracted an more and more investments in infrastructure projects (Gemueva, 2018; Owusu-Manu *et al.*, 2019). However, most of these projects do not meet the originally set deadlines and budgets (Gbahabo & Ajuwon, 2017). These in turn lead to high social and economic costs imposed on already vulnerable societies and economies. Such a systematic inability of project managers to manage complexity of mega infrastructure projects urgently requires empirically supported research to identify, assess, and systematise the complexity problems of such projects.

It is widely accepted that complexity will remain an inherent part of infrastructure development due to the nature of systems that exist when actualizing these projects, coupled with enormous challenges that complexity exerts during construction (Kermanshachi & Safapour, 2019). However, com-

plexity is a discouraging element for businesses' participation in Public-Private Partnerships, i.e. the preferred finance medium for infrastructure building in developing economies. This makes it imperative to elucidate infrastructure complexity in the region in need of more infrastructure investment.

Williams (1999) observes that complexity typically emerges during infrastructure construction from either difficulty surging from the interdependence between project elements and its people (i.e., structural complexity) or incessant change and unknown uncertainty resulting from the interrelationship between both components (i.e., dynamic complexity). Identifying complexity indicators during mega construction based on their emergence behaviour could be a precursor to elucidating and measuring projects' complexity during the planning phase for proactive complexity management (Bakhshi *et al.*, 2016; Lu *et al.* 2015). However, recent studies criticize such an approach as static, possibly misleading project managers to underestimate complexity during the construction phase (Kermanshachi & Safapour, 2019), and failing to reflect complexity emerging characteristics (Luo *et al.*, 2017). Moreover, identifying indicators at the planning stage may not necessarily depict complexity impact during construction. To account for this critique, the study presented in this article aims to identify the actual impact level of each complexity indicator from their emergent behaviour during construction. As such, it can serve as a proactive medium for complexity management to support project managers in their role effectively in the context of Sub-Saharan Africa. At the same time, this approach helps to augment findings from a major recent work of Söderlund *et al.*, 2017, in which complexity indicators are only identified and classified.

In the light above, this article aims to identify, assess, and classify complexity indicators based on the impact level of their emergence behaviour during mega infrastructure construction from the perspective of experienced project managers. The intended contribution is to enable managers, policy makers and potential investors to better comprehend the complex nature inherent within the terrain of inquiry, and to enable them to design strategies that account for peculiarities of Sun-Saharan Africa simultaneously ensuring success of such mega infrastructure projects.

The article is structured as follows. In the next section, relevant literature will be reviewed following the critical literature review method used in recent studies by Sieja and Wach (2019) and Wach (2020) with a specific focus on mega infrastructure project complexity and the identification of its dimensions. Next, methods and data will be presented, and the results of the empirical study will be discussed in relation to the reviewed literature. Finally, implications of the received findings will be discussed.

LITERATURE REVIEW

Mega infrastructure project commands a budget of more than a billion USD and is inherently characterized by the complexity that surges from its large size, scope, numerous task and components, and high uncertainty occurrence resulting from more extended project period, scope change, and contravening political interest (Siemiatycki, 2015). Complexity definition in the construction project management literature remains vague due to researchers' partial and contesting views across time-space (Luo *et al.*, 2017). The earliest definition was by Baccarini (1996) who defines complexity as 'consisting of many varied interrelated parts,' which can be characterized in terms of differentiation and interdependency. Differentiation is the number of varied components in a project (*e.g.*, tasks, specialists, subsystems, and parts), and interdependency is the degree of interaction between these components. Williams (1999) uses this definition mainly to describe structural complexity. Furthermore, Williams suggests the need to capture Turner and Cochrane (1993) uncertainty in goals and means as an aspect of complexity. This assertion influenced researchers to conceptualize complexity differently and perhaps it is the reason why today complexity is often associated to project difficulty and risk (Dao *et al.*, 2017).

Notwithstanding the extensive descriptions of complexity in the literature, practitioners have referred to it as difficult, complicated, knotty, unique, lacking clarity, and intricate. Geraldi *et al.* (2011) reiterates that researchers should always provide an unequivocal distinction between complex and complicated systems when discussing the complexity concepts. Cicmil *et al.* (2009) distinguishes the two streams covering complexity discussion in the literature; the first dimension discussed how complexity manifests in a project – complexity in the project. In contrast, the other dimension covers factors that make a project difficult to manage. The study highlights the first dimension to be theoretically driven

through the complexity theory lens, while the latter is practitioner-driven with the assertion that identifying complexity factors on a project could enable project managers to define decisions and corresponding actions required to manage complexity (Dao *et al.*, 2017; Kermanshachi & Safapour, 2019).

The current study aligns with the latter dimension as it aims to investigate complexity that causes difficulties from the project manager's perspective. Hence, the notion for adopting Xia and Chan (2012) complexity definition as project characteristics that are complicated, multi-faceted, and composed of many interconnected parts.

Research investigating infrastructure project complexity had been conducted from various dimensions over the years. However, no consensus taxonomy clearly describes what complexity constitutes or how its occurrences could be managed (Bakhshi *et al.*, 2016). Most researchers confine to studying complexity dimensions and their effects on project performance with the firm belief that if a project manager perceives complexity from the highlighted indicators, then the right decisions and corresponding actions required to manage complexity could be defined (Dao *et al.*, 2017; Kermanshachi & Safapour, 2019).

Gidado (1996) broadly categorizes complexity sources on construction projects into two distinct groups: elements inherent to performing individual tasks that may resonate from a combination of the project's intrinsic complexity and components necessary to form a workflow, sequence rigidity, and construction elements overlap. Girmscheid and Brockmann (2008) classify project complexity on large-scale engineering projects into overall complexity, task complexity, social complexity, and cultural complexity. Their study described task complexity as the density of work that could be managed by decision-making and coordination to depict structural and dynamic complexity.

Lessard *et al.* (2014) investigated the various project properties and features that attribute complexity and highlighted technical and institutional complexity as complexity dimensions. Nguyen *et al.* (2015) identified organizational, technological, environmental, socio-political, infrastructure, and scope as complexity dimensions on transport projects using fuzzy analytic hierarchy process. Kermanshachi and Safapour (2019) categorize construction project complexity indicators attributes into stakeholder management, governance, fiscal planning, quality, legal, interfaces, execution target, design and technology, location, scope definition, and project resources. Mirza and Ehsan (2017) classify complexity factors based on schedule constraints during infrastructure development into time, scope, cost, quality, resource, and risk complexity.

He *et al.* (2015) used the content analysis technique to explore existing literature in which complexity was categorized into technological, organizational, goal, environmental, cultural, and information complexity. Further, Bosch-Rekveldt *et al.* (2011) describe complexity as technical, organizational, and environmental (TOE). Chapman (2016) classifies complexity indicators on rail megaproject into three categories, the delivery team (who), delivery process (how), and project characteristics (what).

Despite these proposed classifications, meagre studies categorize complexity indicators based on the properties of their emergence behaviour on infrastructure projects. Remington and Pollack (2016) categorize complexity influencing factors into structural, technical, directional, and temporal complexity. Williams (1999) highlights that complexity emerges from structural uncertainty and uncertainty. Lu *et al.* (2015) proposes using task and organization perspectives to determine the dynamic emergence effects of complexity influencing construction projects' factors. According to the study, defining the complexity indicators underlying emergence behaviour could enable project managers to understand better infrastructure project complexity, which subsequently improves overall project performance. In this view, the study focused on the emergence behaviour of complexity indicators (*i.e.*, structural and dynamic) within the project construction site, as seen from the table in the Appendix (Kian Manesh Rad & Sun, 2014).

RESEARCH METHODOLOGY

The scope of this study was limited to the project execution phase, because in general construction management challenges exacerbating complexity are mainly domiciled on the construction site. Studies capturing complexity in other regions adopted the Delphi survey method to assess, rank, and weigh

complexity indicators on various project types from distinct dimensions. However, a different approach was preferred for this study, grouping complexity indicators based on the impact level of their emergent behaviour from the project manager's perspective.

Through an extensive literature review, seventy-three complexity indicators prevalent on the construction site were identified and used to design a nominal scale pilot study questionnaire. The first section required participants to either agree or disagree if a complexity indicator applies during infrastructure construction. In the next section, participants either ticked structural (S), dynamic (D), or both (B), the attributes which apply to each complexity indicator emergent behaviour. Seven built environment academicians – three tutors and four postgraduate students with prior experience developing mega infrastructure – and ten field professionals were selected to ascertain the minimum sample requirement of 10 participants for a pilot study (Hill, 1998).

In this pilot study, sequel to distributing the questionnaire form online, a video-conference call was conducted to explain and clarify details and ensure participants understood all concepts and questions asked in the survey. The researchers confirmed that repetitiveness, ambiguity, and redundancy were eliminated from the final complexity indicator assessment questionnaire based on gathered data. Forty-nine indicators were identified to be prevalent on the construction site, 21 into the structural dimension, and 28 formed the dynamic dimension seen from the Appendix.

The final version of the main questionnaire design captured how project managers perceive complexity indicator intensity based on its emergence behaviour. The questionnaire contained 55 survey questions that required answers, structured into three sections. Section 1 captured participant's demography. Section 2 entailed structural complexity indicators. Project managers were required to select the extent to which they perceive an indicator contributes to the overall project complexity on an 11-point Likert-type scale, where 0 stands for no impact and 10 for extremely high impact towards increased project difficulty level. Section 3 captured dynamic complexity indicators. Participants were required to select between 0 (no influence) and 10 (extremely high influence) the extent to which an indicator leads to uncertainty that predisposes project managers. The Likert-types scales were used to measure complexity based on previous studies, which also employed Likert scales to investigate construction project complexity: Luo *et al.* (2017), Dao *et al.* (2017), and Mirza and Ehsan (2017).

Homogenous sampling was used for its potential to obtain a representative sample with similar characteristics (Sharma, 2017). This technique ensured that the selected sample was better positioned to define how intense complexity indicator emergence characteristics contribute to overall project difficulty and uncertainty during construction from their experiences working on this type of projects. Being aware of the problems of conducting surveys in different cultures and in the context of developing economies reported by Bartosik-Purgat and Jankowska (2017), the designed questionnaire was administered online but was preceded and followed by personalized inquiries. The target was 358 project managers working on mega infrastructure projects and registered with the Federation of Construction Industry (FOCI) database (N=358). The FOCI publishes a regularly updated list of approved large construction contractors in the region. The survey was conducted on Qualtrics platform with the university address to ensure respondents received this as an academic study. Data collection lasted from September 1st, 2020, to November 29th, 2020. A broad description of the research project was given in the introductory section together with research ethics forms required by the authors' institutions.

When the survey was closed, 189 entries were recorded. Next, researchers screened for partially completed entries, which led to the final sample of 142 entries (n=142), representing a 41% response rate. Respondent's industry experience ranged between 6-30 years, with the majority (57%) having over 16 years of work experience. In terms of professional expertise, most respondents were civil engineers (51%), which is a common practice on mega construction sites.

A popular software package (IBM SPSS) was used to conduct the Exploratory Factor Analysis (EFA) and categorize complexity indicators into dimensions describing their emergent behaviour's intensity level. This technique was employed because it allows finding underlying factor structure for the complexity indicators. The EFA was conducted for each complexity dimension.

The minimum amount of data needed to perform factor analysis was satisfied using likewise deletion – the final sample size for the first dimension was 121, and 117 for the second dimension. The

sample size threshold of 100 cases suggested by Gorsuch (1997) and Kline (2014), or five samples per variable, (Cattell, 2012; Gorsuch, 1997) was achieved.

The structural complexity dimension captured indicators that increase complexity emerging from the project structural attribute. Conducting the EFA, data were subjected to factor analysis using Principal Axis Factoring and oblique Promax rotation. The Kaiser-Meyer-Olkin (KMO) values for individual items were above 0.5 for a sample size less than 200 (MacCallum *et al.*, 1999), and the KMO measure for sampling adequacy was 0.81, which indicates that the sample data is meritorious to conduct EFA (Tabachnick *et al.*, 2019). Bartlett's test of sphericity c2 (210)=3122.09, p<.001 showed a patterned relationship exists between the items. Using an eigenvalue cut-off of 1.0, four factors were found to explain a cumulative variance of 73%. Table 1 depicts factor loading after using a significant factor level of 0.40 suggested by Field (2014). With the exemption of 'project density' and 'the lack of technical know-how,' all elements were above the 0.40 significant factor level.

Additionally, elements from the established factor scale must have demonstrated internal consistency of at least 0.60 for Cronbach α coefficient. This was achieved, and alpha if-item-deleted was collectively found to be less than Cronbach α coefficient, in line with widely used procedures suggested by Nunnally and Bernstein (1978). Corrected- item-total correlation for each element in a classified group was greater than the 0.500 thresholds suggested by Cristobal *et al.*, (2007), which signified that each element was highly consistent with the sum of other elements. Details are presented in Table 1.

After completion of the above-mentioned tests, the final instrument for structural complexity indicator consisted of 19 elements. These were classified into four factors, to explain the emergence behaviour intensity level. The structural complexity intensity factors were labelled as extremely high (F1), high (F2), moderate (F3), and low (F4) based on Thamhain's (2013) overall project complexity level dimension taxonomy. The defined complexity intensity clusters captured more than three elements (Tabachnick *et al.*, 2019), demonstrating the intensity each indicator contributes to overall project complexity from the project manager's perspective during mega infrastructure construction.

Table 1. The EFA result for structural complexity indicators

Element	Factor loading	Eigenvalue	CITC	Alpha if item deleted	Cronbach's
Extremely high		10.930			0.931
Difficulty of task	0.792		0.797	0.919	
Rigidity of sequence	0.855		0.883	0.911	
Project scope	0.720		0.765	0.922	
Availability of skilled workforce	0.946		0.854	0.914	
Physical locations	0.749		0.711	0.927	
Multiple locations	0.846		0.762	0.923	
Site topography	0.519		0.706	0.929	
High		1.732			0.885
Type of structure	0.404		0.758	0.758	
Number of project participants	0.516		0.685	0.685	
Project budget	0.896		0.805	0.830	
Quality requirement	0.734		0.767	0.849	
Moderate		1.469			0.848
Structure height	0.545		0.505	0.854	
Numerous task	0.768		0.765	0.791	
High variety of task	0.425		0.669	0.815	
Project scheduling	0.561		0.624	0.828	
Construction method	1.037		0.743		
Low		1.283			0.870
Site perimeter	0.757		0.707	0.860	
Number of elements	0.837		0.826	0.752	
Required engineering hours	0.756		0.727	0.838	

Source: own study.

The second questionnaire section established the level to which dynamic complexity indicator emergence behaviour contributed to uncertainty and incessant change during mega infrastructure construction from the project manager's perspective. Factor analysis using Principal Axis Factoring and oblique Promax rotation was performed on the data set. Individual items KMO value was above 0.5, and the KMO measure was 0.843, which shows the sample was adequate to conduct EFA. Bartlett's test of sphericity of c2 (378)=3602.392, p<.001 depicted that a patterned relationship existed between the items, and factor analysis may have been applied on this sample. Eigenvalue cut-off of 1.0 was adopted, and six common factors were extracted to explain the cumulative variance of 75.196% (Table 2). The significance factor level of 0.40 threshold was set, and each extracted factor label showed an internal consistency above 0.60 for Cronbach α coefficient. Besides, all indicators had a corrected-item-total correlation above the 0.300 prescribed threshold.

The final instrument result consisted of 23 indicators, classified into four-factor labels after elimination of factor F5 and F6 due to low internal consistency, and deployment of workers indicator, because it loaded below the 0.40 threshold. Perhaps, this could be due to the local procurement strategies which involve specialist subcontractors. Project managers tend to focus on the lead subcontractor rather than on their work team (Rosli *et al.*, 2018).

Each of the four complexity factor labels consisted of at least three indicators, defined using Thamhain's (2013) overall degree of project uncertainty taxonomy, to describe how project managers perceived each indicator contribute to uncertainty and continuous change during the construction phase. The dynamic complexity factor labels were Chaos (F1), Unforeseen Uncertainty (F2), Foreseen Uncertainty (F3), and Variations (F4), described below.

The received results are discussed in the following chapter.

RESULTS AND DISCUSSION

Structural complexity

Extremely high emergent effect (F1)

The extremely high dimension (F1) depicted elements that require competent project managers to manage complexity intensity exerted during mega infrastructure construction (International Centre for Complex Project Management, 2012; Remington, 2016). Sequence rigidity leads to construction freeze due to the difficulty it enacts in performing tasks onsite. This occurrence leads to high complexity for managers, as found in the survey. Similarly, managers could be overwhelmed if the project scope is enormous, as Bosch-Rekveldt *et al.* (2011) points out that scope size plays a crucial role in increasing structural complexity.

The absence of skilled workers to manage the project scope and execute tasks during construction is a major complexity. Skilled workforce is pivotal on the construction site (Dale, 2013). Kermanshachi and Safapour (2019) showed that primary stakeholders on construction projects in the United States found the absence of skilled workers to contribute to complexity negligibly. However, in the current study, project managers in Sub-Saharan Africa found this indicator to lead to substantial complexity on the construction site. This disparity could be explained by prevalence of automation on construction sites in the United States. Even more so, there is a massive resource pool of skilled immigrant workers, which is the contrary to the reality of work in developing nations where the absence of skilled workers is prevalent (Jarkas, 2017).

Problems identified in previous research: physical location of the project in terms of access (Dao *et al.*, 2017), existing infrastructure onsite (Chapman, 2016), impact on the execution plan (Kermanshachi & Safapour, 2019), the location remoteness (Bosch-Rekveldt *et al.*, 2018), and site topography (Xia & Chan, 2012), were all found to lead to high structural and technical complexity onsite, overwhelming project managers extensively. If the project must depend on multiple projects for technical input and human resources, the complexity becomes enormously high, just as identified in the current study.

High complexity emergent effect (F2)

The high complexity level (F2) dimension captured four indicators that project managers found to contribute to project difficulty during the construction phase exuberantly. The infrastructure type and its function play a pivotal role in determining the number of project participants (Dao *et al.*, 2017), the expected quality requirement (Xia & Chan, 2012), and the overall required budget (Bosch-Rekveldt *et al.*, 2011). Constructing a new project type would require a higher budget to purchase innovative technology and employ specialist subcontractors to support the project manager. When provided funds are insufficient, the tendency towards high complexity increases as the manager is constrained. Correspondingly, when sufficient funds are provided, coordinating numerous participants, and employing new technology is certainly a source of added complexity as much time would be expended to get the project team acquainted with the novel approach.

Delivering projects with minimal defects is a horrendous task for managers, since attaining maximum quality would require continuous supervision, coordination, and monitoring of the numerous workforce. This study established how these indicators contributed to high complexity and suggested that project managers should employ proactive project management strategies, ameliorate management of complexity emerging from these indicators during construction, confirming insights from the study of Nguyen *et al.* (2015).

Moderate emergent effect (F3)

This dimension comprises five indicators that moderately contribute to complexity when managing mega infrastructure construction projects. Managers might find height to moderately influence difficulty because the mega infrastructure structures are considerably high in most instances, which results in a need for various equipment to support work at height, and the prospect of coordinating workers on-site becomes lower, thus leading to complexity (Xia & Chan, 2012). The higher the project, the greater the number and variety of tasks to be performed, which in turn requires innovative construction methods and effective scheduling of artisans and materials to manage complexity (Gajić & Palčič, 2019). Nguyen *et al.* (2015) showed that the number of tasks leads to organizational complexity, which experienced project managers in the current study found to moderately trigger difficulty as professionals get accustomed to project height from participating in various infrastructure construction projects (Kermanshachi & Safapour, 2019).

Lastly, unfamiliar construction methods such as prefabrication contribute to high complexity on building projects (Xia & Chan, 2012). Participants in this study opined this as moderately contributing to complexity, while moderate complexity indicators can be managed by adopting reactive project management strategies that support managers to optimally supervise task performance and coordinate schedules (Ochieng & Hughes, 2013). These complexity elements are peculiar to every project type. Findings of this study suggest that participating project managers have developed their competencies to contend their emergent behaviour effect over the years.

Low emergent effect (F4)

The F4 category captured three elements that according to project managers slightly contributed to difficulty in managing mega infrastructure construction. These elements inherently form part of overall project characteristics. Mirza and Ehsan (2017) identified site perimeter, required engineering hours, and numerous elements as complexity indicators that impact project performance during infrastructure development with no mention of their effect level. Xia and Chan (2012) highlighted that large magnitude does not necessarily reflect high complexity on large building projects, which aligns with findings from this study. It was found that size surges minimal complexity at the construction stage. Further evidence to this finding was from the study of Lebcir and Choudrie (2011) that indicated that size has a low influence on project cycle time, leading to complexity.

Theoretically, the larger the project size, the more physical elements and required engineering hours. Ahn *et al.* (2017) established that numerous project elements lead to meagre complexity when adopting interface management on construction projects. At the construction phase, Gidado (1996)

highlights how the high number of elements forming a workflow triggers complexity, with no mention of the extent to which these indicators lead to complexity. The current study addressed this gap by identifying that the number of elements that form a project and the hours required during the construction phase contribute to minimal complexity on mega infrastructure construction, according to project managers in Sub-Saharan Africa. Perhaps this could be due to the sophisticated machinery and advanced technology found on this project type (Ofori, 2015).

Table 2. EFA result for dynamic complexity indictors

Element	Factor loading	Eigenvalue	CITC	Alpha if item deleted	Cronbach's
Chaos		**11.741**			**0.929**
Project duration	0.545		0.599	0.939	
Project tempo	0.915		0.849	0.909	
Construction method	0.809		0.837	0.911	
Uncertainty in methods	0.876		0.864	0.906	
Reliance on other projects	0.859		0.795	0.916	
Project teams' capability	0.837		0.820	0.913	
Unforeseen uncertainty		**3.380**			**0.910**
Uncertainty in scope	0.545		0.779	0.779	
Change in project scope	0.542		0.773	0.892	
Change in the project specification	0.664		0.844	0.874	
Inability to estimate accurately time and budget	0.849		0.763	0.893	
Quantity of information to analyse	0.745		0.722	0.900	
Foreseen uncertainty		**1.898**			**0.904**
Multiple project goal	0.545		0.631	0.901	
Variety of perspective	0.768		0.791	0.882	
Form of contract	0.425		0.673	0.895	
Disperse teams	0.561		0.690	0.893	
Multiple locations	1.037		0.779	0.883	
Multiple time zone	0.507		0.693	0.893	
Project drawings and detailing	0.877		0.763	0.885	
Variations		**1.573**			**0.855**
Geological condition	0.500		0.630	0.835	
Immediate project environment	0.438		0.626	0.837	
Plant deployment	0..654		0.610	0.840	
Regulations	0.708		0.747	0.807	
Lack of clear project goal	0.690		0.743	0.805	
Medium Variation		**1.368**			**0.696**
High number of goals	0.673		0.458	0.670	
Scope of work	0.871		0.601	0.493	
Ambiguity of scope	0.459		0.482	0.642	
Low Variation		**1.095**			**0.500**
Multiple project goal	0.455		0.355	–	
Number of information source	0.575		3.335	–	

Source: own study.

Dynamic complexity

Chaos (F1)

This classification consists of six indicators that attribute to unexplainable change during infrastructure construction. Project managers are unable to explain how these elements negatively impact performance. They are inherent project characteristics and influence every project type (Thamhain, 2013) and their effect is unforeseeable at the planning stage (Flyvbjerg, 2017).

Mirza and Ehsan (2017) highlighted project duration as the primary source of schedule complexity in infrastructure development projects. Overstaying on the project site may lead to problems with the morale of the project team and negatively influence project tempo (Chapman, 2016). The need to keep up a high tempo during construction requires the manager to be provided with an umpteenth supply of resources, which, if unavailable, prevent the manager from effectively managing the construction site (Xia & Chan, 2012).

This study found that the selected construction method and its uncertainty lead to chaotic construction sites in Sub-Saharan Africa. The problem could be associated with the lack of experience using innovative construction methods and the absence of capable staff to implement these methods (Jarkas, 2017). In most instances, managers are left to rely on other projects for technical support, limiting their ability to enact control on the construction site. This study suggested methods and strategies that support framing and decimating project information in real-time which can be used to ensure minimal impact from these indicators, while managers are informed how to identify chaotic projects more accurately during the planning phase.

Unforeseen Uncertainty (F2)

The study identified five indicators that project managers found to be unpredictable when constructing mega infrastructure. These indicators are identifiable and known to proliferate uncertainty and continuous change, yet managers find it challenging to determine their occurrence frequency during construction and manage these scenarios.

At the planning stage, poorly defined project scope lay the grounds for avoidable and incessant rework during construction, potentially derailing project performance through delay and cost overrun (Bosch-Rekveldt *et al.*, 2011; Gajić & Palčič, 2019). Scope uncertainty during construction is the major cause of design change that leads to project specification change onsite (Nguyen *et al.*, 2015). When this scenario occurs with no contingency provision for materials and manpower to curtail the situation, managers cannot accurately estimate project time and budget. This potentially increases uncertainty on the construction site, decapitating managers from coordinating and controlling work in a manner that ensures the project performs to its set out goals. To condone the dynamic complexity effect emancipating from the project scope, project managers should look to adopting reactive project management strategies (Maylor *et al.*, 2008). Thus, elements in this category would enable managers to determine a project susceptible to uncertainty and incessant change before moving to the site.

Foreseen Uncertainty (F3)

This factor label comprises seven indicators that contribute to constant changes during construction. However, with an effective management plan, these indicators can be adequately managed. Their occurrence leads to contingencies during infrastructure construction, attributed to incessant delay and budget increase (Thamhain, 2013). Managing multiple stakeholders' goals and their contesting perspective to what the project should be is an occurrence that is unavoidable on mega infrastructure sites. In the same vein, Gajić and Palčič (2019) found that on an international development project, the inability to clarify such contesting goals was a major cause of uncertainty on-site, since managers were unable to accurately determine the project scope.

Furthermore, relying on multiple locations to support the site – just as seen in having a batching plant outside the construction site – exposes the project to uncertainty, because dependence on virtual teams working across different time zones increases the project manager's dynamic complexity. When there is a need to clarify the work drawings on-site and the manager cannot contact the design team at a different time zone immediately, manager's ability to respond in time and make comprehensive decisions on site is constrained.

Variations (F4)

This dimension consists of indicators that project managers recognise as prompting uncertainty during mega infrastructure construction. Their impact level is well known and can be effectively managed by adopting project management guidelines and tools suggested by Remington, 2016. These indicators

are attributable to the request for information (RFI) and variation cost to manage uncertainty. Potentially, managers expect uncertainty to emerge from the project environment, the lack of clear goals, and plant deployment, which could only slow the project tempo with no disruption to construction output on-site.

CONCLUSIONS

In general, findings derived from this research will help various stakeholders to be more cautious on project complexity effects. More specifically, they will help project managers to better assess overall project complexity by focusing on indicators with excruciating effects, emphasize developing project management strategies that support managers contend with complexity, and appropriately allocate project resources. For project managers who are new to the context of developing economies, this article, based on insight from experienced managers of mega infrastructure projects in Sub-Saharan Africa, can serve as a guide to develop their competencies further, in order to contend with difficulties inherent in complex infrastructure projects. As such, this article can be an important reading for project managers who plan to work in locations with the transforming and convoluted institutional environment described by Kenneth-Southworth *et al.* (2018). For policy makers, a reading of this article should help identify risk areas where delays and budget overruns could cause particularly painful effects, and thus save resources of already vulnerable local economies and communities. This could help to ensure more investments in infrastructure development to be attracted to Sub-Saharan Africa to support its industrialization, advocated by the Infrastructure Consortium for Africa (2018).

This article opens a fertile ground for extension and replication studies to devise project management strategies that contend with complexity trajectories on infrastructure projects. Insights from a recent review of work on development of knowledge during the internationalization process of developing economy firms (Głodowska *et al.*, 2019) suggest that extensions accounting for more social-cultural variables offer a particularly promising way of advancing findings from this study. Specifically, we call for research that could explain how international sharing of knowledge might mitigate problems of complexity of projects in infrastructure firms in various institutional environments.

Future research should also confirm whether the categorization of complexity adopted here is consistently applicable beyond land infrastructure mega-projects being built in Sub-Saharan Africa. Along these lines, the size of investment in infrastructure in China and involvement of international entrepreneurs in developing economies, in particular high numbers of foreign entrepreneurs in China (Lemanski, 2018), suggests a need to test factors which contribute to an increase in projects' complexity elaborated in this study in the context of China and other developing economies.

REFERENCES

Ahn, S., Shokri, S., Lee, S., Haas, C.T., & Haas, R.C. (2017). Exploratory study on the effectiveness of interface-management practices in dealing with project complexity in large-scale engineering and construction projects. *Journal of Management in Engineering, 33*(2), 04016039. https://doi.org/10.1061/(asce)me.1943-5479.0000488

Baccarini, D. (1996). The concept of project complexity–a review. *International Journal of Project Management, 14*(4), 201-204. https://doi.org/10.1016/0263-7863(95)00093-3

Bakhshi, J., Ireland, V., & Gorod, A. (2016). Clarifying the project complexity construct: Past, present and future. *International Journal of Project Management, 34*(7), 1199-1213. https://doi.org/10.1016/j.ijproman.2016.06.002

Bartosik-Purgat, M., & Jankowska, B. (2017). The Use of Social Networking Sites in Job Related Activities: A Cross-cultural Comparison. Entrepreneurial Business and Economics Review, 5(2), 177-193. http://dx.doi.org/10.15678/EBER.2017.050210

Bosch-Rekveldt, M., Bakker, H., & Hertogh, M. (2018). Comparing project complexity across different industry sectors. *Complexity, 2018*. https://doi.org/10.1155/2018/3246508

Bosch-Rekveldt, M., Jongkind, Y., Mooi, H., Bakker, H., & Verbraeck, A. (2011). Grasping project complexity in large engineering projects: The T.O.E. (Technical, Organizational and Environmental) framework. *International Journal of Project Management, 29*(6), 728-739. https://doi.org/10.1016/j.ijproman.2010.07.008

Cattell, R. (2012). *The scientific use of factor analysis in behavioral and life sciences*: Berlin: Springer Science & Business Media.

Chan, C.T. (2012). The principal factors affecting construction project overhead expenses: an exploratory factor analysis approach. *Construction Management and Economics, 30*(10), 903-914.

Chapman, R.J. (2016). A framework for examining the dimensions and characteristics of complexity inherent within rail megaprojects. *International Journal of Project Management, 34*(6), 937-956. https://doi.org/10.1016/j.ijproman.2016.05.001

Cicmil, S., Cooke-Davies, T., Crawford, L., & Antony, K. (2009). Exploring the complexity of projects: Implications of complexity theory for project management practice. *PMBOK Guide.* Retrieved from https://doi.org/10.1002/pmj.20136 on January 2021.

Cristobal, E., Flavian, C., & Guinaliu, M. (2007). Perceived e-service quality (PeSQ). *Managing Service Quality: An International Journal,* 17(3), 317-340. https://doi.org/10.1108/09604520710744326

Dale, L.B. (2013). *Skilled Labor Shortage in the Construction Industry? It's Not Demonstrated in the Numbers*. Retrieved from: https://www.leg.state.nv.us/App/NELIS/REL/79th2017/ExhibitDocument/OpenExhibitDocument?exhibitId=30799&fileDownloadName=0220b_staw.pdf on April 2021.

Dao, B., Kermanshachi, S., Shane, J., Anderson, S., & Hare, E. (2017). Exploring and assessing project complexity. *Journal of Construction Engineering and Management, 143*(5), 04016126. https://doi.org/10.1061/(asce)co.1943-7862.0001275

Field, A. (2014). *Discovering statistics using IBM SPSS statistics*: Thaousand Oaks: Sage.

Flyvbjerg, B. (2017). *The Oxford handbook of Megaproject Management*: Oxford: Oxford University Press.

Gajić, S., & Palčič, I. (2019). A new framework for complexity analysis in international development projects–Results from a Delphi study. *Advances in Production Engineering & Management, 14*(2), 225-238. https://doi.org/10.14743/apem2019.2.324

Gbahabo, P.T., & Ajuwon, O.S. (2017). Effects of project cost overruns and schedule delays in Sub-Saharan Africa. *European Journal of Interdisciplinary Studies, 3*(2), 46-59.

Gemueva, K. (2018). Chinese Infrastructure Projects in Sub-Saharan Africa: Credit Financing. *Outlines of global transformations: politics, economics, law* (Center for Crisis Society Studies).https://doi.org/ 10.23932/2542-0240-2018-11-5-55-73

Geraldi, J., & Adlbrecht, G. (2008). On faith, fact, and interaction in projects. *IEEE Engineering Management Review, 2*(36), 35-49. https://doi.org/10.1109/emr.2008.4534318

Geraldi, J., Maylor, H., & Williams, T. (2011). Now, let's make it really complex (complicated) A systematic review of the complexities of projects. *International Journal of Operations & Production Management, 31*(9), 966-990. https://doi.org/10.1108/01443571111165848

Gidado, K. (1996). Project complexity: The focal point of construction production planning. *Construction Management & Economics, 14*(3), 213-225. https://doi.org/10.1080/014461996373476

Girmscheid, G., & Brockmann, C. (2008). The Inherent Complexity of Large Scale Engineering Projects. *Project Perspectives, 29*, 22-26.

Głodowska, A., Maciejewski, M., & Wach, K. (2019). How Entrepreneurial Orientation Stimulates Different Types of Knowledge in the Internationalization Process of Firms from Poland? *Entrepreneurial Business and Economics Review, 7*(1), 61-73. https://doi.org/10.15678/EBER.2019.070104

Gorsuch, R.L. (1997). Exploratory factor analysis: Its role in item analysis. *Journal of personality assessment, 68*(3), 532-560. https://doi.org/10.1207/s15327752jpa6803_5

He, Q., Luo, L., Hu, Y., & Chan, A.P. (2015). Measuring the complexity of mega construction projects in China—A fuzzy analytic network process analysis. *International Journal of Project Management, 33*(3), 549-563. https://doi.org/10.1016/j.ijproman.2014.07.009

Hill, R. (1998). What sample size is "enough" in internet survey research. *Interpersonal Computing and Technology: An electronic journal for the 21st century, 6(3-4)*, 1-12.

Infrastructure Consortium for Africa. (2018). *Infrastructure financing trends in Africa: I.C.A. annual report 2018*. Retrieved from https://www.icafrica.org/en/knowledge-hub/infrastructure-financing/ on June 19, 2019.

International Centre for Complex Project Management. (2012). *Complex Project Manager Competency Standards*. Retrieved from Commonwealth of Australia (Department of Defence on October 17, 2020).

Jarkas, A.M. (2017). Contractors' perspective of construction project complexity: Definitions, principles, and relevant contributors. *Journal of Professional Issues in Engineering Education and Practice, 143*(4), 04017007. https://doi.org/10.1061/(asce)ei.1943-5541.0000337

Kermanshachi, S., Dao, B., Rouhanizadeh, B., Shane, J., & Anderson, S. (2018). Development of the project complexity assessment and management framework for heavy industrial projects. *International Journal of Construction Education and Research, 16*(1), 24-42. https://doi.org/10.1080/15578771.2018.1499568

Kermanshachi, S., & Safapour, E. (2019). Identification and quantification of project complexity from perspective of primary stakeholders in U.S. construction projects. *Journal of Civil Engineering and Management, 25*(4), 380-398. https://doi.org/10.3846/jcem.2019.8633

Kian Manesh Rad, E., & Sun, M. (2014). *Taxonomy of project complexity indicators in energy megaprojects*. Paper presented at the International Scientific Conference People, Buildings and Environment Kroměříž, Czech Republic.

Kline, P. (2014). *An easy guide to factor analysis*: London: Routledge.

Lebcir, R.M., & Choudrie, J. (2011). A dynamic model of the effects of project complexity on time to complete construction projects. *International Journal of Innovation, Management and Technology, 2*(6), 477. http://ijimt.org/papers/179-A10002.pdf

Lemanski, M. (2018). Foreign Entrepreneurs in China. *Entrepreneurial Business and Economic Review, 6*(4), 7-10.

Lessard, D., Sakhrani, V., & Miller, R. (2014). House of Project Complexity—understanding complexity in large infrastructure projects. *Engineering Project Organization Journal, 4*(4), 170-192. https://doi.org/10.1080/21573727.2014.907151

Lu, Y., Luo, L., Wang, H., Le, Y., & Shi, Q. (2015). Measurement model of project complexity for large-scale projects from task and organization perspective. *International Journal of Project Management, 33*(3), 610-622. https://doi.org/10.1016/j.ijproman.2014.12.005

Luo, L., He, Q., Jaselskis, E.J., & Xie, J. (2017). Construction project complexity: research trends and implications. *Journal of Construction Engineering and Management, 143*(7), 04017019. https://doi.org/10.1061/(asce)co.1943-7862.0001306

MacCallum, R.C., Widaman, K.F., Zhang, S., & Hong, S. (1999). Sample size in factor analysis. *Psychological Methods, 4*(1), 84. https://doi.org/10.1037/1082-989x.4.1.84

Maylor, H., Vidgen, R., & Carver, S. (2008). Managerial complexity in project-based operations: A grounded model and its implications for practice. *Project Management Journal, 39*(1_suppl), S15-S26.

Mirza, E., & Ehsan, N. (2017). Quantification of project execution complexity and its effect on performance of infrastructure development projects. *Engineering Management Journal, 29*(2), 108-123. https://doi.org/10.1080/10429247.2017.1309632

Nguyen, A., Nguyen, L., Le-Hoai, L., & Dang, C. (2015). Quantifying the complexity of transportation projects using the fuzzy analytic hierarchy process. *International Journal of Project Management, 33*(6), 1364-1376. https://doi.org/10.1016/j.ijproman.2015.02.007

Nunnally, J.C., & Bernstein, I. (1978). *Psychometric Theory.* New York: McGraw-Hill. https://doi.org/10.3102/00028312005003431

Ochieng , E., & Hughes, L. (2013). Managing project complexity in construction projects: The way forward. *Journal of Architectural Engineering Technology, 2*(1), e111. https://doi.org/10.4172/2168-9717.1000e111

Ofori, G. (2015). Nature of the construction industry, its needs and its development: A review of four decades of research. *Journal of Construction in Developing Countries, 20*(2), 115.

Ofori, G., & Toor, S.-u.-R. (2012). Leadership and Construction Industry Development in Developing Countries. *Journal of Construction in Developing Countries, 17*, 1-21.

Owusu-Manu, D.-G., Jehuri, A.B., Edwards, D.J., Boateng, F., & Asumadu, G. (2019). The impact of infrastructure development on economic growth in sub-Saharan Africa with special focus on Ghana. *Journal of Financial Management of Property and Construction*, *24*(3), 253-273. https://doi.org/10.1108/JFMPC-09-2018-0050

Remington, K. (2016). *Leading complex projects*. London: Routledge.

Remington, K., & Pollack, J. (2016). *Tools for complex projects.* London: Routledge.

Rosli, N.M., Mustaffa, N.E., & Ariffin, H.L.T. (2018). *A Review of Domestic Subcontract in Construction Industry.* Paper presented at the Regional Conference on Science, Technology and Social Sciences (RCSTSS 2016).

Sharma, G. (2017). Pros and cons of different sampling techniques. *International Journal of Applied Research, 3*(7), 749-752.

Sieja, M., & Wach, K. (2019). The Use of Evolutionary Algorithms for Optimization in the Modern Entrepreneurial Economy: Interdisciplinary Perspective. *Entrepreneurial Business and Economics Review*, 7(4), 117-130. https://doi.org/10.15678/EBER.2019.070407

Siemiatycki, M. (2015). *Cost Overruns on Infrastructure Projects: Patterns, Causes and Cures.* Toronto: IMFG Perspectives.

Söderlund, J., Sankaran, S., & Biesenthal, C. (2017). The past and present of megaprojects. Los Angeles, CA: SAGE Publications Sage CA.

Tabachnick, B.G., Fidell, L.S., & Ullman, J.B. (2019). *Using multivariate statistics* (Vol. 5). Boston: Pearson Boston, MA.

Thamhain, H. (2013). Managing risks in complex projects. *Project Management Journal, 44*(2), 20-35. https://doi.org/10.1002/pmj.21325

Turner, J.R., & Cochrane, R.A. (1993). Goals-and-methods matrix: coping with projects with ill defined goals and/or methods of achieving them. *International Journal of Project Management, 11*(2), 93-102. https://doi.org/10.1016/0263-7863(93)90017-h

Wach, K. (2020). A Typology of Small Business Growth Modelling: A Critical Literature Review. *Entrepreneurial Business and Economics Review*, 8(1), 159-184. https://doi.org/10.15678/EBER.2020.080109

Williams, T.M. (1999). The need for new paradigms for complex projects. *International Journal of Project Management, 17*(5), 269-273. https://doi.org/10.1016/s0263-7863(98)00047-7

Xia, B., & Chan, A.P. (2012). Measuring complexity for building projects: a Delphi study. *Engineering, Construction and Architectural Management, 19*(1), 7-24. https://doi.org/10.1108/09699981211192544

Appendix:

Structural Complexity Element		
Constructs	**Elements**	**Source**
Size	Structure height	(Baccarini, 1996; Bosch-Rekveldt *et al.*, 2011; Chapman, 2016; Dao *et al.*, 2017; Gajić & Palčič, 2019; Geraldi & Adlbrecht, 2008; He *et al.*, 2015; Jarkas, 2017; Kermanshachi *et al.*, 2018; Kermanshachi & Safapour, 2019; Lebcir & Choudrie, 2011; Lessard *et al.*, 2014; Mirza & Ehsan, 2017; Nguyen *et al.*, 2015; Xia & Chan, 2012)
	Structure type	
	Site area	
	Density	
	Number of elements	
	Number of participants	
	Number of engineering hours	
	Budget	
Task	Numerous tasks	
	High variety of task	
	Difficulty of task	
	Project scheduling	
	Rigidity of sequence	
	Quality requirement	
	Construction methods	
	Lack of technical methods	
	Availability of skilled workforce	
Design complexity	Level of detailing	
	Structural elements	
	Clarity of functions	
	Variety of drawings	
	Project scope	
	Physical location	
	Multiple locations	
	Site topography	
Dynamic Complexity Element		
Project Features	Project duration	(Ahn *et al.*, 2017; Baccarini, 1996; Bosch-Rekveldt *et al.*, 2011; Chapman, 2016; Dao *et al.*, 2017; Gajić & Palčič, 2019; Geraldi & Adlbrecht, 2008; He *et al.*, 2015; Jarkas, 2017; Kermanshachi *et al.*, 2018; Kermanshachi & Safapour, 2019; Lebcir & Choudrie, 2011; Lessard *et al.*, 2014; Mirza & Ehsan, 2017; Nguyen *et al.*, 2015; Xia & Chan, 2012)
	Project tempo	
	Construction methods	
	Uncertainty in methods	
	Reliance on other projects	
	Project team's capability	
	Geological conditions	
	Immediate environment	
	Multiple time zone	
	Disperse team	
	Deployment of plants	
	Form of contract	
Project Goals	High number of goals	
	Lack of clear project goal	
	Multiple project goals (multidisciplinary members)	
	Variety of perspective	
Project Scope	Scope ambiguity	
	Scope uncertainty	
	Project detail and drawing.	
	Change in project scope	
	Change in project specification	
	Inability to estimate accurately (timeline and budget)	
	Quantity of information to analyse	
	Quantity of information source	

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No conflict of interest was declared for this study.

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Business model innovation and digital technology: The perspective of incumbent Italian small and medium-sized firms

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ABSTRACT

Objective: The aim of the article was to conduct an explorative study on the relationship between business model innovation and digital technologies in incumbent small and medium-sized enterprises (SMEs).

Research Design & Methods: A qualitative methodology supported the study by providing a novel perspective of analysis. Ten cases were selected from a sample of seventy SMEs engaged in a university-industry collaboration programme.

Findings: The study aimed to explore the implications of the business model innovation process in incumbent SMEs when they adopt digital technologies. This perspective helped to understand how digital technologies act as enabling factors that support SMEs in innovating their business models.

Implications & Recommendations: This study developed a conceptual framework to depict business model innovation when SMEs adopt digital technologies. Digital technology emerged as a necessary but not sufficient condition to achieve business model innovation.

Contribution & Value Added: The study shed light on the relationship between business model innovation and digital technologies in incumbent SMEs and unfolded its major underlying factors.

Article type: research article

Keywords: business model innovation; SMEs; digital technology; entrepreneurship; business model

JEL codes: O32, L26, L25

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INTRODUCTION

One of the most relevant reasons why small and medium-sized enterprises (hereafter SMEs) start rethinking and reshaping their business models is the opportunity to adopt new digital technology. A large and growing literature provides significant evidence on this issue (Christensen *et al*., 2016; Khanaga *et al*., 2014; Baden-Fuller & Haeflinger, 2013; Cucculelli & Bettinelli, 2015). However, some recent articles show that the adoption of digital technology alone may not be a sufficient driver for business model innovation in the case of incumbent SMEs, as the process of reshaping the existing business models can be difficult in firms that have already settled into a specific pattern (Bowman *et al*., 2019; Kiel *et al*., 2017; Müller *et al*., 2018). This makes the interaction between the adoption of new technologies and business model innovations a crucial issue to explore in empirical settings (Kim & Min, 2015). This issue is even more relevant in the case of SMEs, as their organisational structure makes them reluctant to make major changes and prone to inertia. Despite being the founding layer of most world economies, they are late to adopt digital technology (European Commission, 2020): thus, understanding the impact of the technology on business model innovation in SMEs is timely for the economic analysis and also highly relevant to the policy agenda. This article contributes to these

topics by providing an exploratory analysis of how and to what extent the process of business model innovation unfolds in the case of incumbent SMEs that adopt digital technologies.

Despite the extensive literature on business model innovation (cf. Foss & Saebi, 2018), no prior studies have focused on how business model innovation and adoption of digital technologies co-exist in explaining the growth of incumbent SMEs. Moreover, even though digital technologies play a crucial role in enabling and supporting business model innovation (Chesbrough, 2010; Christensen *et al*., 2016; Ibarra *et al*., 2018, Moeuf *et al*., 2018; Bollweg *et al*., 2019), the existing literature is mostly silent on how incumbent SMEs exploit new technologies to shape business model innovation. Finally, despite the large number of studies on business model innovation, very few have addressed the perspective of small incumbents (Anwar & Shah, 2018). By contrast, a considerable number of contributions has focused on start-ups and large corporations (Habtay & Holmen, 2014; Markides & Charitou, 2004; Osterwalder & Pigneur, 2010; Chesbrough, 2010; Chesbrough & Rosenbloom, 2002).

Due to the constraints of size and organisational resources, small and medium-sized incumbent firms usually experience a relationship between technology and business model innovation which is unique and largely atypical. The article explores this topic on an empirical ground by exploiting the evidence from ten case studies of incumbent SMEs that have adopted digital technologies as a lever for innovating their business model. Given the difficulty small firms have in managing the process of business model innovation, we believe that this article may also provide guidance for firms that are reshaping their model in the new competitive landscape that is prevailing after the Covid-19 outbreak (Bivona & Cruz, 2021; Breier *et al*., 2021; Cucculelli & Peruzzi, 2020; Thierry *et al*. 2020).

This study was based on case studies. Data was collected through semi-structured interviews with entrepreneurs and managers in ten Italian incumbent SMEs (Yin, 2014; Eisenhardt, 1989). An abductive approach was followed in collecting and analysing data (Corbin & Strauss, 2014; Dubois & Gadde, 2002).

To examine the business model innovation process in sample firms, we developed a conceptual framework to identify and cluster profiles of SMEs with similar patterns of business model innovation and adoption of digital technologies. For each profile, we examined the managerial propositions that drive innovation in the business profile and influence the adoption of digital technologies.

The remaining part of the article is organised as follows. Section 2 will describe the literature background of the study with a focus on the SMEs' perspective. Section 3 will outline the methodology. Section 4 will present findings from the analysis of the cases and discusse some theoretical and managerial implications. Section 5 will conclude.

RESEARCH METHODOLOGY

Business model, business model innovation, and digital technologies

Teece (2010, p. 179) assumes that 'a business model articulates the logic, the data and other pieces of evidence that support a value proposition for the customer, and a viable structure of revenues and costs for the enterprise delivering that value.' Consistently, a 'practitioner's' perspective shows that the business model is represented and developed through several 'building blocks,' which have been conceptualised in different perspectives (cf. Osterwalder *et al*., 2005; Taran *et al*., 2015; Gasmann *et al*., 2014).

Foss and Saebi (2015; 2018, p. 11) recognise business model innovation as 'designed, novel and non-trivial changes to the key elements of a firm's business model and the architecture linking these elements.' Business model innovation is also understood as a process (Christensen *et al*., 2016; Frankenberger *et al*., 2013) to create new value for customers, to gain higher profits (Cliffe & McGrath, 2011; Ng, 2017).

Business model innovation has been described as simple or complex (Taran *et al*., 2015). The degree of complexity has been measured as the number of building blocks modified or changed to develop business model innovation. The innovation is simple when one or a few building blocks are modified and complex when several building blocks are changed (Taran *et al*., 2015; Foss & Saebi, 2017; Yeager & Shenhar, 2019).

Business model innovation has been conceptualised as a stage-gate process (Frankenberger *et al*., 2013; Christensen *et al*., 2016). Although adopting a processual stage-gate approach might have been outdated, the stages conceptualised by Frankenberger *et al*. (2013) were suitable to analyse data and

unfold theoretical and managerial implications regarding incumbent SMEs. According to Frankenberger *et al*. (2013), the stages of the business model innovation process are described as:

1. Initiation: The firm focuses on understanding the actors' ecosystem, identifying their needs, and the drivers of the change.
2. Ideation: The firm develops new ideas regarding business model innovation. These are related to the transfor-mation of opportunities and information collected. Several challenges are related to the current firm's dominant logic.
3. Integration: The firm starts to design a new business model. In this phase, the firm manages the resources and actors involved in the business model innovation process.
4. Implementation: Only when the new business model is designed, does its implementation begin. In this phase, the firm might experience internal resistance to change and problems in the experi-mentation of the model. The new business model is released after several iterations and experi-ments.

Business model innovation is context-dependent and can manifest differently from industry to industry. Moreover, given its dependency on the firm's resources (Rachinger *et al*., 2018; Khanaga *et al*., 2014), it also usually takes a considerable amount of time and effort by the firm to unfold.

Business model innovation can be activated by a limited number of elements (Ng, 2017; Gassmann *et al*., 2014), one of them is the adoption of digital technologies that has been indicated as one of the most significant drivers (Kiel *et al*., 2017; Christensen *et al*., 2016; Khanaga *et al*., 2014; Chesbrough, 2010), especially in the case of SMEs (Müller *et al*., 2018; Baden-Fuller & Haeflinger, 2013). Therefore, the study outlines digital technologies drawing from Moeuf *et al*. (2018).[1] Following Ibarra *et al*. (2018), Moeuf *et al*. (2018), Nagy *et al*. (2019), and Nambisan (2017), this study assumes that SMEs use digital technologies to facilitate, enable, or drive their business model innovation. It also recognises that SMEs adopt different types of digital technologies with different intensities, influencing the degree of business model innovation (Ibarra *et al*., 2018; Habtay & Holmen, 2014; Kiel *et al*., 2017; Müller *et al*., 2018; Anwar & Shah, 2018).

Digital technologies are categorised in three main fields according to their potential impact on the firm structure, which is also related to the 'building blocks' of the business model. The three fields are (Rachinger *et al*., 2018; Ibarra *et al*., 2018; Bollweg *et al*., 2019, Osterwalder & Pigneur, 2010; Gassman *et al*., 2014; Taran *et al*., 2015):

1. Digital Technologies in organisation and management (value configuration), as in software enterprise resource planning (ERP).
2. Digital Technologies in Marketing and Sales (value segment and customer relationship management), as in social media marketing and websites, CRMs (Software as a service (SaaS) or apps).
3. Digital Technologies in Production (value proposition), as in production cost management (PCM) or the PLM (product lifecycle management) software, or other management software and cyber-physical systems adopted to boost production and efficiency.

These three fields of application were adopted in the study as a proxy for digital technology adoption intensity. The intensity summarises the investments in terms of time and resources, and finally, the overall complexity in the technology development. In addition, the intensity of the adoption of digital technologies can be taken as a proxy for the firm's willingness to change. However, a higher intensity of adoption also increases the complexity in managing the business model innovation process (Taran *et al*., 2015).

Incumbent SMEs and business model innovation challenges

Small and medium-sized enterprises (SMEs) are the driving force of most economies (Bowman *et al*., 2019). Despite this fact, few studies have developed an in-depth analysis of the impact of digital technology adoption in their business model innovation process.

[1] Digital technologies are conceptualised according to the Industry 4.0 paradigm (Kagermann *et al*., 2013) as follows: big data and analytics; simulation; autonomous robots; internet of things; cyber-physical systems; cloud computing; virtual reality; machine-to-machine communication; cyber security; digital and social media marketing.

Habtay and Holmen (2014) and Markides and Charitou (2004) posit that a clear separation between new and old business models in these firms is difficult to observe, as incumbent SMEs with a solid entrepreneurial orientation develop business model innovations within the established business units or set up a new business unit dedicated to exploiting business opportunities. It is worth noting that SMEs usually look forward to Business Model Innovations (BMI) to achieve new levels of competitive advantage (Anwar, 2018). Incumbent SMEs mobilise digital technology adoption resources to unfold BMI (Bowman *et al*., 2019). However, several challenges remain in the BMI process in SMEs, as the process might be linked to the existence of a prior business model, to path-dependency in the entrepreneur's dominant logic, to hidden and tacit rules (Nonaka, 1994) of the previous firm resource settings, or the pressure for short-term results (Ciulli & Kolk, 2019). Finally, SMEs are often short of resources and time to experiment with new business models, deploy business model innovation (Bowman *et al*., 2019; Khanaga *et al*., 2014), or invest in digital technologies and innovation programmes to achieve new competitive advantages (Anwar *et al*., 2018; Barney, 1991; Bollweg *et al*., 2019).

Moreover, previous studies suggested that incumbent SMEs follow a different path in innovating the business model for start-ups and large corporations. For start-ups, designing and testing new business model components may be regarded as common steps in their growth process (Chesbrough, 2010; Christensen *et al*., 2016). By contrast, this is rather uncommon for established firms, such as incumbent SMEs, in which experimentation is often perceived as a waste of time (Liu & Bell, 2019).

Business model innovation and digital technologies in SMEs: A conceptual model

The study explores the emerging issue of incumbent SMEs at the intersection between digital technologies and business model innovation processes. To the best of our knowledge, no previous studies have provided a detailed picture of how digital technologies impact SMEs business model innovation processes using a case study approach. Using a qualitative methodology with semi-structured interviews, the study was founded on the following research question: How do incumbent SMEs unfold business model innovation processes through digital technologies? Given the explorative and qualitative nature of the article, the research question wass deliberately broad to accommodate any further insights that may come from the data collection.

In this study, we combined dimensions of business model innovation processes, that is, complexity and status, with the intensity of adoption of digital technologies (see Figure 1).

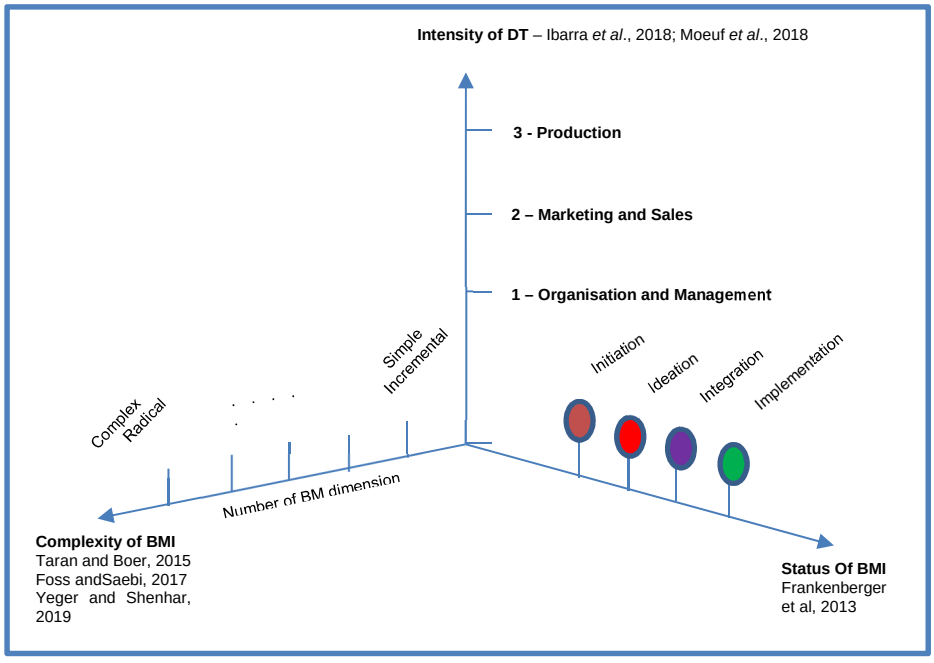

Figure 1. The dimensions of analysis of business model innovation
Source: own elaboration.

The complexity of business model innovation described how many building blocks of the model have been changed or impacted by the adoption of digital technology (Taran *et al*., 2015; Foss & Saebi, 2018; Yeager & Shenhar 2019). Likewise, the intensity of adoption of digital technology – borrowed from Ibarra *et al*. (2018) and Moeuf *et al*. (2018) – related to the pervasiveness of the adoption in three major areas: organisation and management, marketing and sales, and production. Finally, the status of the business model innovation process drew from Frankenberger *et al*. (2013).

A conceptual framework (Figure 1) was developed to ease the analysis of the information gathered from semi-structured interviews. It positioned each case into a conceptual map. It also enabled the qualitative comparison of cases according to the elements that inspire the research. Finally, the model was explorative as per Nonaka (1994), that is, it can bring new light on a case that has not been studied so far.

RESEARCH METHODOLOGY

The study lied at the intersection between two literature streams, to shed light on the under-explored challenges related to incumbent SME business model innovation processes. Therefore, an explorative, empirical, and qualitative research methodology was deemed useful to provide thoughtful insights for researchers and practitioners (Eisenhardt, 1989; Voss *et al*., 2002 Yin, 2014). The information was gathered through in-depth, semi-structured interviews, with ten different firms (Corbin & Strauss, 2014; Dubois & Gadde, 2002). The semi-structured interviews were considered appropriate to gather the informants' perspectives according to a multi-faceted and partly unknown phenomenon (Yin, 2014). Moreover, the development of a semi-structured interview protocol ensured the validity of the data collection process (Yin, 2014).[2]

The interview protocol was developed from the literature on business model innovation and digital technology adoption. All the informants were submitted the same interview to ensure the study's validity (Yin, 2014). Together with the conceptual model (Figure 1), the research question guided the researchers in collecting empirical data through interviews and secondary data. Data was collected from key informants, including entrepreneurs and managers, and analysed by combining the abductive and systematic approaches (Dubois & Gadde, 2002; Corbin & Strauss, 2014). Moreover, data from key informants was triangulated with direct observations, notes, and secondary data gathered directly from the official documents of the company and the web. Secondary source data were obtained from participation in meetings of the Board of Directors, operational meetings, formal documents and reports, analysis of websites, social media pages, brochures, and sales presentations.

Participating firms were selected from a sample of seventy SMEs enrolled in a university-industry collaboration programme. These firms were actively collaborating with the university for developing innovation in the business and engineering fields. Thus, cases were collected through purposeful sampling (Eisenhardt & Graebner, 2007). According to the sampling, interviewed firms have been selected – as a criterion for inclusion – by looking for those who have already adopted digital technologies and are potentially innovating the business model (see Table 1). The selected ten cases represent a consistent sample in line with data collection saturation principle of qualitative research (Yin, 2014). Interviews were characterised by the required respondents, technologies, context, and the business sector heterogeneity the companies were affiliated with.[3]

The research process consisted of the following steps: i) drafting the interview protocol; ii) creating the conceptual framework (see section 2.4); iii) developing the interviews and gathering other relevant secondary source data from the firm engaged in the research; iv) developing an analysis of the SME challenges in the business model innovation processes; v) developing the SME profiles for the evaluation of the business model innovation status. Data have been analysed through continuous back and forth cycling between data and literature (Dubois & Gadde, 2002; Corbin & Strauss, 2014).

[2] An abductive approach has been used, which entails moving backwards and forwards between the background theory and the findings (Eisenhardt, 1989; Corbin & Strauss, 2014; Dubois & Gadde, 2002; Yin, 2014).

[3] For each firm, the researcher found the key informant by contacting the key person, such as the principal manager (Eisenhardt and Graebner, 2007).

Table 1. Data collection overview

N.	Data	Firm	Actor	Length	Support
1	May 27, 2019	Gamma	R&D Director	70 mins.	Audio + Note
2	January 21, 2020	Teta	Marketing Director	15 mins.	Audio + Note
3	July 7, 2019	Beta	Export Manager	20 mins.	Audio + Note
4	May 20, 2019	Zeta	Entrepreneur	25 mins.	Audio + Note
5	June 5, 2019	Iota	Entrepreneur	45 mins.	Audio + Note
6	June 28, 2019	Alfa	Entrepreneur	15 mins.	Audio + Note
7	May 15, 2019	Kappa	CFO	25 mins.	Audio + Note
8	June 5, 2019	Epsilon	CFO	60 mins.	Note
9	October 8, 2019	Eta	Entrepreneur	45 mins.	Note
10	October 21, 2019	Delta	Entrepreneur	70 mins.	Note

Source: own elaboration.

Ten case studies were examined from a portfolio of more than seventy Italian firms. These firms were heterogeneous in terms of industrial sectors, for example, plastic moulding, shoemaking, industrial construction, and other sectors, together with the production and distribution of a wide range of products. All firms were SMEs adopting digital technologies as part of their business model innovation process. The ten cases were analysed according to the conceptual model presented above (Figure 1, Section 2.4). The summary of the cases is presented in the following Table 2.

Table 2. Summary of the ten cases

Dimensions	Alfa	Beta	Gamma	Delta	Epsilon	Zeta	Eta	Theta	Iota	Kappa
Industrial Sector	Industrial Printing	Packaging Machines	Coffee Machines	Industrial Constructions	Shoemaking	Shoemaking	Automotive Dealer	Synthetic Turf	Injection Moulding	Injection Moulding
Founded	2005	1980	1936	1970	1973	1965	1958	2012	1988	1994
Intensity of DT	1	1-3	1-2-3	1-2	1-2-3	1-2	1-2	2	1-3	1-3
Complexity of BMI	Complex	Complex	Complex	Simple	Complex	None	Complex	Complex	Complex	None
Status of BMI	Integration	Ideation	Integration	Initiation	Ideation	None	Initiation	Implementation	Initiation	None

Source: own elaboration.

RESULTS AND DISCUSSION

Evidence from the cases

The cases in which digital technologies brought tangible effects often depicted firms developing new products, services, or a new way to reach their buyers. However, the findings suggested that several firms were still not very aware of the business model innovation's implications on their growth and competitive advantage. Indeed, these firms were still struggling to find a viable business model innovation. 'We have developed new machines that entail industry 4.0 technologies, but we have not yet developed a business based on these products' (ALFA).

Moreover, many firms (for example, Gamma with investments in sensors and IoT technologies, Epsilon with investments in digital technologies and production technologies) were still looking for the right digital technology setup for their firms, even before designing a path toward business model innovation. According to the evidence gathered, firms were more focused on technology adoption and digital technology investments rather than deploying the business model innovation activities.

The firms' management often appears highly concerned with developing and setting up the technological profile of the company, rather than focusing on how this would contribute to renovating their business model. Moreover, firms that involve a consulting firm (for example, Delta, Gamma) mainly ask them to support the introduction of digital technologies rather than finding consistency with the

business model or renewing their business model. Nonetheless, observing tangible business model changes is rare when the technological intensity is low (for example, Eta case).

The weakness of incumbent SMEs lays in understanding the impact of digital technologies on business model innovation by the firms' leadership. The evidence suggests that the business model concept is not yet well-established among the informants. When asked how these technologies would impact the different business model building blocks, they only provided a superficial and incomplete understanding of the potential business implications of adopting the digital technologies. It is worth noting that several firms still consider Computer Aided Design and Computer Aided Manufacturing (CAD-CAM) technology as a new digital application, as they also do with remote banking and other now-common applications (for example Zeta case). The misconception about digital technologies in business model innovation is visible in a statement by BETA: 'We are still performing manual data analysis, but we are looking to adopt a big data approach soon' (BETA).

In this respect, some firms clearly showed that they still lack the in-depth know-how of digital technologies (for example, Alfa, Zeta, and Iota). The firms highlighted a limited ability to manage digital technologies. This lack of information could be related to the lack of drive in the entrepreneur and the firms' personnel, even though they had invested in recruiting new people dedicated to IT and technological development. Moreover, considering that the entrepreneurs were often the single decision-makers in these firms, their limited knowledge and awareness of digital technologies emerged as a larger burden toward changing the firm's business model.

Above all of this, almost all interviewed entrepreneurs stated that the ability to adopt and exploit new technologies by top employees was one of the most significant managerial challenges for the firm. Accordingly, the resistance to change the perspective of top employees towards the adoption and use of digital technology was a crucial factor to consider when dealing with business model innovation. In this sense, several cases suggested how hiring external professionals was regarded as a potential key to initiate and enhance the business model innovation process (for example Eta). 'To cope with digital technologies, we hired a digital marketing manager as a key actor to steer the digital transition and the evolution of our business' (ETA).

A further theme emerges from the evidence with regard to the firm's ability to strategize business model innovation. Although all the firms in the sample are in the process of introducing technologies to renovate processes, products and services, very few of them referred to their aim to begin business model innovation as a potential outcome of their efforts and investments in digital technology (for example, Alfa, Gamma). To make matters worse, almost all of the informants started adopting the digital technologies without a clear goal on how the business model should have been changed to exploit these technologies. Nevertheless, as the business model innovation had been sparked from the need to renew the firm's strategic approach (for example, Teta and Eta case), the role of digital technology was still marginal and mostly related to customer engagement, suggesting that firms were still looking forward to understanding how to use digital technology to improve their business. 'Potentially, the new technologies will change our business soon, but not in reality' (IOTA).

What was gathered from the findings was that business model innovation had been regarded as something not really planned. In addition, the findings showed that some of the firms made relevant investments without achieving any tangible effect on the innovation of their business model (for example, Kappa and Gamma), while others exploited a few digital technologies to produce remarkable changes in their way of doing business (for example, Eta and Delta). 'The role of digital technologies is linked with the development of new products and, here, we can link it to the potential sale of new services, for example, predictive manufacturing, which we have not developed yet' (GAMMA).

Lastly, what emerged from the interviews and data gathered was that business model innovation, enabled by the adoption of digital technology, was a long-time process. Some informants suggest that their path toward digital technology began even before the terms industry 4.0 became mainstream (for example Kappa), and that the integration of these technologies into the business logic was crucial and was still ongoing (for example Gamma). Indeed, almost all the interviewed informants suggested that the tangible effects of digital technology were not yet achieved. Thus, it could be argued that their

business model innovation was still underway. 'The change takes us a lot of time; the adoption of these technologies requires the involvement and coordination of so many people' (IOTA).

Theoretical implications

The ten cases highlighted the many challenges studied in the SMEs' path towards business model innovation. These are related to the role of digital technology in business model innovation.

One of the first issues was linked to the firms' focus. The cases highlight that incumbent SMEs put a greater emphasis on digital technology instead of business model innovation. This focus might be mandatory because, according to Moeuf *et al*. (2018), digital technologies support firms in enabling and driving business model innovation. However, the present study argues that digital technology should be considered the mean for incumbent SMEs to achieve business model innovation, and not be the core of innovation. In fact, as Chesbrough (2010) suggests, technologies alone have almost no effect on the firm's competitiveness. Therefore, developing and improving skills to manage and exploit new technologies to support business model innovation is still a challenge for SMEs.

Subsequently, the study highlighted the lack of awareness about the potential positive influence of the adoption of digital technology on business model innovation (von den Eichen *et al*., 2014; Teece, 2010; Casadesus-Masanell & Ricart, 2010; Osterwalder *et al*., 2005; Moeuf *et al*., 2018; Nagy *et al*., 2019). This remains a major limiting factor for incumbent SMEs to fully exploit the business potential of digital technology. Likewise, the lack of awareness about the management of the business model innovation processes raises significant concerns about the suitability of the entrepreneurial and managerial leadership to utilise the business model as a tool to embrace the innovation processes in SMEs (Osterwalder & Pigneur, 2010; Osterwalder *et al*., 2005).

The findings also shed light on the SMEs' difficulty to recognise and manage business dynamics in terms of the building blocks and innovation processes (Habtay & Holmen, 2014; Foss & Saebi, 2018; Frankenberger *et al*., 2013). This drawback could be associated with the entrepreneurial nature of SMEs, in which the entrepreneur is often the only person responsible for the innovation process and the only one who decides which technologies will be used in the firm and how they will be used. The entrepreneurs' centrality tends to blur the distinction between the stages of initiation and ideation, as also the phases of implementation and integration, especially in incumbent SMEs (Frankenberger *et al*., 2013). Besides, the present study assumed that the incumbent SMEs lack the IT or management staff to drive the business model innovation initiative.

Although business model innovation has been understood as a designed process (Foss & Saebi, 2018; Rachinger *et al*., 2018), findings show that the SMEs' business model innovation processes are emergent and mostly unexpected when adopting digital technologies. Thus, while emergent business model innovation can be defined according to emergent strategy conceptualisation (Mintzberg & Waters, 1985), the study suggested that business model innovation may suddenly emerge when incumbent SMEs adopt digital technology. Thus, digital technologies are clearly the enabling and driving factors only when the entrepreneur becomes aware of their potential influence (Bollweg *et al*., 2019). However, the study also suggested that a lack of long-term strategic design concerning business model innovation within incumbent SMEs, was often related to the poor performance of incumbent SMEs in renovating their business model.

In addition, empirical findings supported the conceptualisation of business model innovation as a long-term process (Rachinger *et al*., 2018) that takes several years to generate a new business model even when large investments are made (Ng, 2017). Therefore, starting business model innovation and the process timing emerge as further managerial levers to reach innovation. Unfortunately, evidence from cases showed that SMEs were often unaware of the crucial time features and their influence on the business model innovation process.

Managerial implications

The study offers insightful managerial propositions for SMEs increasingly involved in managing business model innovation complexities and digital technology adoption.

Firstly, entrepreneurs and managers should become aware of the business model concept and understand the business model innovation as a process. Thus, they should exploit the available tools to manage the business model innovation and use the four phases of the business model innovation process outlined above to model the steps for the change.

Secondly, a better understanding of the business model innovation dynamics could enable agents of change to improve the firm's capabilities to renew the business model.

The study offers a conceptual framework that can support incumbent SMEs to be aware of their BMI process, helping entrepreneurs and managers to manage digital technology adoption in order to renovate the firm's business model.

Finally, SMEs should also be aware of the challenges related to the business model innovation process. The paths to business model innovation are often quite long and have a high-risk profile, thus, they require the entrepreneur to manage the unexpected. Business model innovation might suddenly emerge as a non-designed and unanticipated phenomenon. In this scenario, the adoption of digital technology might be the spark that initiates the process of business model innovation. Consistently, SMEs should put more effort into designing and foreseeing the path to business model innovation driven by digital technologies.

CONCLUSIONS

Final remarks

When observed from the incumbent SMEs' perspectives, the intersection between digital technology and business model innovation is still a blurred area that calls for additional investigation. Moreover, the topic's relevance is confirmed by the almost complete absence of studies addressing the issue of digital technology and business model innovation outside the field of start-ups or large corporations.

To explore the process of business model innovation in incumbent SMEs, this study developed a conceptual framework based on three levels of analysis: business model innovation complexity, phases of the business model innovation process, and intensity of the adoption of digital technologies.

The study found that SMEs were neither fully aware of the potential of digital technologies, nor were they ready to recognise and manage the concept of a business model and its innovation process. Moreover, incumbent SMEs appeared to misunderstand the role of digital technologies in the business model innovation process.

Finally, the great focus and effort in the development of digital technologies is not counterbalanced by a similar effort in devoting resources to address business model innovation practices. Indeed, incumbent SMEs do not realise that digital technologies are the main lever to handle the innovation of the business model. This lack of awareness negatively impacts the incumbent ability to renovate their business model.

The present study also highlighted that these drawbacks are linked to the incumbent SMEs' lack of knowledge and inability to properly support the innovation using the management staff effectively. The resistance towards business model innovation found at the initial stages of the process of adoption of new technologies pairs with the resource constraints that acts as a barrier towards innovation in incumbent SMEs. Due to the lack of resources, incumbent SMEs focus on short-term dynamics, whereas the conflict between the new and the old business models emerges as a bonding factor for reshaping the business model. Finally, the study argues that the exploitation of digital technologies is still a significant concern for SMEs. Entrepreneurs and managers struggle to find a practical approach for renovating the way of doing business. In this framework, it is worth stressing that designing and unfolding a new business model is not a short-term action for incumbent SMEs, but a long process which requires commitment and unfolds in years. Digital technologies emerge as a necessary but not sufficient condition to achieve business model innovation: incumbent SMEs must balance the investment in digital technologies with the development of capabilities for pushing the path toward innovation.

Limitations and further research

Beyond the results obtained from the empirical analysis, the study was not without limitations. Although we examined ten different cases using semi-structured interviews, the qualitative methodology was context-specific and could thus provide biased results. Therefore, further quantitative studies are needed to provide a more robust perspective on the topic. Future research is also called for developing a deeper understanding of the role of external actors in supporting and easing the business model innovation process. Moreover, a closer look at the broader perspective on firm strategies is needed to fully understand the influence of digital technologies on business model innovation. Finally, longitudinal case studies on successful business model innovations would aid in identifying all the shades that remain in this nuanced picture.

REFERENCES

Anwar M. & Shah S.A. (2018). Managerial Networking and Business Model Innovation: Empirical Study of New Ventures in an Emerging Economy. *Journal of Small Business and Entrepreneurship, 32*(3), 265-286. https://doi.org//10.1080/08276331.2018.1490509

Anwar, M. (2018). Business model innovation and SMEs performance—Does competitive advantage mediate?. *International Journal of Innovation Management, 22*(07), 1850057. https://doi.org/10.1142/S1363919618500573

Baden-Fuller, C., & Haefliger, S. (2013). Business models and technological innovation. *Long Range Planning, 46*(6), 419-426. https://doi.org//10.1016/j.lrp.2013.08.023

Barney, J. (1991). Firm resources and sustained competitive advantage. *Journal of Management, 17*(1), 99-120. https://doi.org//10.1016/S0742-3322(00)17018-4

Bivona, E. & Cruz, M. (2021). Can business model innovation help SMEs in the food and beverage industry to respond to crises? Findings from a Swiss brewery during COVID-19. *British Food Journal*, ahead-of-print(ahead-of-print). https://doi.org/10.1108/BFJ-07-2020-0643

Bollweg L., Lackes R., Siepermann M., & Weber P. (2019). Drivers and barriers of the digitalisation of local owner operated retail outlets. *Journal of Small Business and Entrepreneurship, 32*(2), 173-201. https://doi.org//10.1080/08276331.2019.1616256

Bowman, H., Nikou, S., & de Reuver, M. (2019). Digitalization, business models, and SMEs: How do business model innovation practices improve performanceof digitalising SMEs?. *Telecommunications Policy*, 101828. https://doi.org//10.1016/j.telpol.2019.101828

Breier, M., Kallmuenzer, A., Clauss, T., Gast, J., Kraus, S., & Tiberius, V. (2021). The role of business model innovation in the hospitality industry during the COVID-19 crisis. *International Journal of Hospitality Management, 92*, 102723.https://doi.org/10.1016/j.ijhm.2020.102723

Casadesus-Masanell, R., & Ricart, J.E. (2011). How to design a winning business model. *Harvard business review, 89*(1/2), 100-107.

Chesbrough, H. (2010). Business model innovation: opportunities and barriers. *Long Range Planning, 43*(2-3), 354-363. https://doi.org//10.1016/j.lrp.2009.07.010

Chesbrough, H., & Rosenbloom, R. S. (2002). The role of the business model in capturing value from innovation: evidence from Xerox Corporation's technology spin-off companies. *Industrial and corporate change, 11*(3), 529-555.https://doi.org/10.1093/icc/11.3.529

Christensen, C.M., Bartman, T., & Van Bever, D. (2016). The hard truth about business model innovation. *MIT Sloan Management Review, 58*(1), 31.

Ciulli, F., & Kolk, A. (2019). Incumbents and business model innovation for the sharing economy: Implications for sustainability. *Journal of Cleaner Production, 214*, 995-1010. https://doi.org//10.1016/j.jclepro.2018.12.295

Cliffe, S., & McGrath, R.G. (2011). When your business model is in trouble. *Harvard Business Review, 89(1/2), 96-98.*

Corbin, J., & Strauss, A. (2014). *Basics of qualitative research: Techniques and procedures for developing grounded theory.* Thousand Oaks: Sage publications.

Cucculelli, M., & Bettinelli, C. (2015). Business models, intangibles, and firm performance: evidence on corporate entrepreneurship from Italian manufacturing SMEs. *Small Business Economics, 45*, 329-350. https://doi.org//10.1007/s11187-015-9631-7

Cucculelli, M., & Peruzzi, V. (2020). Post-crisis firm survival, business model changes, and learning: evidence from the Italian manufacturing industry. *Small Business Economics, 54*, 459-474. https://doi.org//10.1007/s11187-018-0044-2

Dubois, A., & Gadde, L.E. (2002). Systematic combining: an abductive approach to case research. *Journal of business research, 55*(7), 553-560. https://doi.org//10.1016/S0148-2963(00)00195-8

Eisenhardt, K.M. (1989). Building theories from case study research. *Academy of Management Review, 14*(4), 532-550. https://doi.org//10.4135/9781473915480.n52

Eisenhardt, K.M., & Graebner, M.E. (2007). Theory building from cases: Opportunities and challenges. *Academy of Management Journal, 50*(1), 25-32. https://doi.org//10.5465/amj.2007.24160888

European Commission, (2020). Indice di digitalizzazione dell'economia e della società 2020 Italia. Retrived from: URL https://digital-strategy.ec.europa.eu/en/policies/desi on December, 2021

Foss, N.J., & Saebi, T. (2018). Business models and business model innovation: Between wicked and paradigmatic problems. *Long Range Planning, 51*(1), 9-21. https://doi.org//10.1016/j.lrp.2017.07.006

Foss, N.J., & Saebi, T. (Eds.). (2015). *Business model innovation: The organisational dimension*. Oxford: OUP Oxford.

Frankenberger, K., Weiblen, T., Csik, M., & Gassmann, O. (2013). The 4I-framework of business model innovation: A structured view on process phases and challenges. *International Journal of Product Development, 18*(3/4), 249-273. https://doi.org//10.1504/IJPD.2013.055012

Gassmann, O., Frankenberger, K., & Csik, M. (2014). *The business model navigator: 55 models that will revolutionise your business*. London: Pearson UK.

Habtay, S.R., & Holmén, M. (2014). Incumbents'responses to disruptive business model innovation: The moderating role of technology vs market-driven innovation. *International Journal of Entrepreneurship and Innovation Management, 18*(4), 289-309. https://doi.org//10.1504/IJEIM.2014.064211

Ibarra, D., Ganzarain, J., & Igartua, J.I. (2018). Business model innovation through Industry 4.0: A review. *Procedia Manufacturing, 22*, 4-10. https://doi.org//10.1016/j.promfg.2018.03.002

Kagermann, H., Lukas, W. D., & Wahlster, W. (2011). Industrie 4.0: Mit dem Internet der Dinge auf dem Weg zur 4. industriellen Revolution. *VDI nachrichten, 13*(1), 2-3.

Khanagha, S., Volberda, H. & Oshri, I. (2014). Business model renewal and ambidexterity: structural alteration and strategy formation process during transition to a cloud business model. *RandD Management, 44*(January 2013), 322-340. https://doi.org//10.1111/radm.12070

Kiel, D., Arnold, C., & Voigt, K.I. (2017). The influence of the Industrial Internet of Things on business models of established manufacturing companies-A business level perspective. *Technovation, 68,* 4-19. https://doi.org//10.1016/j.technovation.2017.09.003

Kim, S. K., & Min, S. (2015). Business model innovation performance: when does adding a new business model benefit an incumbent? *Strategic Entrepreneurship Journal, 9(*1), 34-57.https://doi.org/10.1002/sej.1193

Liu, P., & Bell, R. (2019). Exploration of the initiation and process of business model innovation of successful Chinese ICT enterprises. *Journal of Entrepreneurship in Emerging Economies, 11*(*4*)*, 515-536.* https://doi.org//10.1108/JEEE-09-2018-0094

Markides, C., & Charitou, C.D. (2004). Competing with dual business models: A contingency approach. *Academy of Management Perspectives, 18(*3), 22-36. https://doi.org//10.5465/ame.2004.14776164

Mintzberg, H., & Waters, J. A. (1985). Of strategies, deliberate and emergent. *Strategic management Journal, 6*(3), 257-272. https://doi.org//10.1007/978-1-349-20317-8_1

Moeuf, A., Pellerin, R., Lamouri, S., Tamayo-Giraldo, S., & Barbaray, R. (2018). The industrial management of SMEs in the era of Industry 4.0. *International Journal of Production Research, 56(*3), 1118-1136. https://doi.org//10.1080/00207543.2017.1372647

Müller, J. M., Buliga, O., & Voigt, K.I. (2018). Fortune favors the prepared: How SMEs approach business model innovation in Industry 4.0. *Technological Forecasting and Social Change, 132*, 2-17. https://doi.org//10.1016/j.techfore.2017.12.019

Nagy, J., Oláh, J., Erdei, E., Máté, D., & Popp, J. (2018). The role and impact of industry 4.0 and the internet of things on the business strategy of the value chain—The case of Hungary. *Sustainability, 10*(10), 3491. https://doi.org//10.3390/su10103491

Nambisan, S. (2017). Digital entrepreneurship: Toward a digital technology perspective of entrepreneurship. *Entrepreneurship Theory and Practice, 41*(6), 1029-1055. https://doi.org//10.1111/etap.12254

Ng, H.Y. (2017). *Categorisation of business model patterns and mapping of their relations with business model building blocks*. In 2017 IEEE International Conference on Industrial Engineering and Engineering Management (IEEM) (pp. 1767-1771). IEEE. https://doi.org//10.1109/IEEM.2017.8290195

Nonaka, I. (1994). A dynamic theory of organisational knowledge creation. *Organisation Science, 5(*1), 14-37.https://doi.org/10.1287/orsc.5.1.14

Osterwalder, A., & Pigneur, Y. (2010). *Business model generation: a handbook for visionaries, game changers, and challengers*. Hoboken: John Wiley and Sons.

Osterwalder, A., Pigneur, Y., & Tucci, C.L. (2005). Clarifying business models: Origins, present, and future of the concept. *Communications of the Association for Information Systems, 16(*1), 1. https://doi.org//10.17705/1CAIS.01601

Rachinger, M., Rauter, R., Müller, C., Vorraber, W., & Schirgi, E. (2019). Digitalisation and its influence on business model innovation. *Journal of Manufacturing Technology Management, 30*(*8), 1143-1160.* https://doi.org//10.1108/JMTM-01-2018-0020

Taran, Y., Boer, H., & Lindgren, P. (2015). A business model innovation typology. *Decision Sciences, 46(*2), 301-331. https://doi.org//10.1111/deci.12128

Teece, D.J. (2010). Business models, business strategy and innovation. *Long Range Planning, 43*(2-3), 172-194. https://doi.org/10.1016/j.lrp.2009.07.003

Thierry, T., Mihai, Ț., & Timber, H. (2020). Effects of Covid-19 on business models in Romania and the Netherlands, a digitalization perspective. *Studies in Business and Economics, 15*(3), 115-131. https://doi.org/10.2478/sbe-2020-0049

Von den Eichen, S.F., Freiling, J., & Matzler, K. (2015). Why business model innovation fails. *Journal of Business Strategy, 36*(6), 29-38. https://doi.org//10.1108/JBS-09-2014-0107

Voss, C., Tsikriktsis, N., & Frohlich, M. (2002). Case research in operations management. *International Journal of Operations and Production Management, 22*(2), 195-219. https://doi.org/10.1108/01443570210414329

Yeger, D. & Shenhar, A. (2019). A Unified Framework for Business Model Transformation of Established Firms. *Journal of Business Models, 7*(4), 73-78. https://doi.org/10.5278/ojs.jbm.v7i4.3134

Yin, R.K. (2014). *Case study research and applications: Design and methods.* Thousand Oaks: Sage publications.

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Conflict of Interest

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Price and output effects of long-term exchange rate changes: Central and Eastern European countries in 2002-2019

Viktor Shevchuk

ABSTRACT

Objective: The objective of the article is to measure the magnitude of the long-term exchange rate price and output effects in the Central and Eastern European countries (plus Turkey and Russia) which practice flexible exchange rate policies, while controlling for the institutional quality and policy stance as measured by the Index of Economic Freedom (IEF) from the Heritage Foundation database.

Research Design & Methods: To analyse long-term price and output effects, the anticipated value of a nominal effective exchange rate was used as obtained by the ARIMA (n,m) model. We analysed the relationships between selected macroeconomic variables with the panel DOLS model using quarterly data from 2002 to 2019. Individual country estimates were provided as well. The study considered alternative specifications for regression models, with control for the money supply and institutional developments.

Findings: Our study revealed that anticipated depreciation of the exchange rate was associated with the incomplete exchange rate pass-through (ERPT) into consumer prices and a decrease in output, with the former becoming stronger over the low-inflationary 2010-2019 period. Among other results, there was a trade-off between price and output effects of the money supply. As expected, investments in physical capital were the factor behind higher output. Finally, liberalisation efforts as proxied with the IEF were inflationary and contractionary.

Implications & Recommendations: It was demonstrated that policies aimed at gradual strengthening of local currencies could be helpful for both acceleration of output growth and containment of inflation in the long run. At the same time, it is not recommended to proceed with further liberalisation of regulatory environment, as it seems not to bring about any favourable output effects while contributing to higher consumer prices.

Contribution & Value Added: The novelty of this study is the estimation of the long-term price and output effects of the anticipated exchange rate while controlling for institutional quality and the progress of market reforms as measured by the IEF. The findings may serve as suggestions for reliable exchange rate policy, with a focus on predictability and the long-term macroeconomic effects.

Article type: research article

Keywords: inflation; exchange rate; money supply; output; Central and Eastern European countries

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INTRODUCTION

Exchange rate macroeconomic effects are important for the assessment of monetary regime effectiveness in the Central and Eastern European (CEE) countries with a floating of domestic currency. If the exchange rate depreciation is associated with a high extent of the exchange rate pass-through (ERPT) into consumer prices combined with output contraction in the long run, it cannot but weaken a rationale for exchange rate flexibility as a shock-absorbing tool in the short run either.

Similar to other developing and emerging economies, see survey by Aron, Macdonald, and Muellbauer (2014), the recent empirical studies for the CEE countries are in favour of the incomplete ERPT

(Beckmann & Fidrmuc, 2013; Jimborean, 2013; Hájek & Horváth, 2015). However, there is evidence that the EPRT can be complete in the long run, while being incomplete in the short run (Kurtović *et al.*, 2018). Exchange rate output effects are less clear. Earlier studies for the CEE countries are mostly in favour of contractionary exchange rate depreciations (Bahmani-Oskooee & Miteza, 2006; Bahmani-Oskooee & Kutan, 2008; Miteza, 2006), but recent studies incline towards a more favourable treatment of a weaker currency (Cuestas, Monfort, & Ordóñez, 2019; Cizmović, Shachmurove, & Vulanovic, 2021). In turn, it strengthens an argument in favour of a floating exchange rate regime (Dabrowski & Wroblewska, 2020; Ihnatov & Capraru, 2012). However, a stronger exchange rate anchor is suggested for inflation-targeting emerging economies as a better resistance tool for the inflationary shocks like in the 2007-2008 pre-crisis period (Pourroy, 2012).

While linking of the ERPT to institutional features such as openness or monetary regime is present in many studies – for example Frankel, Parsley, and Wei (2005) or Ghosh (2013) – much less attention is given to similar effects of institutional environment on the relationship between exchange rate and output. For the CEE countries, it is plausible to assume that a decrease in the ERPT may be due to improvements in the institutional quality following the EU accession, with a shift towards a conventional positive relationship between exchange rate depreciation and output as well.

This article aims to study the long run ERPT and output effects of anticipated changes in the nominal exchange rate for a panel of four CEE countries (plus Turkey and Russia) which follow free or managed floating exchange rate policies in the inflation targeting framework. As in the post-crisis environment of 2010-2019 expansionary monetary policy and currency depreciations were widely used for stabilization purposes without any immediate inflationary repercussions, it might be considered as a sign of new realm in the monetary sphere. However, such policies could have unpleasant price and output effects in the long run, with the danger of stagflation to be materialized. The main motivation behind this research was to check whether abovementioned concerns were justified to any extent.

Several research questions were expected to be answered:

RQ1: What is the long-term ERPT in the case of anticipated currency depreciation?

RQ2: What are the output effects of the anticipated currency depreciation?

RQ3: Are there any changes to the impact of the anticipated currency depreciation on consumer prices and output when controlled for institutional quality?

RQ4: Are there any changes to the anticipated exchange rate effects in the post-crisis environment of 2010-2019?

Our main contribution to the literature is empirical verification of the fact that the anticipated exchange rate depreciation is both inflationary and contractionary in the long run for the CEE countries (plus Turkey and Russia), with the ERPT becoming stronger in the 2010-2019 period. Such results are of interest especially in the context of recent surge in inflation. In contrast to other studies, anticipated changes in the nominal exchange rate are considered, with a control for institutional quality. In our view, it is highly relevant for the inflation targeting framework practiced by all countries in the study. Also, a higher level of economic freedom is likely to be inflationary, while contributing to a decrease in output. Results of panel regressions were supported by the country-by-country estimates.

The rest of the article is organized as follows. A brief literature review will be presented in the next section. It will be followed by the description of research methodology, including analytical issues, data analysis, and statistical model. Then, we will move to a discussion of empirical results. The article will end with concluding remarks.

LITERATURE REVIEW

Exchange Rate pass-through to Domestic Prices

Most studies show the decline of ERPT over the last decades across both developed and emerging economies (Lopez-Villavicencio & Mignon, 2016; Aguirre & Conzales Padilla, 2019; Ortega & Osbat, 2020). Standard explanations of a lower ERPT include nominal rigidities, price discrimination (Corsetti, Dedola & Leduc, 2008), incomplete information (Garetto, 2016), trade liberalisation, lower transportation costs,

and less labour-intense services in wholesale and retail trade (Frankel, Parsley & Wei, 2005), pricing-to-market behaviour (Betts & Devereux, 2000), or improved monetary policy performance (Carriere-Swallow *et al.*, 2016; García-Schmidt & Garcia-Cicco, 2020). As surveyed by Aron, Macdonald and Muellbauer (2014), explanations of delayed and incomplete ERPT in developing and emerging markets is determined by many additional factors, such as quality adjustments, structural changes in trading basket and geographical composition of trading partners, trade integration, as well as shifts in the weights of CPI components. Ha, Stocker and Yilmazkuday (2020) argue that the ERPT used to be lower in countries that practice flexible exchange rate policies in the presence of credible inflation targets that helps to neutralize external shocks. Empirical studies for emerging and middle-income economies lay stress on more stable and anti-inflationary environment (Lopez-Villavicencio & Mignon, 2016), or money growth and terms-of-trade (Aguirre & Conzales Padilla, 2019) than factors behind the lower ERPT.

Many recent empirical studies for the CEE countries, including Beckmann and Fidrmuc (2013), Jimborean (2013), Hájek and Horváth (2015), Hajnal, Molnár, and Várhegyi (2015), Baxa and Šestořád (2019) are in favour of the incomplete ERPT, though in the past high ERPT had been found for Hungary and Poland (Ca′Zorzi, Hahn, & Sánchez, 2007). For 9 CEE countries, Beirne and Bijsterbosch (2011) obtained the ERPT to consumer prices at 0.5 or 0.6 on average using impulse responses or the cointegrated VAR, respectively. It should be noted that earlier studies produced very different ERPT estimates for a single transition economy (Coricelli, Égert, & MacDonald, 2006). The ERPT tends to be high for the CIS countries (Comunale & Simola, 2016).

Empirical studies of the ERPT incorporate both single equation models and systems methods, as vector autoregression (VAR) or dynamic stochastic general equilibrium (DSGE) models (Aron, Macdonald, & Muellbauer, 2014). Although most of recent studies use VAR models, for example, Beirne and Bijsterbosch (2009), Baxa and Šestořád (2019), which are advantageous from the point of feedback effects from endogenous exchange rates, single equation models nevertheless remain popular as being more suited to the cases of co-integration and structural changes (Aguirre & Padilla, 2019). As exchange rate changes may reflect not only stochastic shocks, important variables reflecting systemic changes in policy are usually omitted in the typical VAR (Aron, Macdonald, & Muellbauer, 2014). Studies for the CEE countries that use single equation models include Jimborean (2013) or Comunale and Simola (2016). Similar to other EU countries, nonlinearities in the ERPT may require the use of a multivariate smooth transition approach (Cheikh, Ben Zayed, & Nguen, 2018).

Exchange Rate and Output

The traditional view of a currency depreciation as an expansionary policy tool is based mainly upon a stimulating effect on the net exports. However, demand impulse may be weakened by low price elasticities of exports and imports, decrease in real wages, capital outflows (Lizondo & Montiel, 1988), the redistribution of income in favour of capital owners (Krugman & Taylor, 1978), or the balance sheet effect (Blanchard, Faruqee, & Das, 2010). The contractionary effect is more likely if the supply-side effects are taken into account, in the case of anticipated depreciations (Agenor, 1991). While the expansionary effect of depreciation on output is supported for industrial countries, for example Hutchison and Noy (2002), empirical results are not so uniform for developing countries and former transition economies (Bahmani-Oskooee & Miteza, 2006; Bahmani-Oskooee & Kutan, 2008). Contractionary effects of nominal (real) depreciation are found for Bulgaria (Miteza, 2006), the Czech Republic (Hsing, 2016a), Slovakia (Hsing, 2016b), and Turkey (Karahan, 2020). However, the expansionary effect of depreciation on output is observed for Poland (Bahmani-Oskooee & Kutan, 2008; Haug, Jędrzejowicz, & Sznajderska, 2013). Recently, an expansionary effects of currency depreciation on industrial production has been obtained for 25 Eastern European countries (Cizmović, Shachmurove, & Vulanovic, 2021). As control variables, the trade openness and several indexes of institutional quality had been used. The importance of links between trade openness and exchange rate regime has been stressed recently by Stoykova (2021). Regarding the exchange rate effects on output, the control for institutional variables is provided by Chavez (2020). Similar to the discussion on the ERPT, it is natural to assume that institutional quality and related policies also play a role in the exchange rate effects on output, especially in the long run.

Similar to the ERPT empirical studies, most recent studies on the exchange rate effects on output make use of the VAR models. However, there are examples of the use of single equation models as well (Bahmani-Oskooee & Kutan, 2008; Ihnatov & Capraru, 2012; Hsing, 2016a; Hsing, 2016b). Recently, directional asymmetries have attracted attention. For example, it has been obtained for Australia with the nonlinear ARDL approach that only currency appreciation has the long-term output effects (Bahmani-Oskooee & Mohammadian, 2016). However, the output effects of depreciation and appreciation are quite heterogeneous for emerging economies (Bahmani-Oskooee & Mohammadian, 2017), including the CEE countries (Bahmani-Oskooee & Mohammadian, 2018).

While the recent empirical findings are in favour of incomplete and declining ERPT, the estimates of exchange rate effects on output lack such uniformity suggesting potential problems in the use of exchange rate as a policy tool. As the policy regime of inflation targeting suggests a stronger role for the exchange rate (Comunale & Simola, 2016), it is of interest to study both price and output effects of anticipated exchange rate developments within the theoretical framework that allows for a combination of positive ERPT with the possibility of both expansionary and contractionary output effects dependent on structural features of the economy. The level of economic freedom deserves attention as closely related to the monetary regime in general and exchange rate policy in particular.

These prior empirical results allowed to assume the following research hypotheses:

H1: There is a positive relation between anticipated exchange rate depreciation and consumer prices, although it is not complete and declining over time.

H2: There is a possibility of the inverse relation between currency depreciation and output that reflects import-dependent and/or financially-constrained pattern of the real sector.

RESEARCH METHODOLOGY

Analytical Framework

Besides more comprehensive macroeconomic models, for example García-Schmidt and García-Cicco (2020), the analysis of the ERPT often applies rather simple models based on aggregate demand and money demand equations, interest parity equation, import price setting process etc. On the other hand, the exchange rate effects on output are important as there can be a trade-off between the correction of external balances in the case of incomplete ERPT and contractionary output developments. For this purpose, a rather simple AD-AS model with rational expectations seems to be a proper analytical framework, sufficient to outline the basic relationships for the economies with undeveloped financial markets. Obviously, the economies of the well-developed financial markets require more sophisticated modelling approaches for the exchange rate analysis.

For economies with the financial constraint in the real sector and the wealth effect in the aggregate demand, a simple AS-AD model is presented below:

$$y_t = s_1(m_t - E_{t-1}p_t) - s_2E_{t-1}(e_t + p_t^* - p_t) + u_t, \quad (1)$$

$$y_t = a_1(m_t - E_t\pi_{t+1}) + a_2E_t(e_{t+1} + p_{t+1}^* - p_{t+1}) + a_3(E_t\pi_{t+1} - \pi_t) - a_4r_t + a_5y_t^* + v_t, \quad (2)$$

$$\pi_t = \gamma p_t + (1-\gamma)(e_t + p_t^*), \quad (3)$$

$$r_t = r_t^* + E_te_{t+1} - e_t - (E_t\pi_{t+1} - \pi_t) + (E_tp_t^* - p_t^*) + \varphi_t, \quad (4)$$

$$e_t = \rho e_{t-1} + \varepsilon_t, \quad (5)$$

in which:

y_t - real output;
m_t - money supply;
p_t and p_t^* - domestic and foreign prices, respectively;
r_t and r_t^* - domestic and foreign real interest rates, respectively;
e_t - nominal exchange rate (the domestic currency price of foreign currency);
ε_t - stochastic shock to the exchange rate that is independent and identically distributed with mean zero and constant variance;
π_t - consumer price index (CPI);

φ_t - measure of risk premium;
u_t and v_t - stochastic supply and demand shocks, respectively.

All variables, except for r_t and r_t^*, are expressed in logarithms. Operators E_t and E_{t-1} denote expectations made in the periods t and t–1, respectively.

Model (1)-(5) was standard in all respects. Equation (1) described the aggregate supply function based on a composition of tradable and non-tradable goods, with micro-foundations provided by Rojas-Suarez (1992). Output was stimulated by the amount of the real credit (*the financial effect*), and it was depressed by the relative price (*the price effect*). The decisions made by producers were based on the last period's expectations of relative prices. The positive financial effect (s_1) reflected the financial constraint in production, while the price effect (s_2) measured the strength of dependence on the import of capital goods and intermediates. Equation (2) related aggregate demand for the domestic good to the real money supply (*the wealth effect*), expectations of the relative price (*the price effect*), expectations of inflation and the real interest rate. Higher foreign prices contribute to aggregate demand due to the price effect (a_2), as do the real value of money supply due to the wealth effect (a_1), expectations of higher inflation (a_3) and a decline in the real interest rate (a_4). In the familiar structuralist tradition, an adverse effect of currency depreciation on producers or consumers may be compensated by an increase in the money supply. The productivity and demand shocks, u_t and v_t, respectively, are assumed to be expansionary.

Equation (3) defined the CPI as a weighted average of the prices of domestic and foreign goods (in domestic prices). In the equation (4), the interest rate was specified in real terms as the foreign interest rate plus the expected depreciation of the domestic currency, subtracting the expected rate of domestic inflation. It was assumed that domestic prices do not affect foreign prices. In the presence of risk premium, a positive relationship between ex-post exchange rate change and the interest rate differential as it was predicted by the UIP used to be restored (Kumar, 2019). Finally, in the equation (5) the exchange rate was subject to either permanent or transitory shocks (for the former, ρ=1).

After necessary substitutions for i_t and r_t, the model (1)-(5) was solved for the equilibrium values of y_t and p_t by the undetermined coefficients technique. It was assumed that the exchange rate was exogenous in respect to both output and prices, along with foreign output and foreign prices, and the world interest rate. As our focus was on the price and output responses to changes in the exchange rate while controlling for the money supply, the reduced-form solutions to the system (1)–(5) for the values of output and domestic price contain only monetary variables and stochastic shocks as follows:

$$\begin{aligned} y_t = \bar{y} + \left(\frac{1}{\Delta_0}\right)[(a_2 - (1-\gamma)a_1)s_1 + a_1 s_2]m_t - \\ - \left(\tfrac{1}{\Delta_1}\right)[\rho a_2 s_1 + \rho a_1 s_2 + (1-\rho)(\gamma a_3 + \gamma a_4)s_2 - (1-\gamma)\rho a_1 s_1]e_{t-1} + u_t, \end{aligned} \tag{6}$$

$$\begin{aligned} p_t = \bar{p} + \left(\frac{1}{\Delta_1}\right)(a_1 - s_1)m_t + \left(\frac{1}{\Delta_1}\right)[s_2 + \rho a_2 - (1-\gamma)\rho a_1]e_{t-1} + \left(\frac{1}{\gamma a_3 + \gamma a_4}\right)(v_t - u_t) + \\ + \left(\frac{1}{\gamma a_3 + \gamma a_4}\right)\left[\rho a_2 + (1-\rho)(\gamma a_4 - (1-\gamma)a_3) - (1-\gamma)\rho a_1 - (a_2 + \gamma(a_1 \right. \\ \left. - a_3))\frac{s_2 + \rho a_2 - (1-\gamma)\rho a_1}{\Delta_1}\right]\varepsilon_t, \end{aligned} \tag{7}$$

in which:

$\Delta_0 = \gamma a_1 + a_2 + s_2 - s_1$;
$\Delta_1 = \gamma a_1 + \rho a_2 + (1-\rho)(\gamma a_3 + \gamma a_4) + s_2 - s_1$;
$\bar{y}$ and $\bar{p}$ - the equilibrium values of output and domestic price level, respectively.

A temporary depreciation of the exchange rate, ε_t, was neutral in respect to output, but had a price effect. Assuming a permanent depreciation of the exchange rate ($\rho = 1$), the magnitude of domestic price effects of e_{t-1} was affected by the relative strength of both price effects (a_2 and s_2) and the wealth effect (a_1) in comparison to the financial effect (s_1), as well as on the composition of CPI (for higher values of γ, the reaction of prices became stronger). A permanent depreciation of the

exchange rate was likely to bring about a decline in output if the price effect in the aggregate demand was not sufficient to offset contractionary supply effects. If $a_1 < s_1$, a stronger ERPT is associated with a more pronounced contractionary effect on output. If strong enough in comparison to the wealth effect (a_1), the financial effect (s_1) may bring about a decline in domestic prices combined with an expansionary output effect.

Stochastic demand shocks are neutral in respect to output while contributing to higher prices. As expected, the supply shock was pro-growth and anti-inflationary. That kind of asymmetry is kept if the supply shock is modelled as the autoregressive process, *i.e.* $u_t = \theta u_{t-1} + \omega_t$, where ω_t is the stochastic component. Such an assumption is more realistic if associate supply shocks with investments.

Data

Quarterly time series from 2002:Q1 to 2019:Q4 for the Czech Republic, Hungary, Poland, and Romania were used, with relevant data for Turkey and Russia for comparison, as countries which follow the same floating exchange rate policies but significantly differ in respect to the institutional quality. Quarterly series of the CPI (index, 2010 = 100), cpi_t, the real GDP (index, 2010 = 100), y_t, the nominal effective exchange rate (index, 2010 = 100), e_t, as well as the money aggregate M3 (in local currency), m_t, openness for trade in goods and services (% of GDP), $open_t$, and the investments (% of GDP), inv_t, were retrieved from the IMF's *International Financial Statistics* database (www.imf.org). As mentioned above, institutional quality was measured by the IEF, $herit_t$, from the Heritage Foundation (www.heritage.org). The IEF suited well the purpose of our study, as it comprises most important components that used to be discussed in relation to the exchange rate effects, *i.e.* monetary freedom, which measures the stability of prices, business freedom, which signals the scope of administrative regulations, trade freedom, investment freedom and financial freedom, which characterise the openness of the economy to trade and capital flows, as well as independence of financial institutions.

Applying the ARIMA(1,1) structure for Romania and ARIMA(1,2) for other countries, the anticipated component of the exchange rate, ea_t, was derived on the basis of in-sample one period ahead forecast as obtained with the ARIMA(n,m) model.

Table 1. Descriptive statistics

Statistics	cpi_{it}	y_{it}	ea_{it}	m_{it}	inv_{it}	$open_{it}$	$herit_{it}$
Mean	4.585	4.627	4.688	4.630	3.147	4.400	4.132
Std. Dev.	0.296	0.184	0.240	0.693	0.177	0.407	0.103
Max	5.503	5.114	5.984	5.984	3.669	5.164	4.327
Min	3.724	4.177	4.239	2.537	2.787	3.771	3.877

Source: own elaboration in EViews.

Results of tests for the presence of cross-dependency in the panel set are presented in Table 2. All four tests indicated the strong presence of cross-sectional dependency. Only in the case of investments, the Pesaran CD test suggested cross sectional independence.

The results of the panel unit root tests are presented in Table 3. Both unit root tests, Cross-sectional Augmented Dickey-Fuller (CADF), and the Cross-sectional Im-Pesaran-Shin (CIPS), clearly indicated that all panels except $open_{it}$ were non-stationary in levels and stationary in first differences. Each of the tests was carried out to include an intercept (ea_{it}, $open_{it}$, $herit_{it}$) or intercept and trend (cpi_{it}, y_{it}, m_{it}, inv_{it}).

For the test of cointegration, seven Pedroni's tests were applied for several sets of variables which were hypothesised as potential determinants of the consumer prices and output (Table 4). For the former, a data set that consisted of cpi_{it}, ea_{it}, m_{it}, and $open_{it}$ revealed a weak evidence of cointegration. However, all tests suggested the presence of cointegration if $open_{it}$ is substituted for inv_{it} and $herit_{it}$. Somewhat different pattern of cointegration was found for output, with evidence of cointegration being stronger in the absence of $herit_{it}$. On the other hand, cointegration test results became much weaker if trade openness was accounted for. As the group rho-test and panel v-test may have a very low power in the case of small samples, it was possible to conclude that our models were in fact panel cointegrated. Noteworthy, no cointegration between output and price levels was detected.

Table 2. Pesaran's cross sectional independence test results

Tests	cpi_{it}	y_{it}	ea_{it}	m_{it}	inv_{it}	$open_{it}$	$herit_{it}$
Breusch-Pagan LM	1026.2***	929.36***	366.0***	1023.9***	179.89***	831.70***	841.99***
Pesaran scaled LM	184.62***	166.94***	64.08***	184.2***	30.11***	107.40***	108.77***
Bias-corrected scaled LM	184.58***	166.90***	64.04***	184.16***	30.06***	107.34***	108.71***
Pesaran CD	32.03***	30.44***	8.88***	31.99***	0.20	15.43***	25.77***

Note: ***, ** and * mean rejection of null hypotheses of cross-sectional independence at 1%, 5%, and 10% level.
Source: own elaboration in EViews.

Table 3. Panel unit roots test results

Variables	CADF		CIPS	
	Level	Δ	Level	Δ
cpi_{it}	0.97	-3.94***	0.69	-4.20***
y_{it}	0.84	-10.84***	0.77	-14.86***
ea_{it}	-0.67	-12.14***	-0.61	-18.51****
m_{it}	-0.04	-10.61***	-0.09	-16.00***
inv_{it}	0.09	-11.18***	0.08	-17.94***
$open_{it}$	-1.96**	-13.62***	-2.08**	-24.01***
$herit_{it}$	-0.12	-11.62***	-0.18	-12.90***

Note: ***, ** and * mean rejection of null hypotheses at 1%, 5% and 10% level, is the operator of first differences.
Source: own elaboration in EViews.

Table 4. Pedroni panel cointegration test results

Statistics	Consumer Price Index		Output	
	cpi_{it}, ea_{it}, m_{it}, $open_{it}$	cpi_{it}, ea_{it}, m_{it}, inv_{it}, $herit_{it}$	y_{it}, ea_{it}, m_{it}, inv_{it}	y_{it}, ea_{it}, m_{it}, inv_{it}, $herit_{it}$
Panel v-Statistic	1.20	2.06**	-0.96	-0.35
Panel rho-Statistic	-1.59*	-1.68**	-2.78***	-0.99
Panel PP-Statistic	-2.11**	-2.54***	-3.24***	-1.60*
Panel ADF-Statistic	-1.86*	-2.42***	-2.01**	-1.09
Group rho-Statistic	-0.91	-0.72	-2.86***	-0.88
Group PP-Statistic	-1.78**	-1.92**	-3.90***	-2.01**
Group ADF-Statistic	-1.40*	-1.56*	-2.55***	-1.38*

Note: ***, ** and * mean rejection of null hypotheses of no cointegration at 1%, 5%, and 10% level.
Source: own elaboration in EViews.

As variables were integrated, the Dynamic Ordinary Least Squares (DOLS) estimator was applied. Its main advantage was that the use of lead and lagged differences of the regressor allowed for a robust correction of endogeneity in the exogenous variables (Afonso & Jalles, 2012). It was important for our study as the exchange rate may be influenced to some extent by both price and output, along the lines of the monetary model of exchange rate. Besides correcting for the small sample bias caused by an endogeneity problem, in the context of rational expectations and anticipated changes in the exchange rate, it was an important advantage of the DOLS estimator that lead differences of the regressor were taken into account. However, it should be admitted that our empirical approach did not allow for a comprehensive specification of the shocks in the financial sector nor for asymmetries in output effects that can be related to the strength of ERPT. For a differentiated data, it was easier to study price and output effects of the exchange rate with interaction effects for institutional variables.

Statistical Model

A general representation for the consumer prices and real output baseline models is provided below:

$$cpi_{it} = a_0 + a_1 ea_{it} + a_2 time10_t + a_3 ea_{it} \cdot time10_t + a_4 m_{it} + a_5 inv_{it} + a_6 open_{it} + \zeta_{it}, \quad (8)$$

$$y_{it} = b_0 + b_1 ea_{it} + b_2 time10_t + b_3 ea_{it} \cdot time10_t + b_4 m_{it} + b_5 inv_{it} + \xi_{it}, \quad (9)$$

in which:

$time10_t$ - the time dummy (0 for the 2002-2009 period, and 1 otherwise);

ζ_{it} and ξ_{it} - stochastic shocks to inflation and output, respectively.

Our regression model incorporated monetary and structural variables in levels and a slope dummy variable $ea_{it} \cdot time10_t$. Such a choice of an interaction term aimed at assessment of the exchange rate effects in the period after the world 2008-2009 financial crisis. A time dummy $time10_t$ controled for specific features of the 2010-2019 period.

A decision to use variables in levels was reinforced by the fact that the anticipated component of the exchange rate was supposed to be relatively stable over time. Alternative approaches with time series in a differentiated form that prevail in empirical studies with the VAR models may have led to a loss of information contained in levels of dependent and independent variables.

Based on the solutions in equations (6) and (7), it was expected that the anticipated exchange rate depreciation contributed to consumer prices ($a_1 > 0$), while its impact on output was rather ambiguous ($b_1 \neq 0$). In the estimates of exchange rate effects, it was important to control for the monetary policy which itself affects prices and output, at least in the short run (Ortega & Osbat, 2020). The money supply was likely to be inflationary ($a_2 > 0$) and expansionary ($b_2 > 0$). For example, a positive effect of money supply on output was found for the Czech Republic, Romania (Simionescu *et al.*, 2018), and Russia (Ono, 2013). In line with the predictions of AD-AS model, it was likely that the exchange rate depreciation and money supply were both inflationary but with uncertain effect on the output.

Investments were chosen as a straightforward proxy for the supply shock. It was supposed to stimulate output ($a_3 > 0$) and exert the downward pressure on prices ($b_3 < 0$), with the latter effect being dependent on the aggregate demand sensitivity to the interest rate. Openness could have served as another proxy for the expansionary supply shock, but it was decided to exclude this variable from the output regression as suggested by the cointegration test results. However, external conditions were controlled by using world oil prices as a deterministic regressor. The impact of trade openness on consumer prices seemed to be ambiguous ($a_4 \neq 0$). While trade liberalisation and relevant benefits of higher openness were considered as one of standard explanations for a decline of the ERPT in the developed countries (Frankel, Parsley & Wei, 2005), just the opposite outcome was found for the developing countries (Ghosh, 2013).

In the extended model, the IEF was included into both regressions. As suggested by the literature (Corsetti, Dedola, & Leduc, 2008; Carriere-Swallow *et al.*, 2016; García-Schmidt & Garcia-Cicco, 2020), proper account for institutional quality was highly important for the estimations of ERPT. To the same extent, it is possible to argue that accounting for economic freedom as an integral indicator of institutional quality may modify the exchange rate effects on output. For the CEE countries, a favourable relationship between economic freedom and economic growth is found by Uzelac, Davidovic, and Dukić Mijatović (2020). As established by Khalilov and Yi (2021) for the OECD countries, it is necessary to create a friendly regulation for entrepreneurs in order to accelerate economic growth. In addition, there was a control for investments in the regression for consumer prices that include $herit_{it}$. It was motivated mainly by the results of cointegration analysis.

Control for the IEF provided a robustness check for the exchange rate effects in the presence of institutional features of the economy. Comparisons between the estimates for the 2002-2019 sample and sub-samples provided information on the stability of coefficients over the time frame. In addition, country-by-country estimates allowed for assessment of the credibility of panel DOLS estimates. As argued by Bahmani-Oskooee & Mohammadian (2018), heterogeneous country-specific results may reduce the importance of estimates by panel models. Also, it is worth noting that our study was focused

on the exchange rate long-term effects solely. In order to assess the short-term effects of exchange rate changes, estimation of the error-correction models (ECMs) is required.

RESULTS AND DISCUSSION

Panel Data Analysis

The estimates of the cointegrating relationship for CPI and GDP for two regression models are presented in Tables 5 and 6, respectively. A grouped version of the DOLS was used, with the trend suppressed in the estimates for CPI. The use of a slope dummy variable provided an opportunity to conclude whether the exchange rate price and output effects changed over time.

Our results were in favour of the incomplete ERPT, which was consistent with other studies. Both the baseline model and the extended model brought about the value of the parameter on ea_{it} at 0.272 and 0.191, respectively. However, there was no evidence of the decline of the ERPT in the post-crisis period of 2010-2019. As suggested by the slope dummy variable, there was statistically significant strengthening of the anticipated exchange rate effect on consumer prices over the 2010-2019 period. Thus, the hypothesis H1 was confirmed only partially, with no support for a declining ERPT in the post-crisis environment. A stronger ERPT was observed against a decline in consumer prices in the 2010-2019 period, as the value of the parameter on $time10_t$ was negative both in the baseline model (-0.998) and in the extended model (-0.697).

Table 5. Long-term estimates of the CPI determinants, 2002-2019

Explanatory variables	Dependent variable cpi_{it}	
	Baseline model	Extended model
ea_{it}	0.272***	0.191***
$time10_t$	-0.998***	-0.697***
$ea_{it} \cdot time10_t$	0.259***	0.163***
m_{it}	0.274***	0.228***
$open_{it}$	0.009	–
inv_{it}	0.003	-0.038**
$herit_{it}$	–	0.522***

Note: ***, ** and * mean statistical significance at 1%, 5%, and 10% level
Source: own elaboration in EViews.

Table 6. Long-term estimates of the GDP determinants, 2002-2019

Explanatory variables	Dependent variable y_{it}	
	Baseline model	Extended model
ea_{it}	-0.171***	-0.184***
$time10_t$	0.128	-0.038
$ea_{it} \cdot time10_t$	-0.029	0.005
m_{it}	0.230***	0.225***
inv_{it}	0.194***	0.183***
$herit_{it}$	–	-0.223***

Note: ***, ** and * mean statistical significance at 1%, 5%, and 10% level
Source: own elaboration in EViews.

A stronger link between the exchange rate and consumer prices can be attributed to the strength of both price effects (s_2 and a_2) combined with a weaker wealth effect (a_1). Among other explanations, a lower exchange rate volatility was found to be the most likely factor behind the higher ERPT (Jimborean, 2013). Also, a more competitive domestic distribution sector may have an impact of its own, as it was found for the EU countries (Ortega & Osbat, 2020), or monetary policy stability, as it is the case for the developing countries (Ghosh, 2013).

As for the hypothesis H2, it was confirmed in an unambiguous way. Anticipated depreciation of the exchange rate was contractionary, with no signs of any changes to the inverse relation to output in the post-crisis period of 2010-2019. It is worth noting that the abovementioned combination of strong price effects with a weak wealth effect bought about an inverse relationship between the anticipated exchange rate depreciation and output. In the presence of a stronger price effect by the anticipated exchange rate, somewhat weakening of its asymmetric impact on output was expected in the case of smaller financial effect (s_1).

Regardless of the specification, it was found that the money supply brings about an increase in both consumer prices and output. Among other results, investments contributed to output, while becoming anti-inflationary if there is control for the economic freedom. The post-crisis period of 2010-2019 seems not to be different in respect to output. Contrary to the studies for the developing countries (Ghosh, 2013), the higher openness was not inflationary.

In the extended model, control for the economic freedom curbs the ERPT from 0.272 to 0.191, while the exchange rate effect on output did not change significantly. A higher level of economic freedom, as measured by the IEF, brought about an increase in consumer prices combined with a decrease in output. Our results imply that the adoption of liberal policies in the 2000s might have been excessive. While being motivated by the requirements of the EU accession, all kinds of liberal policies associated with economic freedom did not contribute, at least in a direct way, to deceleration of inflation and acceleration of economic growth.

Country-by-country Analysis

In order to detect potential differences in the estimates, the exchange rate effects on consumer prices and output were estimated for each country by using the same specification as in the panel data estimates. For all countries, the anticipated exchange rate, money supply, CPI and output were non-stationary in levels and stationary in first differences. Also, the Johansen test indicated cointegration of the variables along the lines of two models used in the panel data analysis of the exchange rate effects on the CPI and output.

Estimates of the ERPT for individual countries (Table 7) show that majority of coefficients were statistically significant and had the positive sign. The mean group estimator, computed as the average of the individual coefficients estimated for each country, was very close to the long-term ERPT estimated in Table 5, especially for the baseline model, *i.e.* 0.285 vs. 0.272. When compared to the study by Jimborean (2013), there was not much heterogeneity of the ERPT estimates at the individual country level. Similar to Hajnal, Molnár, and Várhegyi (2015), there was an increase of the ERPT for Hungary in the post-crisis period, but the coefficient on ea_{it} became insignificant in the extended model. Regardless of the regression model, individual country estimates were not different from the panel estimates in that the ERPT became stronger over the 2010-2019 period, which in turn was characterized by a downward pressure on consumer prices.

Table 7. Individual country estimates of the ERPT, 2002-2019

Countries	Dependent variables					
	Baseline model			Extended model		
	ea_{it}	$time10_t$	$ea_{it} \cdot time10_t$	ea_{it}	$time10_t$	$ea_{it} \cdot time10_t$
Czech Republic	0.345***	-0.797***	0.188***	0.195***	-0.655***	0.148***
Hungary	0.385***	-0.925**	0.203**	0.080	-1.677***	0.388***
Poland	0.095**	-0.759*	0.189**	0.480***	-1.280*	0.284*
Romania	0.539***	-1.145*	0.285*	0.585***	-1.449**	0.352**
Turkey	0.137**	-0.892***	0.173***	0.297***	-1.024***	0.203**
Russia	0.206***	-0.896***	0.205***	0.296***	-1.266***	0.306***
Mean group	0.285	-0.903	0.207	0.309	-1.161	0.267

Note: ***, ** and * mean statistical significance at 1%, 5%, and 10% level.
Source: own elaboration in EViews.

When comparing the mean group estimates of the exchange rate effects on GDP in Table 8 with the panel estimates in Table 6, it is clear that these ones were very close, *i.e.* -0.203 versus -0.171 (the baseline model) and -0.207 versus -0.184 (the extended model). The close values of long-run coefficients for the panel regression and the average of coefficients obtained in individual country regressions confirmed robustness of the estimated results. Except Russia, both a slope dummy variable and a time dummy variable were insignificant, which was consistent with the panel estimates. Control for the level of economic freedom, the inverse relationship between the anticipated exchange rate, and output seemed to become stronger only in Poland, with the opposite outcome in Hungary.

Table 8. Individual country estimates of the exchange rate effects on GDP, 2002-2019

Countries	Dependent variables					
	Baseline model			Extended model		
	ea_{it}	$time10_t$	$ea_{it} \cdot time10_t$	ea_{it}	$time10_t$	$ea_{it} \cdot time10_t$
Czech Republic	-0.136**	-0.131	0.031	-0.130***	-0.021	0.008
Hungary	-0.262***	0.705	-0.155	-0.147*	0.639	-0.135
Poland	-0.125***	-0.156	0.041	-0.195**	0.158	-0.001
Romania	-0.160***	1.330	-0.316	-0.213***	1.282	-0.303
Turkey	-0.383**	-0.862	0.175	-0.403*	-1.406	0.289
Russia	-0.154***	-1.259***	0.263***	-0.153***	-1.265***	0.265***
Mean group	-0.203	-0.062	0.007	-0.207	-0.102	0.020

Note: ***, ** and * mean statistical significance at 1%, 5% and 10% level.
Source: own elaboration in EViews.

The estimates of the negative exchange rate effects on output for Turkey were much stronger when compared with the CEE countries, albeit at a lower level of statistical significance. As for Russia, results were somewhat below the mean of the group. At the same time, the ERPT for both countries was lower in comparison with the estimates of such countries as Romania (both models), the Czech Republic, and Hungary (the baseline model), or Poland (the extended model). Both time and interaction terms were not much different from the mean of the group. On the whole, differences between the CEE countries and their two low-income neighbours with regard to the ERPT were not strong enough.

CONCLUSIONS

In the article, the DOLS estimates of anticipated exchange rate effects on the consumer prices and output in the CEE countries (plus Turkey and Russia) are provided. The main result was that the anticipated exchange rate depreciation was associated with the incomplete ERPT and a decrease in output, with the former effect apparently becoming stronger over the 2010-2019 period. Thus, our research hypothesis that the positive relation between exchange rate depreciation and domestic consumer prices that is not complete and declining over time was confirmed only partially. On the other hand, the second hypothesis of the contractionary effect of currency depreciation on output was confirmed. Control for the level of economic freedom and the output effects of the exchange rate remained much the same while the ERPT seems to become smaller. Higher level of economic freedom was a factor behind higher prices and lower output. Among other results, the money supply was expansionary but at the cost of higher prices. As expected, the investments in physical capital was the factor behind output growth, with an anti-inflationary effect of control for the economic freedom.

Our study implies that there is not much room for relative price incentives for the long-term economic growth as currency depreciation is inflationary and contractionary. Consequently, the exchange rate appreciation may be considered for stabilisation purposes. Also, further liberalisation of the CEE economies seems to be counter-productive. Although our results seem to be quite robust, it is necessary to admit serious limitations of the study to be addressed in future research. Firstly, causal links between exchange rate, consumer prices, and output both in the short- and long run within the VAR/VEC framework require additional research, with an account for the structural break in 2008-2009

and more precise specification of the shocks in the financial sector. Secondly, interaction effects for institutional variables are worth attention for better understanding of the exchange rate impact on prices and output. Third, a time-varying nature of the exchange rate price and output effects is of interest for future studies. On the theoretical side, impact of nominal rigidities and interest rate links with the world financial markets deserve research efforts.

REFERENCES

Afonso, A., & Jalles, J.T. (2012). *Revisiting Fiscal Sustainability: Panel Cointegration and Structural Breaks in OECD Countries* (ECB Working Paper Series, 1465). Frankfurt: European Central Bank.

Agenor, P.R. (1991). Output, Devaluation and the Real Exchange Rate in Developing Countries. *Review of World Economics*, *127*(1), 18-41.

Aguirre, H., & Conzales Padilla, H. (2019). *Exchange rate pass-through, monetary policy and real shocks: An empirical evaluation* (Economic Research Working Papers, 85. Buenos Aires: Banco Central de la República Argentina (BCRA).

Aron, J., Macdonald, R., & Muellbauer, J. (2014). Exchange Rate Pass-Through in Developing and Emerging Markets: A Survey of Conceptual, Methodological and Policy Issues, and Selected Empirical Findings. *Journal of Development Studies*, *50*(1), 101-143. https://doi.org/10.1080/00220388.2013.847180

Bahmani-Oskooee, M., & Miteza, I. (2006). Are Devaluations Contractionary? Evidence from Panel Cointegration. *Economic Issues*, *11*(1), 49-64.

Bahmani-Oskooee, M., & Kutan, A. (2008). Are devaluations contractionary in emerging economies of Eastern Europe? *Economic Change and Restructuring*, *41*(1), 61-74. http://dx.doi.org/10.1007/s10644-008-9041-9

Bahmani-Oskooee, M., & Mohammadian, A. (2016). Asymmetry effects of exchange rate changes on domestic production: Evidence from nonlinear ARDL approach. *Australian Economic Papers*, *55*(3), 181-191. http://dx.doi.org/10.1111/1467-8454.12073

Bahmani-Oskooee, M., & Mohammadian, A. (2017). *On the Relation between Domestic Output and Exchange Rate in 68 Countries: An Asymmetry Analysis* (MPRA Paper, 82939). Munich: University Library of Munich.

Bahmani-Oskooee, M., & Mohammadian, A. (2018). Asymmetry Effects of Exchange Rate Changes on Domestic Production in Emerging Countries. *Emerging Markets Finance & Trade*, *54*(6), 1442-1459. https://doi.org/10.1080/1540496X.2017.1307730

Baxa, J., & Šestořád, T. (2019). *The Czech Exchange Rate Floor: Depreciation without Inflation?* (Working Paper Series,1/2019). Prague: Czech National Bank.

Beckmann, E., & Fidrmuc, J. (2013). Exchange rate pass-through in CIS countries. *Comparative Economic Studies, 55*(4), 705-720. https://doi.org/10.1057/ces.2013.8

Beirne, J. & Bijsterbosch, M. (2009). *Exchange rate pass-through in Central and Eastern European member states* (Working Paper Series, 1120). Frankfurt: European Central Bank.

Betts, C., & Devereux, M. (2000). Exchange rate dynamics in a model of pricing-to-market. *Journal of International Economics*, *50*(1), 215-244. https://doi.org/10.1016/S0022-1996(98)00036-1

Blanchard, O., Faruqee, H., & Das, M. (2010). The Initial Impact of the Crisis on Emerging Market Countries. *Brookings Papers on Economic Activity*, *41*(1), 263-323.

Carriere-Swallow, Y., Gruss, B., Magud, N., & Valencia, F. (2016). *Monetary Policy Credibility and Exchange Rate Pass-Through* (Working Paper, WP/16/240). Washington: International Monetary Fund.

Ca□Zorzi, M., Hahn, E., & Sánchez, M. (2007). *Exchange rate pass-through in emerging markets* (Working Paper Series, 739). Frankfurt: European Central Bank.

Chavez, C. (2020). How is the dynamic impact of Undervaluation on Economic Growth in Latin American Countries?: A Panel VAR analysis. *Research Square*. https://doi.org/10.21203/rs.3.rs-25367/v1

Cheikh, N.B., Zayed, Y. B., & Nguen, P. (2018). Nonlinear Exchange Rate Transmission in the Euro Area: A Multivariate Smooth Transition Regression Approach. *Economics Bulletin*, *38*(3), 1590-1602. http://hdl.handle.net/10453/130371

Cizmović, M., Shachmurove, Y., & Vulanovic, M. (2021). Real Effective Exchange Rates and Deindustrialization: Evidence from 25 Post-Communist Eastern European countries. *Post-Communist Economies, 33*(7), 862-898. https://doi.org/ 10.1080/14631377.2020.1867429

Comunale, M., & Simola, H. (2016). *The pass-through to consumer prices in CIS economies: The role of exchange rates, commodities and other common factors* (BOFIT Discussion Papers, 16). Helsinki: Bank of Finland.

Coricelli, F., Égert, B., & MacDonald, R. (2006). *Monetary Transmission Mechanism in Central & Eastern Europe: Gliding on a Wind of Change* (Working Paper, 850). Ann Arbor: The William Davidson Institute.

Corsetti, G., Dedola, L., & Leduc, S. (2008). High exchange-rate volatility and low pass-through. *Journal of Monetary Economics*, *55*(6), 1113-1128. https://doi.org/10.1016/j.jmoneco.2008.05.013

Cuestas, J. C., Monfort, M., & Ordóñez, J. (2019). *Real exchange rates and competitiveness in Central and Eastern Europe: have they fundamentally changed?* (Working Papers, 12). Castellón (Spain): Universitat Jaume I.

Dabrowski, M., & Wroblewska, J. (2020). Insulating property of the flexible exchange rate regime: A case of Central and Eastern European countries. *International Economics, 162*(C), 34-49. https://doi.org/10.1016/j.inteco.2020.03.002

Frankel, J.A., Parsley, D.C., & Wei S-J. (2005). *Slow pass-through around the world: A new import for developing countries?* (NBER Working Paper, 11199). Cambridge, MA: National Bureau of Economic Research.

Garetto, S. (2016). Firms' *heterogeneity*, incomplete information, and pass-through. *Journal of International Economics*, 101(C), 168-179. https://doi.org/10.1016/j.jinteco.2016.05.001

García-Schmidt, M., & García-Cicco, J. (2020). Revisiting the exchange rate pass through: A general equilibrium perspective. *Journal of International Economics*, *127*(C), 103389. http://dx.doi.org/10.1016/j.jinteco. 2020. 103389

Ghosh, A. (2013). Exchange rate pass through, macro fundamentals and regime choice in Latin America. *Journal of Macroeconomics*, *35*(C), 164-171. https://doi.org/10.1016/j.jmacro.2012.09.001

Ha, J., Stocker, M., & Yilmazkuday, H. (2020). *Inflation and Exchange Rate Pass-Through* (Policy Research Working Paper, 8780). Washington: World Bank.

Hájek, J., & Horváth, R. (2015). *Exchange rate pass-through in an emerging market: The case of the Czech Republic* (IES Working Paper, 8/2015). Prague: Charles University.

Hajnal, M., Molnár, G., and Várhegyi, J. (2015). *Exchange rate pass-through after the crisis: The Hungarian experience* (MNB Occasional Papers, 121). Budapest: Magyar Nemzeti Bank.

Haug, A., Jędrzejowicz, T. & Sznajderska, A. (2013). *Combining monetary and fiscal policy in an SVAR for a small open economy* (*NBP Working Papers*, 168). Warsaw: National Bank of Poland.

Hsing, Y. (2016a). Is Real Depreciation Expansionary? The Case of the Slovak Republic**.** *Applied Econometrics and International Development, 16*(2), 55-62.

Hsing, Y. (2016b). Is real depreciation expansionary? The case of the Czech Republic. *Theoretical and Applied Economics*, *XXIII*(3), 93-100.

Hutchison, M., & Noy, I. (2005). How Bad Are Twins? Output Costs of Currency and Banking Crises. *Journal of Money, Credit and Banking*, *37*(4), 725-752. https://doi.org/10.1353/mcb.2005.0043

Ihnatov, I., & Capraru, B. (2012). Exchange Rate Regimes and Economic Growth in Central and Eastern European Countries. *Procedia Economics and Finance*, 3, 18-23. https://doi.org/10.1016/S2212-5671(12)00115-3

Jimborean, R. (2013). The exchange rate pass-through in the new EU member States. *Economic Systems*, *37*(2), 302-329. http://dx.doi.org/10.1016/j.ecosys.2012.08.006

Karahan, Ö. (2020). Influence of Exchange Rate on the Economic Growth in the Turkish Economy. *Financial Assets and Investing*, *11*(1), 21-34. https://doi.org/10.5817/FAI2020-1-2

Khalilov, L., & Yi, C-D. (2021). Institutions and entrepreneurship: Empirical evidence for OECD countries. *Entrepreneurial Business and Economics Review*, *9*(2), 119-134. https://doi.org/10.15678/EBER.2021.090208

Krugman, P., & Taylor, R. (1978). Contractionary effects of devaluation. *Journal of International Economics*, *78*(8), 445-456.

Kumar, S. (2019). Does risk premium help uncover the uncovered interest parity failure? *Journal of International Financial Markets, Institutions & Money*, *63*(C), 101135. https://doi.org/10.1016/j.intfin.2019.101135

Kurtović, S., Šehić–Kršlak, S., Halili, B., & Maxhuni, N. (2018). Exchange Rate Pass-Through into Import Prices of Croatia. Exchange Rate Pass-Through into Import Prices of Croatia. *Naše Gospodarstvo/Our Economy, 64*(4), 60-73. http://dx.doi.org/10.2478/ngoe-2018-0023.

Lizondo, J., & Montiel, P. (1988). *Contractionary Devaluation in Developing Countries: An Analytical Overview*(IMF Working Paper, WP/88/51). Washington: International Monetary Fund.

Lopez-Villavicencio, A., & Mignon, V. (2016). *Exchange rate pass-through in emerging countries: Do the inflation environment, monetary policy regime and institutional quality matter?* (Working Paper, 2016-18). Nanterre: Université de Paris Ouest Nanterre La Défense.

Miteza, I. (2006). Devaluation and output in five transition economies: A panel cointegration approach of Poland, Hungary, Czech Republic, Slovakia and Romania, 1993-2000. *Applied Econometrics and International Development*, *6*(1), 77-86.

Ono, S. (2013). The effects of foreign exchange and monetary policies in Russia. *Economic Systems*, *37*(4), 522-541. https://doi.org/10.1016/j.ecosys.2013.03.003

Ortega, E., & Osbat, C. (2020). Exchange rate pass-through in the euro area and EU countries. *Occasional Paper Series*, 241. Frankfurt: European Central Bank.

Pourroy, M. (2012). Does exchange rate control improve inflation targeting in emerging economies? *Economics Letters*, *116*(3), 448-450. https://doi.org/10.1016/j.econlet.2012.04.036

Rojas-Suarez, L. (1992). Limited Capital Markets And The Real Effects Of Monetary Stabilization Policies Under Alternative Exchange Rate Regimes. *Journal of International Money and Finance*, *11*(6), 594-613. https://doi.org/ 10.1016/0261-5606(92)90006-J

Simionescu, M., Balcerzak, A., Bilan, Y., & Kotásková, A. (2018). The impact of money on output in Czech Republic and Romania. *Journal of Business Economics and Management*, *19*(1), 20-41. https://doi.org/10.3846/jbem.2018.1480

Stoykova, O. I. (2021). How to increase the value of bilateral trade? Currency union versus fixed exchange rate regime. *Entrepreneurial Business and Economics Review*, *9*(2), 21-38. https://doi.org/10.15678/EBER.2021.090202

Uzelac, O., Davidovic, M., & Dukić Mijatović, M. (2020). Legal Framework, Political Environment and Economic Freedom in Central and Eastern Europe: Do They Matter for Economic Growth? *Post-Communist Economies*, *32*(6), 697-725. https://doi.org/10.1080/14631377.2020.1722583

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Conflict of Interest

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The success factors of family and non-family firms: Similarities and differences

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ABSTRACT

Objective: The aim of this article is to identify whether there are similarities or differences between family and non-family firms in terms of the factors which contribute to business success. More specifically, comparison analyses were designed to isolate possible variations related to an enterprise's advantage over its competitors, the internal and external relationships of the enterprise, intangible resources, and an enterprise's financial resources.

Research Design & Methods: The source for empirical data used herein is individual data selected from a country-wide survey conducted by Statistics Poland from December 2017 to January 2018. The survey was carried out electronically using an online questionnaire. Focusing on non-financial businesses with 10-249 employees, it examined how entrepreneurs view the significance and impact of a group of factors on the development and success of their businesses, including a self-assessment of the firm's current situation and development over the last three years. The sample consisted of 43,379 firms, of which 14,686 self-identified as having a family character. Unobservable (latent) variables were used for a more in-depth analysis: one represented a component of enterprise success while the other four were characterised as success factors. An analysis of the main components was used to identify independent variables (success factors) with the relationships between the variables examined through structural equation modelling.

Findings: In the light of the findings, it is possible to show that family firms display partial differences in their rating of the factors that have impacted their success. For this group, aspects including how the firm is organised, financial resource access, and the overall financial situation were less important in comparison to non-family ones. However, family firms showed no differences in their perception of the factors supporting their competitive advantage and their intangible resources.

Implications & Recommendations: An ongoing debate has weighed whether family and non-family firms differ in terms of performance and their internal perception of business success, and numerous studies present rather distinct visions. Some confirm the advantages of family businesses; others deny such benefits exist, and a final group notes no statistically significant evidence that would confirm differences between the two groups. In contrast, the results of our study provide evidence that Polish family businesses partly differ from non-family ones regarding the factors that influence their business success.

Contribution & Value Added: Our study verifies whether family and non-family firms differ in terms of the factors that contribute to business success. We describe both business success and the factors that impact it as unobserved (latent) constructs. This approach is rare in the current literature; more often, success factors and measures are analysed separately. However, this approach allowed us to analyse the relationship in a more consistent and complex way.

Article type:	research article
Keywords:	Family and non-family firms; success factors; success measures; success models; small and medium-sized enterprises; structural equation modelling
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INTRODUCTION

Comparative studies centred around family and non-family firms are a frequent and extremely rewarding research area. The findings have so far been equivocal, representing one of the main challenges facing researchers who aim to show whether there are some character traits and methods of operation specific to family firms that make them different from their non-family counterparts, and if so, clarifying the extent to which and in which areas such differences exist. The comparative criteria focusing on the behaviours of family and non-family firms tend to be based on the standard comparisons covering such aspects as ownership, management, income, remuneration and rewards, relationship network, leadership, or career path of employees (Pacheco, 2019; Stewart & Hitt, 2012). They further include goals, business orientation, competitive strategies, resources, and management style (Mandl, 2008; Zaks *et al*., 2018).

Drawing upon the relevant literature, family firms have distinctive, specific, and unique features linked to management and decision-making (Gersick *et al*., 1997; Gudmundson *et al*., 1999), objectives and strategies to be pursued (Chua *et al.*, 1999; Vazquez & Rocha, 2018; Ward, 1988; Williams Jr *et al*., 2018), structure and preferences in financing operations (Mishra & McConaughy, 1999; Poutziouris, 2002; Strebulaev & Yang, 2013) or the attitude towards corporate social responsibility (CSR) actions (Déniz & Suárez, 2005; Schulze *et al*., 2003). What makes family businesses more distinctive is longevity and succession (Gomez-Mejia *et al*., 2018; Zellweger *et al*., 2012) and their financial logic (Gomez-Mejia *et al*., 2018). Furthermore, the sphere clearly differentiating family from non-family businesses involves human and social capital (Cater & Justis, 2010; Coleman, 1990; Farrington *et al*., 2012; Lochner *et al*., 1999; Putnam, 1993; Schlepphorst & Moog, 2014; Winter, 2000). In this context, an emphasis is placed on *familiness* as a concept embedded in the resource-based view (RBV). For family firms, the concept refers to a set of distinct internal synergistic resources that are available due to family involvement in running a business (Habbershon & Williams, 1999). These resources only appear in family firms and, for practical purposes, cannot be replicated (Sundaramurthy & Kreiner, 2008), thus undoubtedly determining a family firm's distinctiveness as compared to other businesses.

The list of the potential differentiating areas is broad (Mandl, 2008; Stewart & Hitt, 2012) and their identification is complicated given that family firms emulate the operations and market behaviours specific to non-family businesses because of changing market conditions, competition level, increased customer demands, economic and political changes, and technological progress (Pounder, 2015). In more specific concepts, the mere statement that family firms are different from their non-family counterparts becomes a starting point for exploring whether their familial character has a positive or negative impact in terms of behaviours and performance (Donckels & Fröhlich, 1991; Lee & Rogoff, 1996; Stewart & Hitt, 2012; Zellweger & Astrachan, 2008). Despite having developed various concepts and despite the verification attempts embedded in theoretical frameworks, about one-third show that family firms perform better, one-third argue their performance is worse, and one-third maintain that there are no such differences (Audretsch *et al.*, 2013). Similar findings can be found in Mandl's (2008) comprehensive study, in which the author argues that there is no sufficient or statistically confirmed evidence suggesting that family firm performance is better, worse or the same as that of non-family businesses.

We assume that survey result ambiguity is connected with the usage of relatively small samples and the exiguous specificity of the results. Analyses are conducted to take into account the discretionary chosen subject of research (partly intuitively) or performance measures. There is a scarcity of results based on the consistent and complex factors with various impacts on the performance of family and non-family firms. To our best knowledge, the business success of an enterprise could be such an aggregated measure. Nevertheless, the sources of success seem to be an adequate field of comparison to achieve relevant results.

Against this backdrop, it is relatively rare to see success as a criterion for comparison or to consider it (its measures and sources) the differentiating factor between family and non-family firms. This finding is somewhat surprising given that many arguments suggest that family firms can do better in specific situations and perform better than non-family businesses (Zellweger & Astrachan, 2008). Despite this clear research gap, *i.e.* scant in-depth analyses of similarities or differences between family and non-family firms in terms of business success, an analysis of the factors involved in success and its measures is not easy. One fundamental difficulty for researchers is that in the literature, the concept of success has not been devoid of ambiguity (Stafford *et al*., 1999), with businesses defining success according to distinct values and respecting various success determinants. Consequently, a diagnosis revealing whether the same factors play a part in the success of family vs non-family firms will provide greater insight into the core differences between these two groups. In this article, we investigate certain factors influencing the success of small and medium-sized enterprises (SMEs) and explore whether the unique features characterising an enterprise (family or non-family) differentiate it within this area. *The primary purpose of the article is to identify the differences between family and non-family firms in terms of the factors that contribute to business success.*

More specifically, comparison analyses were devoted to isolating possible differentiation among:

1. each enterprise's advantage over its competitors;
2. the internal and external relationships of the enterprise;
3. intangible resources;
4. the enterprise's financial resources.

The discussion presented herein will cover the following areas: the concept of success and its ambiguities, success models, and success factors in an economic entity. These explorations will form a starting point for formulating the research hypothesis. The methodology section will include a sample description and the identification and grouping of dependent and independent variables and research models, *i.e.* structural equation modelling (SEM) that is used to estimating and testing a network of relationships among variables (measured variables and latent constructs). A further section will describe the findings produced, discuss them, and reference the relevant literature. Finally, the article will conclude and presents the research limitations, outlining areas for further exploration in this research field.

LITERATURE REVIEW

Success, Success Measures, and Models

With praxeology theory, success is defined as the result of a specific approach to implementing a unique task, which is positively assessed according to its importance (Sobczyk, 2009). From this point of view, success could be isolated more as a latent and multidimensional construct, and it is connected with a general assessment of the particular situation. Success as a holistic phenomenon could be detailed alongside a subjective assessment of achievement as expressed by one or a set of objective indicators. Faulkner and Bowman (1992) have distinguished between internal (within the organisation) and external (relative to either consumers or competitors) success criteria (de Chematony *et al*., 1998). In other studies, success is described using business-based and consumer-based measures (de Chematony *et al*., 1998). Unquestionably, it is possible to isolate numerous criteria or measures that will depict the meaning of success. If some of the criteria or measures is taken or combined to present a particular kind of success, then this approach is related to building a model of success (Petter *et al*., 2008). The interrelationship among success, success measures and the success model are presented in Figure 1.

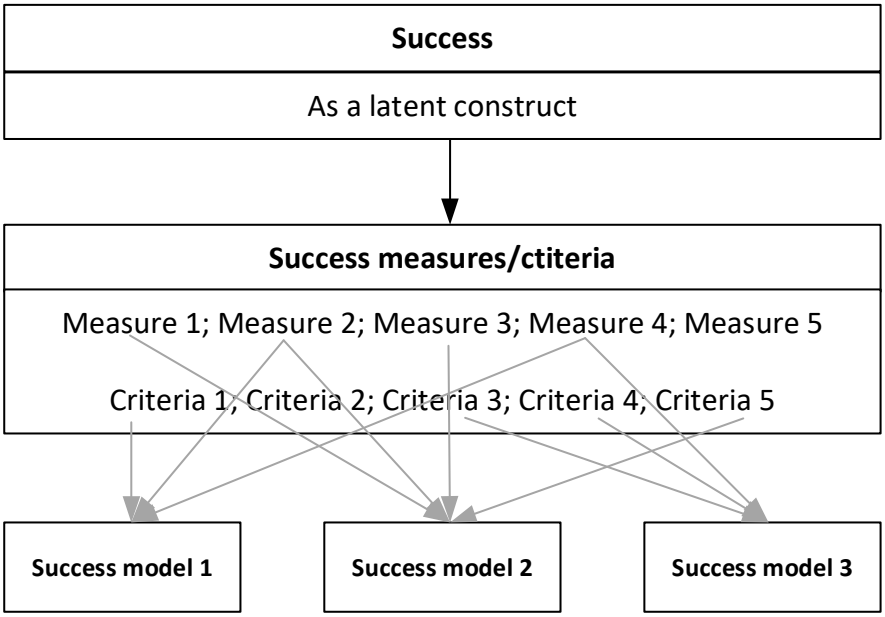


Figure 1. The relationship among success, success measures (criteria) and the success model
Source: own elaboration.

These three aspects are presented in detail in the following subsections.

The concept of success

Analysing the concept of success in popular terms already raises some questions. According to a Polish-language dictionary, success equates to the positive outcome of an action, goal achievement or achieving a desired object or result. This definition implies that if an action's result leads to achieving a goal, then the action may be recognised as a success. However, one might wonder whether every positive (favourable) result or outcome is a success. Performance measures such as profit, sales, growth or the number of employees and customers are not consistently recognised as a success by every enterprise. As a general rule, those measures do not appear to constitute the main goals of certain businesses.

Another problem that comes to light is decoupling the concept of success from that of performance (Simpson *et al.*, 2012). This complication stems largely from success being defined through elements of performance. More specifically, certain types of (high) performance can be identified with success (Brooksbank *et al*., 2003). The discussion on what constitutes success and the best way of defining and measuring performance is longstanding and ongoing (Beaver, 2002; Rogoff *et al*., 2004), producing further equivocal findings. Whereas some authors tend to split performance into financial and non-financial success-related criteria, others refer to performance as economic and non-economic goals (Brooksbank *et al.*, 2003; Reijonen, 2008) or two categories: quantitative and qualitative goals. The most common quantitative factors cited in the literature are economic or financial indicators; including profitability, productivity, and growth rate, a favourable competitive position that leads to superior and sustainable economic performance, and an increase or maintenance of the company's market share (Staniewski, 2016).

In their discussions of success, a considerable number of authors focus on traditional, easily-definable (easily-measurable) financial metrics such as increased turnover, profit and return on investment (Jennings & Beaver, 1997; Sharma, 2004), productivity (Brooksbank *et al*., 2003; Perren, 1999), market share and a better competitive position (Chandler & Hanks, 1993; Man *et al*., 2002), total income and its increase (Fried & Tauer; 2009) and the increase in asset base (Dobbs & Hamilton, 2007). Åstebro *et al*. (2014) argue that despite low risk-adjusted returns, a large share of individuals chose to be engaged in entrepreneurial activities. Åstebro *et al*. (2014) and Sjögren and Schubert (2018) show that a personal preference for autonomy and a desire to achieve social recognition are

both critical drivers of entrepreneurship and success. Some basic literature on individual motivations states that finance is only one of the many factors leading individuals to engage in entrepreneurship. Other factors, such as individual freedom and social benefit, which are also motivations, have been rarely explored and discussed in previous studies, especially regarding entrepreneurial success (Diputra *et al*., 2021; Hasan *et al*., 2020).

In a different approach, other authors argue for the use of alternative criteria for defining success mainly based on the owner-manager's personal goals (Lekovic & Maric, 2015). Consequently, they highlight the need for employing more flexible definitions of success to small enterprises (Gadenne, 1998; Simpson *et al*., 2012), because defining success for those businesses depends on the various financial and non-financial goals they pursue (Olson *et al*., 2003), which further relate to the entrepreneur's motivation to start a business (Rodriguez-Gutierrez *et al*., 2015). Moreover, defining and measuring success grows more complicated for small businesses due to the owner-manager's pursuit of different goals (Hunter & Kazakoff, 2012; Jennings & Beaver, 1997) and the possible need to consider stakeholders' aspirations ('long-lasting satisfaction of the main stakeholders' aspirations'). Some researchers point out that investigating the essence of success for small businesses is further complicated by subjective biases (identified according to attribution theory; Heider, 1958) that manifest in having success attributed to the owner of the firm with failures resulting from externalities (Hienerth & Kessler, 2006).

Entrepreneurs may assign different meanings to common success criteria, which can influence how they design their firms (Angel *et al*., 2018). Hence, many authors argue that success should also be discussed from a subjective perspective. Unfortunately, adopting this perspective does not make the identification of success any easier given that the entrepreneur's perception of success is defined by some researchers as an individual understanding and assessment of the criteria to be fulfilled, which the entrepreneur finds important and motivating personally (Staniewski & Awruk, 2019; Wach *et al.*, 2016). The starting point for the evaluation process is then the owners, entrepreneurs, or managers themselves. They have their own perceptions of success, while the biased criteria in evaluating success represent their personal fulfilment and achievements, *i.e.* the pride and satisfaction derived from their business or flexible lifestyle (Lekovic & Maric, 2015; Simpson *et al.*, 2004; Stenberg, 2004; Walker & Brown, 2004).

Additional studies designate success as the entrepreneurs' assessment of economic indicators like performance and profit (Rauch & Frese, 2007; Richard *et al*., 2009). According to Sjögren and Yusuf (2021), entrepreneurial success is built throughout the life of the entrepreneur rather than linked to a particular business activity or firm. The authors define entrepreneurial success as the existing achievements by an individual professional actor resulting in various types of innovation (technological, market, logistic, social), an increase in the number of employees in one or more firms managed by the entrepreneur and recognition by society. Therefore, it appears impossible to equate success with optimal performance (Jennings & Beaver, 1997) because an undertaking can be successful without reaching an optimal level of performance in terms of business growth and development. However, the empirical findings produced by Simpson *et al*. (2004) and Baron and Markman (2002) suggest a positive correlation between the owners, entrepreneurs and managers' subjective assessment of success and objective measures.

When discussing family firms, the focus is on recognising the good community perception and family business continuity as business success measures (Bujan, 2019). However, this approach is not shared universally, as some point out that it is challenging to designate intra-generational business continuity as an adequate success measure and failure to do so as being unsuccessful (Watson, 1998), considering that a lack of continuity might be due to having achieved the goal for which the business was set up in the first place.

Researchers who support the argument that success should not be perceived in terms of growth (O'Gorman, 2001; Perren, 1999, 2000; Sharma, 2004) maintain that for a significant number of entrepreneurs, keeping their business afloat on a scale that allows them to be sole proprietors is already a success (Simpson *et al.*, 2012). This point mainly refers to small family businesses, in which

owners do not want to expand since this may jeopardise family cohesion (*e.g.* less free time, separation). One might infer that for many economic entities, financial goals are not as critical as the desire of owners and managers to be personally involved, independent, and responsible for the quality and style of their life (Jennings & Beaver, 1997). For many small-sized firms, success means the ability to sustain an income level that is acceptable for the owners and their employees by maintaining a level of performance that is optimal for them to handle (Beaver, 2002). One should also consider the factors that can moderate the perception of firm success and success measures. In terms of success measures, there are other differences among businesses depending on the owner's gender (Alsos *et al*., 2006; Dafna, 2008; Grilo & Irigoyen, 2006) or the level of family involvement in running the firm (Audretsch *et al*., 2013).

Success is, therefore, a complex and multidimensional concept, especially for family-owned enterprises (Lussier & Pfeifer, 2000; Shane & Venkataraman, 2000). As such, it can hardly be described based on just one criterion (Ioniţă, 2013) because individual failures can undo individual successes. Real success is made up of successes achieved in multiple fields, areas, and aspects. Hence, the paradigm advocating the need for exploring simultaneously a variety of aspects involved in success has become a starting point for identifying and isolating multifactor measures and models of success.

Success Measures

In the literature, the search for adequate measures means uncovering different reference points (goals, values, or subjective feelings). In the case of ownership, firms investigating success from the perspective of delivering the pursued objectives implies confronting traditional business goals with personal goals (*e.g.* that of the owners; Gorgievski *et al*., 2011). Considering that in practice, one encounters both perspectives, the suggestion is to employ non-confrontational logic and include both optics, *i.e.* business goals, which involve profit, continuity, growth and innovations, and non-business goals that reflect their value-based orientation (Gorgievski *et al*., 2011; Toninelli *et al*., 2013). Various factors for entrepreneurial success in Staniewski's research (2016) belong to two groups: 1) organisational factors, meaning features that organisations possess (i.e. an entrepreneur's or company's specific internal features): age and company size, managerial and employee skills, knowledge and competences and ownership structure; 2) non-organisational factors (external factors reflecting the conditions in which entrepreneurs operate, including the industry and spatial and macroeconomic factors): technology, scale economies, entry rates, and sector growth rates.

A considerable number of authors tend to centre their research on traditional and easy-to-define financial measures, such as increased turnover, profit, and return on investment (Dej, 2010); however, others see the possibility of defining success by adopting alternative criteria based on the owner-manager's personal goals (Jennings & Beaver, 1997; Przepiórka, 2017). Some authors consider non-financial success measures as secondary (not of equivalent significance) to financial measures. When applying non-financial measures, it is implicitly understood that an enterprise has already achieved a certain level of financial security (ergo, its financial objectives have been realised) or that the owner does not consider the enterprise to be the main source of income (Jennings & Beaver, 1997). This lack of consensus concerning the measures refers predominantly to small and medium-sized enterprises, usually with a family or ownership character, in which emotional and non-business aspects play a significant role (Brundin & Härtel, 2014).

The theoretical proposals that consider these guidelines are different and move towards multiplying the success measure components. They refer either to the entrepreneur – with success measured based on *e.g.* satisfaction derived from the job and running the business – or they refer to the business, in which success manifests in, *e.g.* specific financial results. Additional studies rely on the context of the environment, in which success is associated with having a specific competitive position (or prestige). It is not infrequent that the concepts suggested by the research comprise all such elements. This approach towards success – perceived as 'a compound of measures' – can, for instance, be found in Gorgievski *et al*. (2011). The authors indicate ten success criteria: personal satisfaction, profitability, satisfied stakeholders, good life-work balance, innovations, business survival and continuity, usability,

contribution to society, public recognition, and development. The criteria include both subjective factors – person-oriented (e.g. personal satisfaction, satisfied employees and customers) – and business-oriented criteria, which, among others, include profitability, growth (number of employees, sales, market share) and innovations, further followed by business survival and continuity, understood here as a generational transfer or profitable sale of the business (Gorgievski *et al*., 2011).

The concepts presented so far with respect to success measures (and synthetic measures) are based on the bibliometric analysis or empirical studies conducted on small-sized samples (Fisher *et al*., 2014; Gorgievski *et al.*, 2011); from the perspective of one region (e.g. family businesses from a border region in eastern Austria (Hienerth & Kessler, 2006); Spanish family businesses (Nuntilde, 2012); among SME managers in Malaysia (Ahmad *et al*., 2011); among Dutch owners of small enterprises (Gorgievski *et al*., 2011); small-sized enterprises in Western Australia (Walker & Brown, 2004); small businesses in Serbia (Lekovic & Maric, 2015); and for selected industries, *e.g.* small event companies in the UK (Wood, 2006).

Success Models

Building on the literature review and their empirical research, Gorgievski *et al.* (2011) suggest using a two-dimensional success model, including a dimension covering the subjective criteria – person-oriented (e.g. personal satisfaction, satisfied employees, customers) – and a business-oriented dimension encompassing, among others, the following four key criteria: profitability, growth (number of employees, sales, market share), innovations (introducing new products or production methods), and business survival or continuity, understood here as a generational transfer or profitable sale of the business. Applying multidimensional scaling, Gorgievski *et al.* (2011) demonstrate that innovativeness was more closely linked to self-improvement orientation than openness to change. Based on empirical research carried out among the Spanish family businesses, Utrilla & Torraleja (2012) suggest using a model-based approach to success underpinned by three primary structures: the first one includes dynamic variables, illustrating enterprise growth (e.g. an increase in sales over the last three years, in market share); the second structure comprises human resources variables (e.g. satisfaction level, absenteeism level, and lower staff turnover); and the third addresses objective financial and economic performance, reflecting the enterprise's situation (e.g. return on equity, return on assets, and profit margin).

In contrast, having conducted a confirmatory factor analysis of the sample covering Malaysian SME founders-managers, Ahmad *et al*. (2011) argue that business success is a four-factor structure reflecting the following factors: (a) financial performance satisfaction, (b) non-financial performance satisfaction, (c) performance in relation to competitors, and (d) business development. Moreover, Maltz *et al*. (2003) propose a multiple-criteria system for assessing organisational success (performance). It comprises five key measures that could help businesses self-check and improve their opportunities for sustainable success. These measures include financial measures, representing the traditional approach to organisational success and covering, e.g. sales, profit or return on investment; customer and market relationship measures describing the relationships between the organisation and its customers; process measures, which reflect organisational efficiency and process improvement; people development measures, enabling one to recognise the key role played by the stakeholders in organisational success and preparing for the future measures (future activities).

Considering the multidimensionality of the concept of success, we come across a variety of proposals for the structure of a universal model of success. In general, a non-observable structure – success – is devised, which can be measured by a set of observable variables – components of success (non-standardised). The choice of the components making up a success measure is arbitrary. It is based on the literature review or the researchers' empirical work conducted as in-depth interviews; suitable case studies (Fisher *et al*., 2014); some additional econometric methods for the variable selection, e.g. confirmatory factor analysis (Ahmad *et al.*, 2011); or using configurational matching (based on the analysis of interactions unfolding among different success factors (Hienerth & Kessler, 2006). According to Wach *et al*. (2020), 'entrepreneurs' achieved success' was conceptualised as a multi-faceted

construct that includes entrepreneurs' self-reported achievement of firm performance, workplace relationships, personal fulfilment, community impact and personal financial rewards. It was measured via the subjective entrepreneurial success-achievement scale (SES-AS). Through factor analysis, Nuvolari *et al*. (2018) also reduce the characterisation of a successful entrepreneur into three factors: economic success, celebrity, and social mobility. A different statistical method is prosopography, in which standardised biographies of outstanding successful entrepreneurs are systematically compiled and analysed using quantitative methodology (Sjögren & Yusuf, 2021).

An analogous approach was adopted in this article. What was recognised as a measure of success was an assessment of nine aspects (variables) making up the overall success measure for an enterprise. The nine aspects covered the changes observed over the last three years in such areas as the number of employees, serviced customers, cooperating parties, suppliers, financial condition, net income, net current assets, equity, investment outlays, and competitive enterprise position on the market. For measuring the success of a particular enterprise, a five-point scale was employed according to which a representative of an enterprise could assess whether the situation in a given area had improved or deteriorated over the last three years; from 1 'significant reduction/deterioration' to 5 'significant growth/improvement'). Bearing in mind the ambiguous research findings as to whether family businesses perform better than non-family ones (Audretsch *et al.*, 2013; Mandl, 2008) and accounting for the fact that the accumulated information was on family and non-family firms, we postulate that family enterprises are not different from non-family enterprises in terms of factors impacting their market success. Because the factors of market success in this article were reflected by the self-perception of competitive advantage of the enterprise, internal and external networks, intangible resources and access to finance and financial situation, the hypotheses were formulated as follows:

- **H1:** Family enterprises are not different from non-family enterprises in terms of the significance of the self-perception of competitive advantage factors as an aspect of market success.
- **H2:** Family enterprises are not different from non-family enterprises in terms of their internal and external networks as an aspect of market success.
- **H3:** Family enterprises are not different from non-family enterprises in terms of the intangible resources of the enterprise as an aspect of market success.
- **H4:** Family enterprises are not different from non-family enterprises in terms of access to finance and financial situation as an aspect of market success.

In light of the current state of entrepreneurship development across Poland, its relatively brief history and market determinants, we argue that familiness and succession reduced to a pragmatic dimension bring about the need for a firm's resources to be adapted to market conditions. That is why the 'family business' label has become more of a trademark rather than an element of the firm's identity or a reference point for its actual or planned activities (Safin *et al*., 2014), which affect the distinctive and observable differences between family and non-family firms, including those relating to the perceived multidimensional success.

The concept of success devised as a non-observable variable described through a set of observable variables has been employed previously, for example, in structural equation models: Utrilla and Torraleja (2012) use a sample of Spanish family businesses, and Diputra and Arismunandar (2021) consult a sample of micro and small business actors in Indonesia. An example model of the relationship between the determinants of success and the variables describing this success for Polish enterprises from the SME group is proposed by Łobos *et al.* (2018) and connects to the psychological determinants of entrepreneurial success and life satisfaction by Przepiórka (2017). One may encounter a range of proposals in the literature as to the application of synthetic success measures (depending on the theoretical framework adopted by the authors) referring to a firm's value, added value or measures describing its financial management, marketing activities, and marketing effects (Kay, 1995; Urbanowska-Sojkin, 2013).

RESEARCH METHODOLOGY

Data Collection Process and Research Sample

The primary source of the empirical data used in this analysis is individual data selected from a country-wide survey of an experimental character conducted by Statistics Poland from December 2017 to January 2018 within the project 'Entrepreneurship development determinants in the SME sector.'[1] The survey was carried out online through the Statistics Poland reporting portal, with the support of interviewers: the statistical office employees.

The survey targeted enterprises from the non-financial sector[2] with between 10 and 249 employees (*i.e.* small and medium-sized enterprises). This survey was the first time that Statistics Poland distinguished family businesses as a research subject. In reference to this aspect, respondents were asked to classify their enterprises either as a family or other enterprise according to the definition suggested by the Polish Agency for Enterprise Development (PARP) and adopted in the survey. According to the definition, a family enterprise is an economic entity in which at least two members of the owner's family or persons related to that family are employed, with at least one of them exercising influence over management; additionally, the family or persons related to it hold more than 50% of enterprise shares. Entities registered as sole proprietors count as family enterprises, provided they employ staff (Kowalewska *et al.*, 2009).

The subject matter of the survey was to rate the importance and impact of a group of factors on enterprise development and success and to assess the current situation of an enterprise and its development over the last three years. In total, the sample included 43,379 enterprises, of which 14,686 represented family businesses and 28,693 were classified as non-family firms. The description of the sample, broken down into family and non-family businesses, is presented in Table 1.

From the entire sample of companies (43,379), 33.9% declared themselves family firms. Among small business entities (10-49 employees), family firms accounted for 35.4%; in the group of medium-sized firms, 27.4%. Due to the activity range-market, from all businesses that declared local market share as dominant, 32% are family firms. In terms of regional market share, 39.5% are family businesses, and 34.9% of these businesses operate internationally. Taking into account the size of the businesses, the percentage of family firms was similar in circa 30-35% respectively. Moreover, χ^2 tests for the structures (see Table 1) confirmed that family and non-family firms in the sample were similar statistically.

Dependent Variables

The success of the enterprise was expressed by a non-observable (latent) variable that covered nine areas of the enterprise activities, *i.e.* the number of employees, serviced customers, cooperating parties, suppliers, financial condition, the value of net income, net assets, net current assets, equity, investment outlays, and competitive position in the market. For measuring each kind of activity, a five-point scale was employed according to which an enterprise representative could assess whether the situation in a given area had improved or deteriorated over the last three years, from 1 'significant reduction/deterioration' to 5 'significant growth/improvement.' The scale of success measurement was adopted by an official survey methodology that was developed by Statistics Poland (2018). The descriptive statistics of the variables are included in Attachment 1.

[1] The research study *Determinants of the entrepreneurship development in the SME sector* was implemented in 2017–2018 by Statistics Poland under the project '*Supporting the monitoring system of cohesion policy in the financial perspective 2014–2020 as well as programming and monitoring cohesion policy after 2020.*' The report is available at: http://stat.gov.pl/statystyka-regionalna/statystyka-dla-polityki-spojnosci/.

[2] The survey did not include enterprises engaged in activities that were classified as part of the following economic sectors: A (agriculture, forestry, hunting and fisheries), K (finance and insurance), and O (public administration and defense, compulsory social security).

Table 1. Sample characteristics

Specification	Family enterprises	Non-family enterprises
Total number of respondents (n)	14,686	28,693
Size classes (%)		
Small (10-49 employees)	84.0	78.3
Middle (50-249 employees)	16.0	21.7
Years of activity (%)		
Less than 3 years	3.6	4.2
3-6	8.9	10.9
6-9	8.5	9.9
9-15	19.5	20.2
15 or more years	59.5	54.8
By legal form (%)		
Sole proprietors	43.7	28.4
Civil law partnerships	10.4	4.2
Commercial companies	45.7	60.3
Other forms	0.2	7.1
By type of business relationship (%)		
Ownership (autonomous)	90.6	80.2
Partnerships	3.8	3.7
Linkages (linked enterprise)	5.6	16.1
By activity range – market (%)		
Local	30.2	31.9
Regional	17.3	14.8
Domestic	34.8	36.0
International	17.7	17.2

Source: own study.

The scale was evaluated using an α-Cronbach coefficient and confirmatory factor analysis (CFA) procedures. The value of the α-Cronbach coefficient for the scale was 0.931, RMSEA=0.034, CFI=0.930, TLI=0.902, suggesting a high-reliability level. According to the recommendations, the RMSEA should be less than 0.1 (Browne & Cudeck, 1992), while the CFI and TLI should be over 0.9 (Hu & Bentler, 1999). The SRMR is not indicated in the STATA software, given the lack of observations. Moreover, it should be stressed that the differences within the average self-assessment proved to be smaller for non-family enterprises than for family enterprises, and they were also statistically significant.

Independent Variables

A set of independent variables represents the factors that were identified and which, on the one hand, included both self-assessment of own resources as compared to competitors and assessment of the significance of internal and external resources perceived as the source of the enterprise operations. In total, there were 22 variables measured on ordinal scales; an ordinal scale ranging from 1 'significantly lower' to 5 'significantly higher was used for comparisons with major market competitors;' for the other remaining variables, the scale ranged from 1 'entirely insignificant' for 5 'of key importance.' The descriptive statistics for the variables are included in Attachment 2. For the dependent variables, an analysis of the Principal Component Analysis (PCA) was carried out to identify unobservable (latent) variables. The findings produced by the analysis allowed four dimensions to be identified: KMO measure of sampling adequacy was 0.930, was Bartlett's test of sphericity – $p<0.001$. The results of grouping are shown in Table 2.

The first dimension (C1) encompasses the factors involving the enterprise's advantage over its competitors; meeting quality standards; business experience; technological equipment, and instrumentation; employees' knowledge, skills, qualifications, and experience; implementation of innovative

solutions; ability to ensure a positive work atmosphere and development of partnerships with other enterprises. The second area (C2) may be described as the 'internal and external network of the enterprise' consisting of the following components: leader's qualities, operation method, competitive position, and internal communication. The third dimension (C3) was specified as intangible resources covering the following elements: operation strategy, quality management, risk management, enterprise management system, computer technologies, information and communication technologies, entrepreneurial orientation, and external cooperation. The last dimension (C4) relates to the enterprise's financial resources, such as access to finance and financial situation.

Table 2. Explanatory variables and latent components

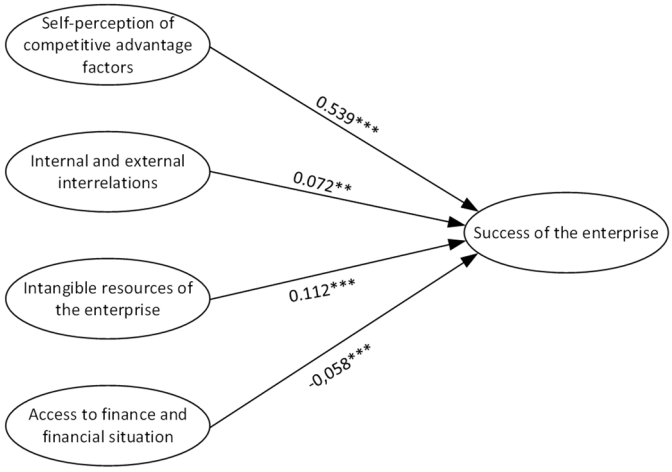
Independent variables	C1	C2	C3	C4
Financial resources	0.639			
Meeting quality standards	0.771			
Business experience	0.819			
Technological equipment and instrumentation	0.815			
Employees' knowledge, skills, qualifications, and experience	0.818			
Implementation of innovative solutions	0.745			
Ensuring a good work atmosphere, employee loyalty, and interpersonal relationships	0.694			
Partnership development with other enterprises	0.738			
Leader's qualities		0.715		
Method of operation		0.687		
Competitive position		0.661		
Internal communication		0.768		
Operation strategy			0.681	
Quality management			0.743	
Risk management			0.763	
Enterprise management system			0.771	
Computer technologies			0.769	
Information and communication technologies			0.659	
Entrepreneurial orientation			0.662	
Cooperation			0.512	
Access to finance				0.773
Financial situation				0.687

Source: own elaboration based on direct surveys.

Research methods

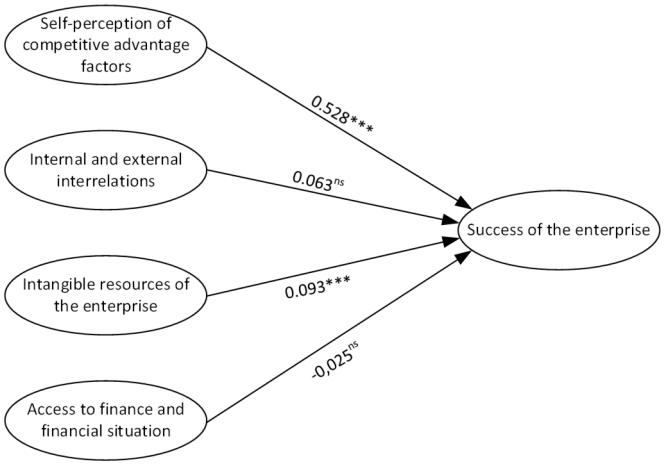
The statistical measurement and verification of relationships between the dependent variable and explanatory variables were carried out using structural equation modelling (SEM) in STATA 15.1. This methodology represents, estimates, and tests a network of relationships among variables (measured variables and latent constructs). In this case, the interrelationships among the four latent constructs representing success factors (see Table 2) and the latent variable reflecting the perception of enterprise success (dependent variable) were checked. It should be mentioned that all parameters between observed variables and latent constructs were statistically significant. Additionally, R-squared, equation-level variance decomposition and Bentler-Raykov squared multiple-correlation coefficient meet the criteria of the measurement model fit (Marsh *et al*., 2004).

The analyses were conducted separately for non-family and family businesses. Both the model estimated for the family business group and one for the non-family group showed an adequate level of matching (Figure 1 and 2).



$\chi^2[424] = 42782.4$; RMSEA = 0.059; CFI = 0.911; TLI = 0.903;
SRMR is not reported in STATA because of missing values; ***p<0.001; **p<0.01

Figure 2. Equation model estimated for non-family businesses
Source: own elaboration based on direct surveys.



$\chi^2[424] = 23244.5$; RMSEA = 0.061; CFI = 0.911; TLI = 0.903;
SRMR is not reported in STATA because of missing values; ***p<0.001

Figure 3. Equation model estimated for family businesses
Source: own elaboration based on direct surveys.

Hence, satisfactory conclusions can be drawn as to the influence of the latent variables, reflecting the controls on the enterprise success factors.

RESULTS AND DISCUSSION

For both family and non-family businesses, the relationship between self-perception of competitive advantage and enterprise success appeared to be statistically significant (p<0.001). This result would suggest that at an aggregate level, all the factors analysed played a crucial role in achieving enterprise's success (Figure 2 and 3). Simultaneously, these findings confirm hypothesis 1. It means the greater the competitive advantage compared to other businesses in a sector or industry, the more likely it is that a business entity will achieve economic success.

Taking into account internal and external networks as a factor of success, in non-family firms, a positive and statistically significant relation was isolated (p<0.01). Hence it was confirmed that for

non-family businesses, aspects including a leader's qualities, method of operation, competitive position and internal communication are more critical in achieving market success than in family firms. Therefore hypothesis 2 was not verified.

The intangible resources of the enterprise in both family and non-family firms were positively connected with their market success and statistically significant ($p<0.001$). These results suggest that better equipment in intangible resources or the implementation of different intangible solutions could support the achievement of the business success of the enterprise, independent of whether it is a family or non-family firm. Therefore, it could be stated that hypothesis 3 was verified.

The negative value of the parameter among the explanatory variables refers to 'financial resources.' However, one should consider the structure of the measurement scale for the detailed variables. Respondents were asked 'how important are the factors listed for the development and success of your enterprise?' while having to indicate the most applicable answer according to the scale from 1 'entirely unimportant' to 5 'very important (critical).' It is possible to interpret these ratings to suggest that those respondents who reported low values on the scale had no issues with financing and accessing finance, and so these factors were of little concern to them. Moreover, those who rated these factors very important were likely to have made this choice because of their minimal access to finance. Hence, the negative value indicates that the enterprises with relatively easy access to finance are also more likely to assess their economic success positively. The impact of financial resources on economic success was statistically significant in the group of non-family firms ($p<0.001$); therefore, it leads to the rejection of hypothesis 4. In the case of non-family firms, access to financial resources is relatively unimportant, and it could be understood that these businesses have better possibilities to finance their development and such a situation positively influences their market success.

Discussion

According to the findings presented herein, for family businesses, less significant aspects (seen as factors determining how family businesses perceive their market success) relate to the internal workings of an enterprise organisation and the importance of internal and external networks. This result may be the effect of the differences in human and social capital (Arregle *et al*., 2007; Basco & Perez Rodriguez, 2009). This resource is unique, primarily manifested in the duality of the relationships unfolding between family members involved in family business activities. They are result of parallel interactions, arising from business and family overlap and are developed between them. This process, in turn, translates to ensuring that the relationships with key internal and external stakeholders are long-lasting and sustainable (De Carolis & Saparito, 2006). Since this kind of relationship is to some extent common across family enterprises and is not brought about by the systemic building of internal and external relations, these relationships, which in some sense go on unnoticed, might be viewed by the representatives of family enterprises as less critical to their success.

Moreover, family enterprises represent a group of entities that tend to be more focused on staying independent from third parties at the expense of their development, while their behaviour towards external financing tends to be quite conservative (Pernsteiner & Węcławski, 2016). As the research shows, family enterprises are also smaller in terms of equity than their non-family counterparts, showing a lower level of debt financing and a lower rate of dividends (Gallo *et al*., 2004). These lower levels, in turn, translate to lower risk and consequently create easier access to finance in both good and bad economic times (D'Aurizio *et al*., 2015). Having less difficulty accessing finance combined with a higher level of internal financing may translate to the perception that the financial situation is less critical for achieving market success. In addition, one should bear in mind that one of the unique resources available solely to family enterprises is survivability capital, which Sirmon and Hitt (2003) have defined as a set of personal resources that family members can borrow, lend, engage, and share for the benefit of family enterprise. Survivability capital comprises such activities as unpaid work or working for lower remuneration and the financial support offered by family members or other businesses owned by other family members (Lins *et al*., 2013; Mzid, 2017; Olson *et al.*, 2003; Zheng, 2010). In specific situations, those resources can be absorbed without having to resort to external financial support, which in turn translates to having a specific perception of one's financial situation.

Unobserved factors of entrepreneurial success that have the same significant impact in family and non-family businesses were the self-perception of competitive advantage factors and the intangible resources of the enterprise. Self-perception of competitive advantage is an internal company performance measure (next to market-based and accounting-based measures; Orlitzky *et al.*, 2003). Due to its relatively general significance in a company's success assessment (Staniewski, 2016), it is no surprise that this factor is crucial for both groups. Considering intangible resources, this group of factors belong to organisational factors, *i.e.* skills, knowledge and competencies (Staniewski, 2016). In this research, they were combined based on aspects that are not typical for family firms, *e.g.* family social capital (Irava & Moores, 2010), and additional features, e.g. quality of management, management system or risk management (see Table 2). Considering their general importance for all businesses, it is no surprise that they were perceived as equally crucial by family and non-family firms.

CONCLUSIONS

This study evaluated the relationships among the multidimensional success factors and multidimensional success measurements of family and non-family businesses. The central assumption was that small and medium-sized enterprises, independently assigned to one of these two groups of businesses, similarly assess the success factors discussed. This assumption was based on the analysis of previous findings that showed, on the one hand, contrary findings in this field; on the other, they were somewhat fragmented or based on relatively small and partly intuitively chosen samples. We proposed a far more complex approach to success factors and success measures of enterprise and used relatively numerous random samples. Employing SEM as a method of hypotheses verification, we confirmed no differences between family and non-family firms considering such aspects as the self-perception of competitive advantage factors and intangible resources of the enterprise. These success factors do not rely on business specificity and have the same significance for each enterprise. In the case of factors that are more strongly connected with business entity specificity, *i.e.* whether it is a family or non-family firm, we isolated distinct differences. For family firms, internal and external interrelations and access to finance and financial situation are less crucial due to their distinct embeddedness, long-term orientation, preservation, independence, and general familiness.

To summarise, we can state that in some aspects of behaviour, the significance of some success factors in family firms differ from their non-family counterparts. The significance of our findings for the praxis connects to the operations of advisers to family firms. Namely, in advising processes and actions, they have to consider that family-oriented objectives are more crucial than strictly business-oriented ones, and therefore, there is no need to change this specificity. Advice should be rather oriented towards how to optimise the economic achievements of family firms in such circumstances.

The survey findings have some limitations since they refer predominantly to Polish family and non-family firms. Having the results verified on samples from other countries seems advisable from a scientific perspective. One could argue that an interesting strand of research could be some in-depth analyses that do not draw on the latent structures of the dependent variables but rather build on the observable variables in both dependent and explanatory groups. Such analyses would make it possible to identify direct relationships among the measured variables. Another research area going beyond the discussion presented herein is an analysis that would show the relationship of success factors or their groups to economic and financial performance, expressed by adequate metrics and indicators within enterprise success models (Ahmad *et al*., 2011; Gorgievski *et al*., 2011; Utrilla & Torraleja, 2012). This approach would allow a broader context to be demonstrated, shedding light on the importance of different success factors in the enterprise's activities.

REFERENCES

Ahmad, N. H., Wilson, C., & Kummerow, L. (2011). Assessing the dimensionality of business success: The perspectives of Malaysian SME owner-managers. *Journal of Asia-Pacific Business*, *12*(3), 207-224. https://doi.org/10.1080/10599231.2011.586855.

Alsos, G. A., Isaksen, E. J., & Ljunggren, E. (2006). New venture financing and subsequent business growth in men- and women-led businesses. *Entrepreneurship Theory and Practice*, *30*(5), 667-686.

Angel P., Jenkins A., & Stephens, A. (2018). Understanding entrepreneurial success: A phenomenographic approach. *International Small Business Journal, 36*(6), 611-636. https://doi.org/10.1177/0266242618768662.

Åstebro, T., Herz, H., Nanda, R., & Weber, R. (2014). Seeking the roots of entrepreneurship: Insights from behavioral economics. *Journal of Economic Perspectives*, *28*(3), 49-70. https://doi.org/10.1257/jep.28.3.49

Arregle, J. L., Hitt, M. A., Sirmon, D. G., & Very, P. (2007). The development of organizational social capital: Attributes of family firms. *Journal of Management Studies*, *44*(1), 73-95.

Audretsch, D. B., Hülsbeck, M., & Lehmann, E. E. (2013). Families as active monitors of firm performance. *Journal of Family Business Strategy*, 4(2), 118-130. https://doi.org/10.1016/j.jfbs.2013.02.002.

Baer, M., & Frese, M. (2003). Innovation is not enough: Climates for initiative and psychological safety, process innovations, and firm performance. *Journal of Organizational Behavior*, *24*(1), 45-68. https://doi.org/10.1002/JOB.179

Baron, R. A., & Markman, G. D. (2000). Beyond social capital: How social skills can enhance entrepreneurs' success. *Academy of Management Perspectives*, *14*(1), 106-116.

Basco, R., & Pérez Rodríguez, M. J. (2009). Studying the family enterprise holistically: Evidence for integrated family and business systems. *Family Business Review*, *22*(1), 82-95. https://doi.org/10.1177/0894486508327824.

Beaver, G. (2002). *Small business, entrepreneurship and enterprise development*. Harlow: Pearson Education.

Brooksbank, R., Kirby, D., Tompson, G., & Taylor, D. (2003). Marketing as a determinant of long-run competitive success in medium-sized UK manufacturing firms. *Small Business Economics*, *20*(3), 259-272.

Browne, M. W., & Cudeck, R. (1992). Alternative ways of assessing model fit. *Sociological Methods & Research*, *21*(2), 230-258.

Brundin E., & Härtel C. E. J. (2014). Emotions in family firms. In L. Melin, M. Nordqvist, P. Sharma (Eds.), *The Sage book of family business* (pp. 529-548). London: Sage.

Bujan, I. (2019, October). Measuring Success in Small Family Businesses - A Socioemotional Wealth Perspective. *ENTRENOVA - ENTerprise REsearch InNOVAtion*, *5*(1), 88-97. https://hrcak.srce.hr/ojs/index.php/entrenova/article/view/13744

Cater, J. J., & Justis, R. T. (2010). The development and implementation of shared leadership in multi-generational family firms. *Management Research Review*, 33(6), 563-585. https://doi.org/https://doi.org/10.1108/01409171011050190

Chandler, G. N., & Hanks, S. H. (1993). Measuring the performance of emerging businesses: A validation study. *Journal of Business Venturing*, *8*(5), 391-408.

Coleman, J. S. (1990). *Foundations of social theory*. London: Belknap Press of Harvard University Press.

Chua, J. H., Chrisman, J. J., & Sharma, P. (1999). Defining the family business by behavior. *Entrepreneurship Theory and Practice, 23*(4), 19-39. https://doi.org/10.1177/104225879902300402

Dafna, K. (2008). Managerial performance and business success: Gender differences in Canadian and Israeli entrepreneurs. *Journal of Enterprising Communities: People and Places in the Global Economy*, *2*(4), 300-331. https://doi.org/10.1108/17506200810913890

D'Aurizio, L., Oliviero, T., & Romano, L. (2015). Family firms, soft information and bank lending in a financial crisis. *Journal of Corporate Finance*, *33*, 279-292. https://doi.org/10.1016/j.jcorpfin.2015.01.002

De Carolis, D. M., & Saparito, P. (2006). Social capital, cognition, and entrepreneurial opportunities: A theoretical framework. *Entrepreneurship: Theory and Practice*, *30*(1), 41-56. https://doi.org/10.1111/j.1540-6520.2006.00109.x

de Chematony, L., Dall'Olmo Riley, F., & Harris, F. (1998). Criteria to assess brand success. *Journal of Marketing Management*, *14*(7), 765-781. https://doi.org/10.1362/026725798784867608

Dej, D. (2010). Defining and measuring entrepreneurial success. In M. Lukes & M. Laguna (Eds.), *Entrepreneurship: A psychological approach* (p. 225). Prague: Oeconomica. https://doi.org/10.2307/1974198

Déniz, D., & Suárez, C. K. M. (2005). Corporate social responsibility and family business in Spain. *Journal of Business Ethics*, *56*(1), 27-41.

Diputra, I., & Arismunandar, M. J. (2021). Entrepreneurial self-efficacy: Compromising the pros and cons of the relationship between personality traits and entrepreneurial success. *Multicultural Education*, *7*(7), 176. https://doi.org/10.5281/zenodo.5090790

Dobbs, M. & Hamilton, R. T. (2007). Small business growth: Recent evidence and new directions. *International Journal of Entrepreneurial Behavior & Research*, *12*(5), 296-322. https://doi.org/10.1108/13552550710780885

Donckels, R., & Frohlich, E. (1991). Are family businesses really different? European experiences from STRATOS. *Family Business Review*, 4(2), 149-160.

Faulkner, D., & Bowman, C. (1992). Generic strategies and congruent organisational structures: Some suggestions. *European Management Journal*, *10*(4), 494-500.

Farrington, S. M., Venter, E., & Boshoff, C. (2012). The role of selected team design elements in successful sibling teams. *Family Business Review*, 25(2), 191-205.

Fisher, R., Maritz, A., & Lobo, A. (2014) Evaluating entrepreneurs' perception of success: Development of a measurement scale. *International Journal of Entrepreneurial Behavior & Research,* 20(5), 478-492.

Fried, H. O., & Tauer, L. W. (2009). *Understanding the entrepreneur: An index of entrepreneurial success.* Ithaca: Cornell University Press.

Gadenne, D. (1998). Critical success factors for small business: An inter-industry comparison. *International Small Business Journal*, *17*(1), 36-56.

Gallo, M. Á., Tàpies, J., & Cappuyns, K. (2004). Comparison of family and nonfamily business: Financial logic and personal preferences. *Family Business Review*, *17*(4), 303-318. https://doi.org/10.1111/j.1741-6248.2004.00020.x

Gersick, K. E., Gersick, K. E., Davis, J. A., Hampton, M. M., & Lansberg, I. (1997). *Generation to generation: Life cycles of the family business*. London: Harvard Business Press.

Gomez-Mejia, L. R., Patel, P. C., & Zellweger, T. M. (2018). In the horns of the dilemma: Socioemotional wealth, financial wealth, and acquisitions in family firms. *Journal of Management*, 44(4), 1369-1397. doi:10.1177/0149206315614375.

Gorgievski, M. J., Ascalon, M. E., & Stephan, U. (2011). Small business owners' success criteria, a values approach to personal differences. *Journal of Small Business Management*, 49(2), 207-232. https://doi.org/10.1111/j.1540-627X.2011.00322.x

Grilo, I., & Irigoyen, J. (2006). Entrepreneurship in the EU : To wish and not to be. *Small Business Economics, 26*(4), 305-318. https://doi.org/10.1007/s11187-005-1561-3

Gudmundson, D., Hartman, E. A., & Tower, C. B. (1999). Strategic orientation: Differences between family and non-family firms. *Family Business Review*, 12(1), 27-39. https://doi.org/10.1111/j.1741-6248.1999.00027.x

GUS (2018). *Uwarunkowania rozwoju przedsiębiorczości w sektorze MŚP. Raport Końcowy*. Warszawa: Centrum Badań i Edukacji Statystycznej GUS.

Habbershon, T. G., & Williams, M. L. (1999). A resource-based framework for assessing the strategic advantages of family firms. *Family Business Review*, *12*(1), 1-25. https://doi.org/10.1111/j.1741-6248.1999.00001.x

Hasan, M., Musa, C. I., Arismunandar, A. M., & Tahir, T. (2020). Positive psychological capital, market orientation, and business performance of family businesses in the culinary sector: A research study. *Economics and Sociology, 13*(3), 97-112. https://doi.org/10.14254/2071-789X.2020/13-3/7

Heider, F. (1958). *The Psychology of Interpersonal Relations*. New York: Wiley.

Hienerth, C., & Kessler, A. (2006). Measuring success in family businesses: The concept of configurational fit. *Family Business Review*, *19*(2), 115-134. https://doi.org/10.1111/j.1741-6248.2006.00061.x

Hu, L. T., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling: A Multidisciplinary Journal*, *6*(1), 1-55.

Hunter, M. G., & Kazakoff, D. (2012). Multi-generation small business response to the recent financial crisis. *Journal of Applied Management and Entrepreneurship, 17*(1), 37-51.

Ioniţă, D. (2013). Success and goals: An exploratory research in small enterprises. *Procedia Economics and Finance*, *6*, 503-511. https://doi.org/10.1016/S2212-5671(13)00168-8

Irava, W. J., & Moores, K. (2010). Clarifying the strategic advantage of familiness: Unbundling its dimensions and highlighting its paradoxes. *Journal of Family Business Strategy*, *1*(3), 131-144. https://doi.org/10.1016/j.jfbs.2010.08.002

Jennings, P., & Beaver, G. (1997). The performance and competitive advantage of small firms: A management perspective. *International Small Business Journal*, *15*(2), 63-75.

Kay, J. (1995). *Foundations of corporate success: How business strategies add value*. Oxford: Oxford Paperbacks. https://doi.org/10.1093/019828988X.001.0001

Kowalewska, A., Szut, J., Małgorzata, B. L., Kwiatkowska, M., Sułkowski, Ł., Marjański, A., & Krynicki, T. J. (2009). *Firmy rodzinne w polskiej gospodarce – szanse i wyzwania*. Warszawa: Polska Agencja Rozwoju Przedsiębiorczości.

Laguna, M., & Razmus, W. (2019). When I feel my business succeeds, I flourish: Reciprocal relationships between positive orientation, work engagement, and entrepreneurial success. *Journal of Happiness Studies, 20*, 2711-2731. https://doi.org/10.1007/s10902-018-0065-1

Lee, M.-S., & Rogoff, E. G. (1996). Research note: Comparison of small businesses with family participation versus small businesses without family participation: An investigation of differences in goals, attitudes, and family/business conflict. *Family Business Review, 9*(4), 423-437. https://doi.org/10.1111/j.1741-6248.1996.00423.x

Leković, B., & Marić, S. M. (2015). Measures of small business success/performance–importance, reliability and usability. *Industrija*, *43*(2), 7-26. https://doi.org/ 10.5937/industrija43-7209

Lins, K. V., Volpin, P., & Wagner, H. F. (2013). Does family control matter? International evidence from the 2008-2009 financial crisis. *Review of Financial Studies*, *26*(10), 2583-2619. https://doi.org/10.1093/rfs/hht044

Lochner, K., Kawachi, I., & Kennedy, B. P. (1999). Social capital: A guide to its measurement. *Health and Place, 5*(4), 259-270. https://doi.org/10.1016/S1353-8292(99)00016-7

Lussier, R. N., & Pfeifer, S. (2000). A comparison of business success versus failure variables between US and Central Eastern Europe Croatian entrepreneurs. *Entrepreneurship Theory and Practice*, *24*(4), 59-67.

Łobos K., et al. (2018). *Determinants of entrepreneurship development in the SME sector*. Report. Statistics Poland. Retrieved from: http://stat.gov.pl/statystyka-regionalna/statystyka-dla-polityki-spojnosci/ on September 2021.

Maltz, A. C., Shenhar, A. J., & Reilly, R. R. (2003). Beyond the balanced scorecard: Refining the search for organizational success measures. *Long Range Planning*, 36(2), 187-204. https://doi.org/10.1016/S0024-6301(02)00165-6

Man, T. W., Lau, T., & Chan, K. F. (2002). The competitiveness of small and medium enterprises: A conceptualization with a focus on entrepreneurial competencies. *Journal of Business Venturing*, *17*(2), 123-142.

Mandl, I. (2008). *Overview of family business relevant issues. Final report*. Vienna: Austrian Institute for SME Research.

Marsh, H. W., Hau, K. T., & Wen, Z. (2004). In search of golden rules: Comment on hypothesis-testing approaches to setting cutoff values for fit indexes and dangers in overgeneralizing Hu and Bentler's (1999) findings. *Structural equation modeling*, *11*(3), 320-341.

Mishra, C. S., & McConaughy, D. L. (1999). Founding family control and capital structure: The risk of loss of control and the aversion to debt. *Entrepreneurship Theory and Practice, 23*(4), 53-64.

Mzid I. (2017) Family Capital and Organizational Resilience of the Family Firm in Tunisia. In: S. Basly (eds), *Family Businesses in the Arab World. Contributions to Management Science* (pp. 41-61). Berlin: Springer, Cham. https://doi.org/10.1007/978-3-319-57630-5_4.

Nuvolari, A., Toninelli, P. A., & Vasta, M. (2018). What makes a successful (and famous) entrepreneur? Historical evidence from Italy (XIX-XX century). *Industrial and Corporate Change 27*(3), 425-447. https://doi.org/10.1093/icc/dtx033.

Nuntilde, P., & Gr, F. A. (2012). Family businesses: How to measure their performance. *African Journal of Business Management, 6*(12), 4612-4621.

O'Gorman, C. (2001). The sustainability of growth in small- and medium-sized enterprises. *International Journal of Entrepreneurial Behavior & Research*, *7*(2), 60-75. https://doi.org/10.1108/13552550110396095

Olson, P. D., Zuiker, V. S., Danes, S. M., Stafford, K., Heck, R. K. Z., & Duncan, K. A. (2003). The impact of the family and the business on family business sustainability. *Journal of Business Venturing*, *18*(5), 639-666. https://doi.org/10.1016/S0883-9026(03)00014-4.

Orlitzky, M., Schmidt, F. L., & Rynes, S. L. (2003). Corporate social and financial performance: A meta-analysis. *Organization Studies*, *24*(3), 403-441. https://doi.org/10.1177/0170840603024003910

Pacheco, L. (2019). Performance vs. Family ownership and management: The case of Portuguese wine firms. *Entrepreneurial Business and Economics Review*, *7*(3), 7-24. https://doi.org/10.15678/EBER.2019.070301.

Pernsteiner, H., & Węcławski, J. (2016). *Finansowanie i corporate governance w przedsiębiorstwach rodzinnych*. Warszawa: C. H. Beck.

Petter, S., DeLone, W., & McLean, E. (2008). Measuring information systems success: models, dimensions,

measures, and interrelationships. *European Journal of Information Systems*, *17*(3), 236-263. https://doi.org/10.1057/ejis.2008.15

Perren, L. (1999). Factors in the growth of micro-enterprises (Part 1): Developing a framework. *Journal of Small Business and Enterprise Development*, *6*(4), 366-385. https://doi.org/10.1108/EUM0000000006691

Perren, L. (2000). Factors in the growth of micro-enterprises (Part 2): Exploring the implications. *Journal of Small Business and Enterprise Development, 7*(1), 58-68. https://doi.org/10.1108/EUM0000000006805

Pounder, P. (2015). Family business insights: An overview of the literature. *Journal of Family Business Management, 5*(1), 116-127. https://doi.org/10.1108/JFBM-10-2014-0023

Poutziouris, P. Z. (2002). The financial affairs of smaller family companies. In D. E. Fletcher (Ed.), *Understanding the small family business* (pp. 125-140). London: Routledge.

Putnam, R. (1993). The prosperous community: Social capital and public life. *The American Prospect, 13*(14), 1-11.

Przepiorka, A. M. (2017). Psychological determinants of entrepreneurial success and life-satisfaction. *Current Psychology*, *36*(2), 304-315. https://doi.org/10.1007/s12144-016-9419-1

Rauch, A., & Frese, M. (2007). Let's put the person back into entrepreneurship research: A meta-analysis on the relationship between business owners' personality traits, business creation, and success. *European Journal of Work and Organizational Psychology, 16*(4), 353-385. doi:10.1080/13594320701595438

Reijonen, H. (2008). Understanding the small business owner: What they really aim at and how this relates to firm performance: A case study in North Karelia. *Eastern Finland Management Research News*, *31*(8), 616-629. https://doi.org/10.1108/01409170810892172

Richard, P. J., Devinney, T. M., Yip, G. S., & Johnson, G. (2009). Measuring organizational performance: Towards methodological best practice. *Journal of Management, 35*(3), 718-804. https://doi.org/10.1177/0149206308330560

Rodríguez-Gutiérrez, M. J., Moreno, P. & Tejada, P. (2015). Entrepreneurial orientation and performance of SMEs in the services industry. *Journal of Organizational Change Management, 28*(2), 194-212. https://doi.org/10.1108/JOCM-01-2015-0020

Rogoff, E. G., Lee, M. S., & Suh, D. C. (2004). 'Who done it?' Attributions by entrepreneurs and experts of the factors that cause and impede small business success. *Journal of Small Business Management, 42*(4), 364-376.

Safin, K., Pluta, J., & Pabjan, B. (2014). *Strategie sukcesyjne polskich przedsiębiorstw rodzinnych*. Warszawa: Difin.

Schlepphorst, S., & Moog, P. (2014). Left in the dark: Family successors' requirement profiles in the family business succession process. *Journal of Family Business Strategy, 5*(4), 358-371. https://doi.org/10.1016/j.jfbs.2014.08.004

Schulze, W. S., Lubatkin, M. H., & Dino, R. N. (2003). Exploring the agency consequences of ownership dispersion among the directors of private family firms. *Academy of Management Journal*, *46*(2), 179-194. https://doi.org/10.2307/30040613

Shane, S., & Venkataraman, S. (2000). The promise of entrepreneurship as a field of research. *Academy of Management Review*, *25*(1), 217-226.

Sharma, P. (2004). An overview of the field of family business studies: Current status and directions for the future. *Family Business Review, 17*(1), 1-36. https://doi.org/10.1111/j.1741-6248.2004.00001.x

Simpson, M., Padmore, J., & Newman, N. (2012). Towards a new model of success and performance in SMEs. *International Journal of Entrepreneurial Behaviour & Research, 18*(3), 264-285. https://doi.org/10.1108/13552551211227675

Simpson, M., Tuck, N., & Bellamy, S. (2004). Small business success factors: The role of education and training. *Education and Training*, *46*(8-9), 481-491.

Sirmon, D. G., & Hitt, M. A. (2003). Managing resources: Linking unique resources, management, and wealth creation in family firms. *Entrepreneurship: Theory and Practice*, *27*(4), 339-359.

Sjögren, H., & Schubert, K. (2018). *Family dynasties: The evolution of global business in Scandinavia*. London: Routledge. https://doi.org/10.4324/9781351021548

Sobczyk, J. R. (2009). Aksjologia sukcesu-uwarunkowania pomiary: miary i oceny. *Prace i Materiały Wydziału Zarządzania Uniwersytetu Gdańskiego, 2*(1), 81-90.

Stafford, K., Duncan, K. A., Dane, S., & Winter, M. (1999). A research model of sustainable family businesses. *Family Business Review*, 12(3), 197-208. https://doi.org/10.1111/j.1741-6248.1999.00197.x

Staniewski, W. M. (2016). The contribution of business experience and knowledge to successful entrepreneurship. *Journal of Business Research*, *69*(11), 5147-5152. https://doi.org/10.1016/j.jbusres.2016.04.095

Staniewski, W. M. & Awruk, K. (2019). Entrepreneurial success and achievement motivation – A preliminary report on a validation study of the questionnaire of entrepreneurial success. *Journal of Business Research*, *101*(C), 433-440. https://doi.org/ 10.1016/j.jbusres.2019.01.073

Sternberg, R. J. (2004). Successful intelligence as a basis for entrepreneurship. *Journal of Business Venturing*, *19*(2), 189-201.

Stewart, A., & Hitt, M. A. (2012). Why can't a family business be more like a nonfamily business?: Modes of Professionalization in family firms. *Family Business Review, 25*(1), 58-86. https://doi.org/10.1177/0894486511421665

Strebulaev, I. A., & Yang, B. (2013). The mystery of zero-leverage firms. *Journal of Financial Economics*, *109*(1), 1-23.

Sundaramurthy, C., & Kreiner, G. E. (2008). Governing by managing identity boundaries: The case of family businesses. *Entrepreneurship: Theory and Practice*, *32*(3), 415-436. https://doi.org/10.1111/j.1540-6520.2008.00234.x

Toninelli, P. A., Vasta, M., & Zavarrone, E. (2013). Explaining entrepreneurial success: Evidence from the Italian case (nineteenth-twentieth centuries). In G. Tortella & G. Quiroga (Eds.), *Entrepreneurship and growth* (pp. 92-112). London: Palgrave Macmillan.

Urbanowska-Sojkin, E. (2013). Zasobowy kontekst sukcesu przedsiębiorstwa. *Zarządzanie i Finanse*, *11*(4), 389-402.

Utrilla, P. N. C., & Torraleja, F. A. G. (2012). Family businesses: How to measure their performance. *African Journal of Business Management, 6*(12), 4612-4621. https://doi.org/10.5897/AJBM12.035

Vazquez, P., & Rocha, H. (2018). On the goals of family firms: A review and integration. *Journal of Family Business Strategy, 9*(2), 94-106. https://doi.org/10.1016/j.jfbs.2018.02.002

Wach, D., Stephan, U., & Gorgievski, M. (2016). More than money: Developing an integrative multi-factorial measure of entrepreneurial success. *International Small Business Journal, 34*(8), 1098-1121.

Wach, D., Stephan, U., Gorgievski, Marjan, J. & Wegge, J. (2020). Entrepreneurs' achieved success: Developing a multi-faceted measure. *International Entrepreneurship and Management Journal, 16*(3), 1123-1151. https://doi.org/10.1007/s11365-018-0532-5

Walker, E., & Brown, A. (2004). What success factors are important to small business owners?. *International Small Business Journal*, *22*(6), 577-594. https://doi.org/10.1177/0266242604047411

Ward, J. L. (1988). The special role of strategic planning for family businesses. *Family Business Review, 1*(2), 105-117. https://doi.org/10.1111/j.1741-6248.1988.00105.x

Watson, A. (1998). *Enterprise reform and employment change in Shaanxi province*. Chinese Economies Research Centre.

Williams Jr, R. I., Pieper, T. M., Kellermanns, F. W., & Astrachan, J. H. (2018). Family firm goals and their effects on strategy, family and organization behavior: A review and research agenda. *International Journal of Management Reviews, 20*, S63-S82. http://dx.doi.org/10.1111/ijmr.12167

Winter, I. (2000). *Family life and social capital: Towards a theorised understanding* (Working Paper No. 21). Melbourne: Australian Institute of Family Studies.

Wood, E. H. (2006). The internal predictors of business performance in small firms: A logistic regression analysis. *Journal of Small Business and Enterprise Development, 13*(3), 441-453. https://doi.org/10.1108/14626000610680299

Zaks, O., Polowczyk, J., & Trąpczyński, P. (2018). Success factors of start-up acquisitions: Evidence from Israel. *Entrepreneurial Business and Economics Review*, *6*(2), 201-216. https://doi.org/10.15678/EBER.2018.060211

Zellweger, T. M., & Astrachan, J. (2008). On the emotional value of owning a firm. *Family Business Review, 21*(4), 347-363.

Zellweger, T. M., Nason, R. S., & Nordqvist, M. (2012). From longevity of firms to transgenerational entrepreneurship of families: Introducing family entrepreneurial orientation. *Family Business Review, 25*(2), 136-155. https://doi.org/10.1177/0894486511423531

Zheng, J. (2010). *How do family firms cope with economic crisis?: Case studies about Chinese family firms* (PhD Dissertation). Retrieved from: http://urn.kb.se/resolve?urn=urn:nbn:se:hj:diva-13480 on September 2021.

Appendixes

Appendix 1. Descriptive statistics of dependent variable components

Dependent variable components	N	Mean	Standard deviation	Skew-ness	Kurtosis	Non-family firms		Family firms		p-value for differ-ence in means
						N	Mean	N	Mean	
Number of employees	43 379	3.14	0.990	-0.075	0.034	28 693	3.11	14 686	3.18	0.0000
Number of serviced customers	43 379	3.28	0.946	-0.192	0.226	28 693	3.26	14 686	3.31	0.0000
Number of cooperating parties (e.g. suppliers)	43 379	3.18	0.736	0.012	1.846	28 693	3.17	14 686	3.21	0.0000
Financial condition	43 379	3.10	0.943	-0.239	0.208	28 693	3.09	14 686	3.13	0.0001
Net income value	43 379	3.22	1.009	-0.319	-0.152	28 693	3.21	14 686	3.24	0.0026
Net current assets value	43 379	3.18	0.888	-0.237	0.452	28 693	3.17	14 686	3.20	0.0000
Equity value	43 379	3.14	0.804	-0.176	1.233	28 693	3.13	14 686	3.17	0.0000
Investment outlays value	43 379	3.10	0.956	-0.231	0.430	28 693	3.08	14 686	3.13	0.0000
Competitive position on the market	43 379	3.10	0.783	-0.172	1.474	28 693	3.08	14 686	3.14	0.0000

Source: own calculations based on direct surveys.

Appendix 2. Descriptive statistics of components of variables

Components of dependent variables	N	Mean	Standard deviation	Skew-ness	Kurtosis	Non-family firms		Family firms		p-value for differ-ence in means
						N	Mean	N	Mean	
Financial resources	40 051	2.75	0.891	-0.423	0.576	25 944	2.74	14 107	2.77	0.001
Meeting quality standards	40 051	3.25	0.713	0.780	1.902	25 944	3.23	14 107	3.29	0.000
Business experience	40 051	3.26	0.732	0.575	1.566	25 944	3.24	14 107	3.29	0.000
Technological equipment and instrumentation	40 051	3.14	0.777	0.152	1.643	25 944	3.12	14 107	3.17	0.000
Employee knowledge, skills, qualifications and experience	40 051	3.19	0.714	0.483	2.126	25 944	3.19	14 107	3.19	0.472
Implementation of innovative solutions	40 051	2.92	0.845	-0.222	1.120	25 944	2.91	14 107	2.94	0.000
Ensuring a positive work atmosphere, employee loyalty, interpersonal relationships	40 051	3.32	0.764	0.591	1.107	25 944	3.31	14 107	3.34	0.000
Developing partner cooperation with other firms	40 051	3.12	0.698	0.211	2.811	25 944	3.11	14 107	3.15	0.000
Leader's qualities	20 908	4.29	0.540	-1.155	3.111	12 685	4.29	8 223	4.28	0.046
Operation method	43 379	3.87	0.866	-0.144	1.086	28 693	3.85	14 686	3.90	0.000
Competitive position	39 074	3.79	0.704	-0.713	1.531	25 231	3.78	13 843	3.82	0.000
Internal communication	42 436	4.03	0.734	-0.933	1.730	27 985	4.04	14 451	4.01	0.001
Operations strategy	38 564	3.56	0.841	-0.568	0.754	25 444	3.56	13 120	3.54	0.029
Quality management	37 325	3.36	0.886	-0.392	0.465	24 540	3.36	12 785	3.36	0.620
Risk management	36 917	3.36	0.868	-0.576	0.709	24 369	3.36	12 548	3.35	0.254
Enterprise management system	35 732	3.15	0.844	-0.530	0.811	23 610	3.16	12 122	3.14	0.028
Computer technologies	37 412	3.35	0.919	-0.525	0.444	24 739	3.36	12 673	3.32	0.000
Information and communication technologies	40 156	3.38	0.925	-0.361	0.046	26 413	3.36	13 743	3.43	0.000
Entrepreneurial orientation	39 293	3.40	0.859	-0.560	0.685	25 758	3.38	13 535	3.45	0.000
Cooperation	12 552	3.76	0.626	-0.441	1.345	8 284	3.76	4 268	3.78	0.108
Access to finance	38 355	3.36	0.984	-0.436	-0.005	24 893	3.32	13 462	3.43	0.000
Financial situation	42 188	4.04	0.760	-0.900	1.414	27 752	3.98	14 436	4.14	0.000

Source: own calculations based on direct surveys.

Appendix 3. Correlation coefficients for the variables

Variables	Y	X1	X2	X3	X4	X5	X6	X7	X8	X9	X10	X11	X12	X13	X14	X15	X16	X17	X18	X19	X20	X21	X22
Success perception (Y)	1.000																						
Financial resources (change over last 3 years) (XI)	0.364**	1.000																					
Meeting quality standards (change over last 3 years) (X2)	0.291**	0.400**	1.000																				
Business experience (change over last 3 years) (X3)	0.255**	0.441**	0.654**	1.000																			
Technological equipment and instrumentation (change over last 3 years) (X4)	0.290**	0.499**	0.554**	0.627**	1.000																		
Employee knowledge, skills, qualifications and experience (change over last 3 years) (X5)	0.285**	0.401**	0.557**	0.619**	0.636**	1.000																	
Implementation of innovative solutions (change over last 3 years) (X6)	0.331**	0.486**	0.434**	0.465**	0.573**	0.541**	1.000																
Ensuring positive work atmosphere, employee loyalty and interpersonal relationships (change over last 3 years) (X7)	0.271**	0.240**	0.497**	0.483**	0.450**	0.544**	0.421**	1.000															
Developing partnerships with other firms (change over last 3 years) (X8)	0.309**	0.357**	0.455**	0.490**	0.487**	0.525**	0.520**	0.602**	1.000														
Leader's qualities (X9)	0.168**	0.063**	0.157**	0.162**	0.141**	0.169**	0.163**	0.185**	0.184**	1.000													
Operation method (X10)	0.126**	0.032**	0.148**	0.129**	0.101**	0.125**	0.104**	0.149**	0.140**	0.443**	1.000												
Competitive position (X11)	0.143**	0.017**	0.151**	0.138**	0.118**	0.137**	0.127**	0.167**	0.164**	0.439**	0.591**	1.000											
Internal communication (X12)	0.178**	0.043**	0.198**	0.171**	0.159**	0.209**	0.159**	0.278**	0.217**	0.514**	0.536**	0.597**	1.000										
Operation strategy (X13)	0.187**	0.070**	0.150**	0.140**	0.140**	0.148**	0.188**	0.166**	0.180**	0.404**	0.501**	0.560**	0.543**	1.000									
Quality management (X14)	0.170**	0.068**	0.162**	0.127**	134**	0.136**	0.165**	0.132**	0.161**	0.334**	0.455**	0.472**	0.448**	0.655**	1.000								
Risk management (X15)	0.144**	0.045**	0.117**	0.113**	0.104**	0.111**	0.125**	0.110**	0.155**	0.364**	0.476**	0.490**	0.443**	0.602**	0.647**	1.000							
Enterprise management system (X16)	0.120**	0.044**	0.102**	0.096**	0.091**	0.099**	0.127**	0.107**	0.146**	0.295**	0.415**	0.422**	0.384**	0.520**	0.582**	0.643**	1.000						
Computer technologies (X17)	0.196**	0.075**	0.148**	0.138**	0.154**	0.155**	0.192**	0.150**	0.177**	0.349**	0.470**	0.485**	0.467**	0.561**	0.580**	0.595**	0.598**	1.000					
Information and communications technologies (X18)	0.151**	0.065**	0.116**	0.114**	0.119**	0.115**	0.173**	0.114**	0.142**	0.301**	0.414**	0.442**	0.380**	0.471**	0.439**	0.480**	0.461**	0.592**	1.000				
Entrepreneurial orientation (X19)	0.179**	0.047**	0.149**	0.139**	0.130**	0.136**	0.173**	0.151**	0.187**	0.398**	0.465**	0.513**	0.439**	0.522**	0.519**	0.576**	0.548**	0.570**	0.587**	1.000			
Cooperation (X20)	0.114**	0.029**	0.097**	0.087**	0.092**	0.099**	0.101**	0.103**	0.151**	0.373**	0.400**	0.404**	0.390**	0.398**	0.420**	0.473**	0.438**	0.446**	0.445**	0.500**	1.000		
Access to finance (X21)	0.093**	-00.006	0.059**	0.063**	0.070**	0.059**	0.063**	0.050**	0.086**	0.215**	0.338**	0.319**	0.259**	0.319**	0.370**	0.447**	0.391**	0.370**	0.437**	0.432**	0.446**	1.000	
Financial situation (X22)	0.098**	-0.021**	0.135**	0.122**	0.086**	0.103**	0.044**	0.137**	0.108**	0.368**	0.451**	0.457**	0.474**	0.372**	0.344**	0.409**	0.326**	0.363**	0.379**	0.420**	0.434**	0.504**	1.000

Note: **: Correlation significance at 0.01 (two-tailed).
Source: own calculations based on direct surveys.

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Conflict of Interest

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Taking the international route: Investigating the impact of socioemotional wealth dimensions on family firm performance via internationalisation

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ABSTRACT

Objective: The aim of the article is to analyse the mediating effect of internationalisation between socioemotional wealth (SEW) dimensions and family firm performance.

Research Design & Methods: The study is quantitative and uses a survey method. A sample of 303 family firms was surveyed from four cities in Pakistan. The partial least squares structural equation modeling (PLS-SEM) was used to assess the relationship between the SEW dimensions and firm performance with internationalisation as the mediating variable.

Findings: The findings revealed that internationalisation has a partial mediation with four dimensions of SEW and firm performance. Moreover, the authors propose that the dimensions of SEW in themselves are not negative or positive, but rather their effect becomes such when interacting with certain variables.

Implications & Recommendations: The study guided family firm owner-managers to leverage the positive effect of some dimensions of SEW while resolving the negative impact of other dimensions for firm's growth and success.

Contribution & Value Added: The study used the individual dimensions of socioemotional wealth from the FIBER scale in contrast to single proxies and higher-order composite SEW construct to analyse the impact of each dimension on firm performance via the mediating effect of internationalisation.

Article type: research article

Keywords: socioemotional wealth; SEW; FIBER; family business; family dynamics; firm performance

JEL codes: L21, L25, L26

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INTRODUCTION

Internationalisation strategies provide an important means of expansion for family firms (Yang *et al*., 2020). Past studies showed that firms which internationalise tend to display superior performance (van Essen *et al*., 2015). However, literature documents a cautious attitude of family firms towards internationalisation strategies (Gomez-Mejia *et al*., 2010; Xu *et al*., 2020) which may account for their lower performance in comparison to non-family firms. Such a risk-averse attitude of family firms falls into place when viewed under the lens of socioemotional wealth theory. The socioemotional wealth (SEW) theory implies that family firms aim for noneconomic goals rather than economic goals (Gomez-Mejia *et al*., 2007). Thus, SEW instills a cautious attitude in family firms' behaviour that limits their strategic choices which in turn, impacts their performance (Muñoz-Bullon *et al*., 2018; Naldi *et al*., 2013). However, several scholars posit that SEW does not affect firm performance directly; rather, the relationship is more defined by some mediating variable (Hernández-Perlines *et al.*, 2019; Kosmidou, 2018; Razzak & Jassem, 2019). We argue that the link between SEW and firm performance is mediated by the firm's internationalisation strategies. The theoretical link

is logical: when firms internationalise, they tend to perform better (Arregle *et al*., 2021; Claver *et al.*, 2009; Scholes *et al*., 2016).

Furthermore, since many studies emphasized the collective behaviour of SEW, there is a need to garner a more nuanced understanding of how the individual dimensions of SEW interact with these variables to explain the inconsistent results better. We argue that the individual dimensions of SEW interact with internationalisation strategies in a different context to have diverse effects on the overall firm performance. So far, literature has explored the SEW dimension as a composite higher-order construct or has taken indirect proxies to measure SEW. Both of these approaches, however, come with their drawbacks. For example, scholars (Chua *et al*., 2015; Hauck *et al*., 2016) warn against using a holistic approach as it ignores the interrelation or the conflicts existing between the dimensions. Gast *et al*. (2018) also advise against taking SEW as higher-order construct but rather to consider the effect of each of its dimension on a strategic factor. Similarly, indirect proxies are criticized for their oversimplified approach (Hernández-Linares & López-Fernández, 2018; Nordqvist *et al*., 2015). As a result, our study fills this gap by treating each SEW dimension as an independent variable. Consequently, we have borrowed the dimensions from the FIBER scale operationalized by Berrone *et al*. (2012) to measure SEW construct directly. FIBER is an acronym for each of the dimensions of SEW and stands for: F) family control and influence; I) identification of the family with the firm; B) binding social ties; E) emotional attachment of family members with the firm, and R) renewal of family bonds through dynastic succession.

Additionally, our study contributes to the literature by enhancing our understanding of family businesses from the Asian perspective. Most of the studies on SEW come from the West (Ng *et al*., 2019), where a majority of Western countries lean more on the individualist side of the Hofstede's cultural dimensions, while Pakistan is primarily a collectivist society (Hofstede, 1991) and thus, faces a different cultural, socio-demographic, and political arena than the West. The Pakistani context is also sought, because the literature on firm performance, for example, highlights that family firms in individualistic societies perform better than those in collectivist cultures, and collectivist societies tend to give more preferences to family priorities than those in individualistic societies (Wagner *et al*., 2015). Since Pakistan is home to more than 80% of family firms (Afghan, 2011) and as a country is still young (established in 1947), most family businesses are in their second generations or have recently entered their third generation. Thus, it is a prime time for family firms as studies worldwide indicate a downfall for family firms after their third generation (Basco *et al*., 2018; Ward, 2011). Against this backdrop, our study tries to answer the following research question:

RQ: How does internationalisation mediate between the SEW dimensions and firm performance in the Pakistani context?

The study is organized into the following sections: the literature review will detail an overview of the past studies conducted so far on the given topic, followed by a theoretical background on the conceptual model. Next, the research methodology will be elaborated, followed by the results and the discussion in the light of literature. Finally, the conclusion section will summarize the study, expounding on the limitations, implications, and future directions.

LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

Effect of SEW on Internationalisation

Internationalisation strategy is one of the key strategic decisions and usually a turning point for organizations (Yang *et al*., 2020). Research on internationalisation in family firms, however, presents mixed findings. One viewpoint suggests that family firms favour internationalisation since the move locks the future growth for succeeding generations (Zahra, 2003). On the other hand, according to the SEW logic, family firms would not like to go international as it usually requires external funding or a professional expertise outside the family (Basly, 2016; Yang *et al*., 2020; Zellweger *et al*., 2012). These acts threaten SEW as they require giving up some of the family control to enact the internationalisation strategy.

In response to the call of Gast *et al*. (2018), who suggests that SEW should not be treated as a higher-order construct; the given conceptual framework (Figure 1) treats the SEW dimensions as antecedents for internationalisation and, in turn, firm performance. The underlying assumption was that the different dimensions of SEW had different effects on internationalisation strategies of family firms, as also observed for other strategic choices (Kellermanns *et al*., 2012; Kosmidou, 2018). The influence of SEW dimensions on the endogenous variables will be now explained in detail.

Family control and influence (F) and internationalisation

A family possesses a great desire to exert a significant influence over the management of the firm. The desire for rigid control can make them to resist internationalizing strategies as they may require hiring external professionals (Yang *et al*., 2020) due to lack of expertise available in-house (Hitt *et al*., 2006). External resources may bring changes in the corporate governance structure that can threaten family control (Jin *et al*., 2021). Alternatively, family firms may be compelled to engage in partnership with an outside firm which can again challenge the family's control. Having non-family member executives offshore can also constrain the family firm managers to closely monitor their activities (Gomez-Mejia *et al*., 2010). Hence, scholars typically denote a negative effect of family control on internationalisation. While some studies have suggested a positive impact of this dimension on internationalisation (Kuo *et al*., 2012), most scholars report a negative one (Scholes *et al*., 2016; Xu *et al*., 2020). Thus, we present the first hypothesis:

H1: The family control and influence (F) dimension has a significant negative impact on internationalisation of family firms.

Identification of Family Members with the Firm (I) and Internationalisation

Research indicates that family members start to strongly identifiy themselves with the family firm. As a result, when the firm faces any threat to its reputation, family members' identity seems threatened (Zellweger *et al*., 2012). Consequently, family members become sufficiently wary about maintaining the firm image and 'saving the face' of the firm. Thus, this dimension is more concerned with caring for employees and other stakeholders who also feel part of the family (Basly & Saunier, 2020; Berrone *et al*., 2012). The motivation to project a positive image of the firm usually favours the move to internationalise (Basly & Saunier, 2020). While it can pose the risk of damaging firm's reputation if the partnering firm falters, the benefits of going international outweigh the risks and there are greater chances that this dimension would motivate family firms to internationalise. This leads us to the next hypothesis:

H2: The dimension of the family members' identification (I) has a significant positive impact on internationalisation of family firms.

Binding Social Ties (B) and Internationalisation

This dimension indicates that family members tend to develop a close bond with the firm. They also bond with other community members and stakeholders like employees, suppliers, and customers. Similarly, external stakeholders also develop an association and exhibit strong devotion to the firm. As a result, family firms establish a strong and credible relationship with their stakeholders (Zellweger *et al*., 2012) and take care of the environment and the community's welfare (Berrone *et al*., 2010). It was observed that this dimension encourages family firms towards innovation and faster product developments as closer bonds with their social capital help them stay ahead of the competition (Garg *et al*., 2003; Weimann *et al*., 2021). We argue that the same logic can be applied to internationalisation strategies. Since the dimension is responsible for fulfilling social networking goals (Basly & Saunier, 2020), these can become an incentive for family firms to pursue internationalisation strategies. Family firms can leverage their social ties by partnering with family members or other acquaintances relocated abroad, thus, reducing the risks associated with internationalisation. We present the corresponding hypothesis:

H3: The binding of social ties (B) dimension has a significant positive impact on the internationalisation of family firms.

Emotional Attachment of Family Members with the Firm (E) and Internationalisation

As a result of prolonged involvement, family members develop a strong emotional attachment with the firm. While emotional attachment can heighten the sense of responsibility for family firms (Lumpkin *et al*., 2010), it can also lead to behaviours like altruism and nepotism when family firm managers tend to favour incompetent family members over capable non-family member executives (Wu, 2018). As a result, family members who are strongly attached to the firm are typically discouraged to internationalise. Claver *et al*. (2009) report a negative influence of this dimension on internationalisation goals of family firms. Zahra (2003) also pinpoints that the decision to internationalise could lead to intra-family conflicts that may harm family harmony and coherence, thereby inhibiting family members from internationalising. Moreover, even though some studies report a positive impact of this dimension, *e.g.* Cennamo *et al*. (2012) argue that it taps a concern for survivability, the negative effect on internationalisation appears more realistic, thus, our next hypothesis is as follows:

H4: The emotional attachment of family firms (E) dimension has a significant negative impact on internationalisation of family firms.

Renewal of Family Bonds through Dynastic Succession (R) and Internationalisation

A key distinguishing factor between family and non-family firms is the transgenerational vision and desire to continue the family legacy through dynastic succession. Family firms are typically considered to be long-term oriented (Claver *et al*., 2009; Gomez-Mejia *et al*., 2007) and committed to preserving the firm's longevity, which is found to have a positive impact on internationalisation (Debicki *et al*., 2020). Studies suggest the desire to preserve the firm for succeeding generations makes principal owner receptive to risky choices, thus implying a positive relationship (Cassia *et al*., 2012; Classen *et al*., 2014). Many scholars indicate that this dimension drives innovation and growth as it motivates family firms to preserve financial wealth for succeeding generations (Cassia *et al*., 2012; Classen *et al*., 2014; Kammerlander & Ganter, 2015). Claver *et al*. (2009) report that the vision of dynastic succession encourages the efforts to elongate the company's survivability and thus, facilitates internationalisation. This leads us to our next hypothesis:

H5: The renewal of the family bonds (R) dimension has a significant positive impact on internationalisation of family firms.

The effect of SEW on Firm Performance via Internationalization

Theoretically, businesses exist to increase their profits and revenues, thereby improving their firm performance. However, the empirical findings on the SEW-performance relationship are far from conclusive (Martínez-Romero *et al*., 2020). Some results show a positive impact, while others offer a negative one. For example, the binding social ties *(B)*, the renewal of family bonds through dynastic succession *(R)*, and the identification of family members *(I)* dimensions tend to have a positive impact on firm performance, while family influence and control *(F)* dimension is more inclined to have a negative effect. Reasons for variance could be difference in the operationalization of family firms or SEW, or the variance between private and public family businesses under study (Ballal & Bapat, 2020). Some scholars suggest that SEW impacts family firm performance indirectly and by some mediating variable (Astrachan & Zellweger, 2008; Kabbach de Castro *et al*., 2016). Gomez-Mejia et al. (2011) suggested that strategic choices such as internationalisation cause a loss of SEW for family firms, thereby discouraging them to internationalise and in turn, instigating a loss in firm performance. Subsequently, they modelled internationalisation as one of the mediators between SEW and firm performance. Literature also suggests that SEW has an impact on family firm performance but this effect is usually indirect (Astrachan & Zellweger, 2008; Kabbach de Castro *et al*., 2016). This leads us to the following hypotheses:

H6a: Internationalisation mediates the relationship between F dimension and family firm performance.

H6b: Internationalisation mediates the relationship between I dimension and family firm performance.

H6c: Internationalisation mediates the relationship between B and family firm performance.

H6d: Internationalisation mediates the relationship between E and family firm performance.

H6e: Internationalisation mediates the relationship between R and family firm performance.

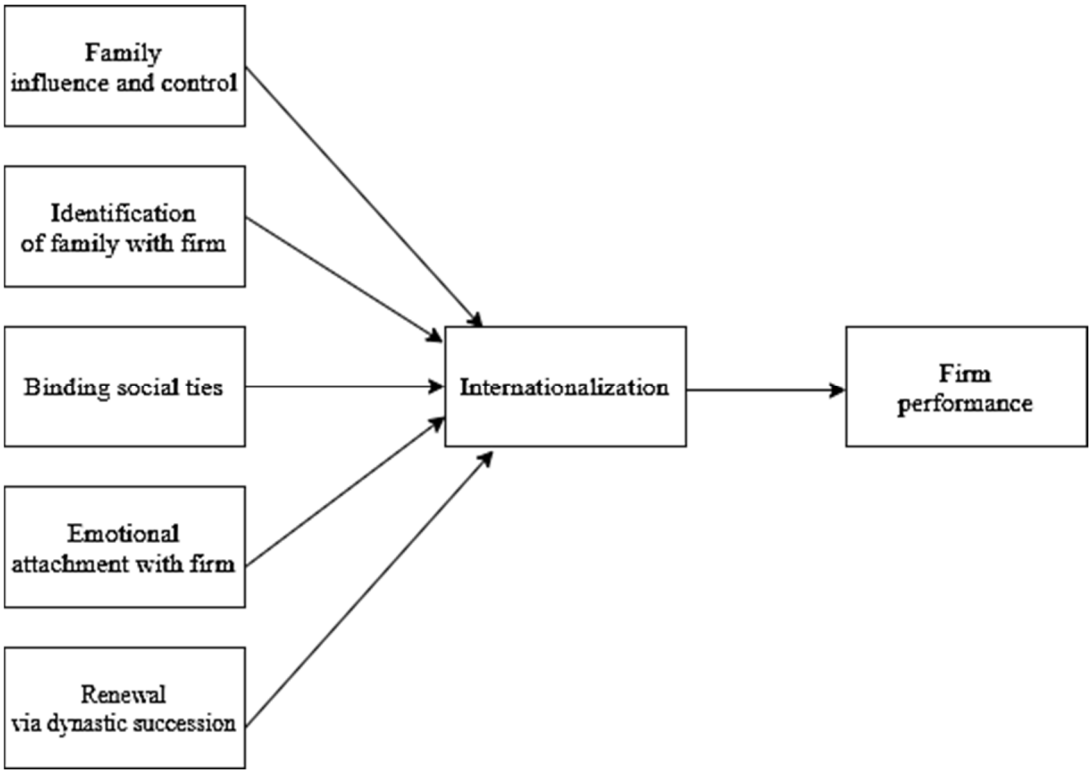

Figure 1. Conceptual model
Source: own elaboration.

RESEARCH METHODOLOGY

Method and Procedure

Given the quantitative nature of the study, a survey method was adopted wherein a self-administered questionnaire was administered to private family firms operating in various industries. Data was collected from Karachi, Lahore, Faisalabad, and Sukkur. These cities have been credited as Pakistan's top manufacturing hubs (Saleem *et al*., 2019). Currently, no organized body collects or disseminates data exclusively on family firms, resulting in the absence of a sampling frame. As a result, probability sampling was not possible, and the authors had to rely on non-probability purposive sampling. This technique is in correspondence with previous studies (Razzak & Jassem, 2019). We defined a family firm as one that possesses a majority of ownership and intends to pursue it as a family firm (Chua *et al*., 1999; Llach & Nordqvist, 2010; Neubaum *et al*., 2019). Public family firms were excluded as they exhibit different behaviours than private ones (Carney *et al*., 2015).

The questionnaire was distributed to more than 600 family businesses in Karachi, Lahore, Faisalabad, and Sukkur in person and via Google Forms. Around 625 family firms were contacted between 1 January, 2021 and 1 April, 2021, wherein 334 firms were contacted via email and Whatsapp to fill out the questionnaire on Google Form, while personal visits were made to about 291 firms. Around 204 family firms filled out the questionnaire out of the email invites, representing a 61% response rate. About 260 family firms contacted via personal visits complied to complete the questionnaire, representing a response rate of 89%. This added to a total of 464 responses collected. The data, once received, was screened for missing or incorrect data. Any response having more than 15% of missing information or monotone responses

was omitted (Hair *et al*., 2017). Furthermore, any response that did not identify itself as a family firm on the screening question 'Do you perceive yourself as a family firm?' was omitted.

Consequently, a total of 303 responses were considered for data analysis, representing 65.5% of the response rate. We kept English as the primary language for the questionnaire. The respondents were family firm owners or managers or a family member in a key position in the firm and who had sufficient knowledge about the decision-making processes of the family firm owners. Partial least squares structural equation modelling (PLS-SEM, version SmartPLS 3) was used for data analysis (Ringle *et al*., 2015). The PLS-SEM was employed for three reasons. It has shown to have greater predictive accuracy (Hair *et al*., 2017), it can deal with non-normality (Vinzi *et al*., 2010), and it does not restrict users to stringent pre-requisites and conditions such as sample size (Hair *et al*., 2019). To ensure the validity of the questionnaire, a pilot test on a sample of 50 respondents was conducted, the results of which were not included in the main findings.

Measurement Development

Each dimension of the FIBER scale (Berrone *et al*., 2012) was treated as a separate independent variable in the study. The dimensions were modelled as reflective as also implied by Berrone *et al*. (2012). Scholars contend that SEW is a multidimensional construct that 'exists in family firms independent of the measures and not as formative' (Debicki *et al.*, 2016, p. 50). Firm performance, taken as the dependent variable, was operationalized as a five-item scale that asked respondents to compare their business performance to their major competitor over the past three years on the following indicators: sales growth, market share, employee growth, customer satisfaction, and profitability. All the items were anchored on a five-point Likert scale. The scale was adopted from the study of Vij and Bedi (2016). The mediating variable, *i.e*., internationalisation was measured in terms of export performance and included the following five items adapted from the study of Mubarik *et al*. (2020): a) company's export sales compared to domestic, b) company's growth in the international market, c) export position of the company compared to competitors, d) export to a diverse international market, and e) export sale in the last five years. The internationalisation and the firm performance scales were also modelled as reflective. The study used three control variables: industry type, generational stage, and firm size.

RESULTS AND DISCUSSION

The demographic profile of the respondent firms is given in Table 1. The majority of the respondent firms were from the two cities Karachi and Lahore (40% each), while the remaining 30% were from Faisalabad and Sukkur.

The analysis of the measurement model revealed it to be valid and reliable (Table 2). The factor loadings of the items for all variables were assessed. Many items of the 'binding of social ties' dimension were dropped due to exceptionally low loadings. Cronbach alpha (CB) and composite reliability (CR) values were referred to check the inter-item reliability of the constructs. While Cronbach's alpha is a widely used tool to check internal consistency (Cronbach & Meehl, 1955), scholars nominate CR as a much superior tool, especially in SmartPLS (Hair *et al*., 2014). The CB and CR values were all above 0.7 as recommended (Fornell & Larcker, 1981), with the exception of *B* dimension, which had a low CB value but a high value of CR. Since many items of the *B* dimension were omitted from the model due to significantly low loadings, this explained the low value of Cronbach alpha as it is sensitive to the number of items in a scale and the correlation between them. The AVE values for all constructs also ranged between 0.5 and 0.7, which indicated sufficient convergent validity (Henseler *et al*., 2009). Fornell-Larcker criterion analysis and the heterotrait-monotrait (HTMT) ratios are two measures of discriminant validity (Hair *et al*., 2017). The Fornell-Larcker criterion analysis must show highest value in both rows and columns for a given construct while the HTMT ratios must yield values below the threshold of 0.9 (Henseler *et al*., 2015). Both measures indicated sufficient discriminant validity. Table 3 shows the result of Fornell-Larcker criterion analysis. Moreover, the results indicated no issue of multicollinearity as the variance inflation factor (VIF) values were observed well below the cut-off value of 5 (Hair *et al*., 2017). We wanted to know if the sample size was adequate and employed the inverse

square root method (Kock & Hadaya, 2018) and the power table (Hair *et al*., 2017) and found that the sample size met the minimum sampls size requirements at 5% significance level.

Table 1. Characteristics of the research sample

Demographics	Frequency	Percentage
Size:		
Small	124	40.8%
Medium	89	29.3%
Large	51	16.8%
Cities:		
Karachi	124	40.8%
Lahore	89	20.3%
Faisalabad	50	16.4%
Sukkur	40	13.2%
Industry:		
Textile	58	19.1%
Food & beverages	49	19.4%
Chemicals and pharma	16	5.3%
Services	99	32.6%
Others	71	23.3%
Generational stage:		
First	80	26.3%
Second	126	41.4%
Third	66	21.7%
Fourth	31	10.2%

Source: own study.

Once the reliability and validity were established, the relationship between the five dimensions of SEW on firm performance was checked in two stages. The first model *(Model 1)* included drawing a direct association between each dimension with firm performance (see Figure. 2). Secondly, the impact of each dimension on firm performance via internationalisation was assessed in *Model 2* (see Figure. 3). A bootstrapping procedure was applied to a 5000 subsample in both models (Hair *et al*., 2014). *Model 1* found a significant relationship between the SEW dimensions with firm performance except for *R*. The results of *Model 2* are given in Table 4. The coefficient of determination (R^2) increased significantly after the inclusion of the mediating variable (from 0.53 to 0.77).

As observed in Table 4 and Table 5, four dimensions of SEW showed a significant relationship with firm performance (FP) when internationalisation (Int) mediated the relationship. Internationalisation had a positive significant relationship with FP (β=0.503; p-value=0.000). The *F* dimension showed a significant negative relationship with Intl. At the same time, Intl had a complementary mediation with FP when interacting with *F*. This was true for *E* and *R*. In contrast, *I* and *B* showed a significant positive relationship with Intl. The *R* dimension did not have a significant relationship with Intl and FP. The three control variables were found to have a positive impact on FP. The value of R^2 increased significantly after the inclusion of the control variable (from 0.361 to 0.61), indicating that the model improved after the inclusion. The R^2 for FP increased to 0.77 in *Model 2*. This implied that the mediating variable and independent variables explained 77% of the variance in FP.

Table 2. The results of the measurement model

Sub-construct	Item	Loading	Cronbach Alpha	Composite Reliability	AVE	Discriminant Validity (HTMT < 0.900)
F	F1	0.797	0.822	0.872	0.578	Yes
	F2	0.775				
	F3	0.672				
	F4	0.829				
	F5	0.716				
I	I6	0.830	0.795	0.879	0.708	Yes
	I7	0.830				
	I8	0.863				
B	B12	0.811	0.570	0.704	0.546	Yes
	B16	0.660				
E	E17	0.652	0.790	0.856	0.546	Yes
	E18	0.765				
	E19	0.851				
	E20	0.667				
	E21	0.743				
R	R22	0.752	0.620	0.791	0.566	Yes
	R23	0.895				
	R24	0.574				
	R25	0.613				
Intl	Intl2	0.879	0.923	0.946	0.813	Yes
	Intl3	0.907				
	Intl4	0.918				
	Intl5	0.902				
FP	FP2	0.882	0.917	0.941	0.801	Yes
	FP3	0.898				
	FP4	0.891				
	FP5	0.908				

Note: Items I9, I10, I11, B13, B14, B15, R20, INTL1, and FP1 were deleted due to significantly small values.
Source: own study.

Table 3. Results of Fornell-Larcker criterion analysis

Sub-construct	B	E	F	FP	I	Intl	R
B	0.752	-	-	-	-	-	-
E	0.192	0.738	-	-	-	-	-
F	-0.050	0.475	0.759	-	-	-	-
FP	0.143	-0.458	-0.523	0.907	-	-	-
I	0.446	0.117	0.117	0.118	0.778	-	-
Int	0.152	-0.410	-0.438	0.851	0.124	0.914	-
R	0.053	0.655	0.459	-0.394	0.198	-0.345	0.782

Source: own study.

The effect size (f^2) indicates the magnitude of the impact irrespective of the sample size (Cohen, 1988). Values between 0.02 and 0.15 are considered small; values between 0.15 and 0.35 moderate and values greater than 0.35 are considered large (Cohen, 1988, 1992). All values ranged between small to moderate with highest effect size for Int being identification with firm ($f^2 = 0.187$). The predictive accuracy Q^2 of 0.462 also indicated a substantial predictive accuracy of the model (Hair *et al.*, 2014). To assess the common method variance (CMV) bias, we used the Harman's Single Factor test and the Full Collinearity Test. The CMV bias refers to a systematic variance introduced in the data and shared among variables due to a common source or method. The highest total variance was 29.6%, which was well below the cutoff value of 50% (Harman, 1976). Likewise, all the VIF values were observed to be less than 3.3 (Fuller *et al*., 2016), thus indicating that no CMV bias existed in the data.

Table 4. Results of the structural model (Model 2)

Paths	B	t-values	p-values
F → Intl	-0.274	4.782	0.000
I → Intl	0.319	5.234	0.000
B → Intl	0.214	4.413	0.000
E → Intl	-0.311	4.208	0.000
R → Intl	-0.043	0.599	0.550
Intl → FP	0.503	12.790	0.000
Industry → FP	0.055	2.004	0.046
GenStg → FP	0.206	5.237	0.000
FSz → FP	0.283	6.391	0.000
R^2			
Firm performance	0.772		
Internationalisation	0.305		

Source: own study.

Table 5. Specific indirect effect (Model 2)

Paths	B	p-value
F → Intl → FP	-0.138	0.000
I → Intl → FP	0.16	0.003
B → Intl → FP	0.108	0.000
E → Intl → FP	-0.156	0.000
R → Intl → FP	-0.022	0.550

Source: own study.

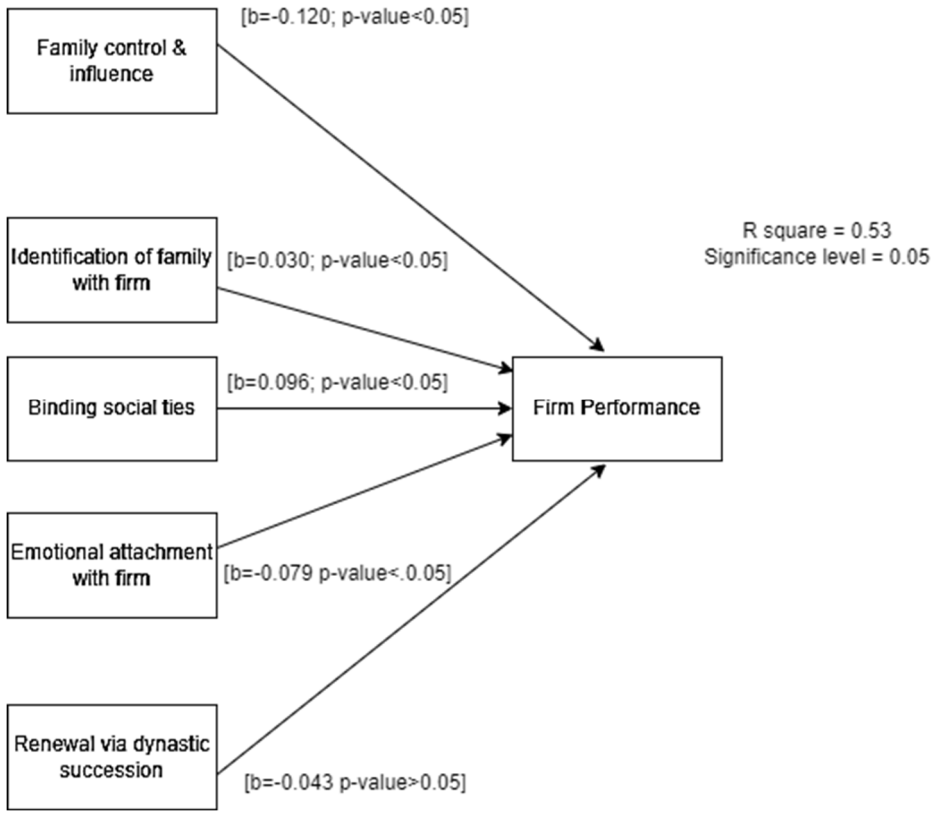

Figure 2. Model 2: Direct relationship between SEW dimensions and firm performance

Source: own elaboration.

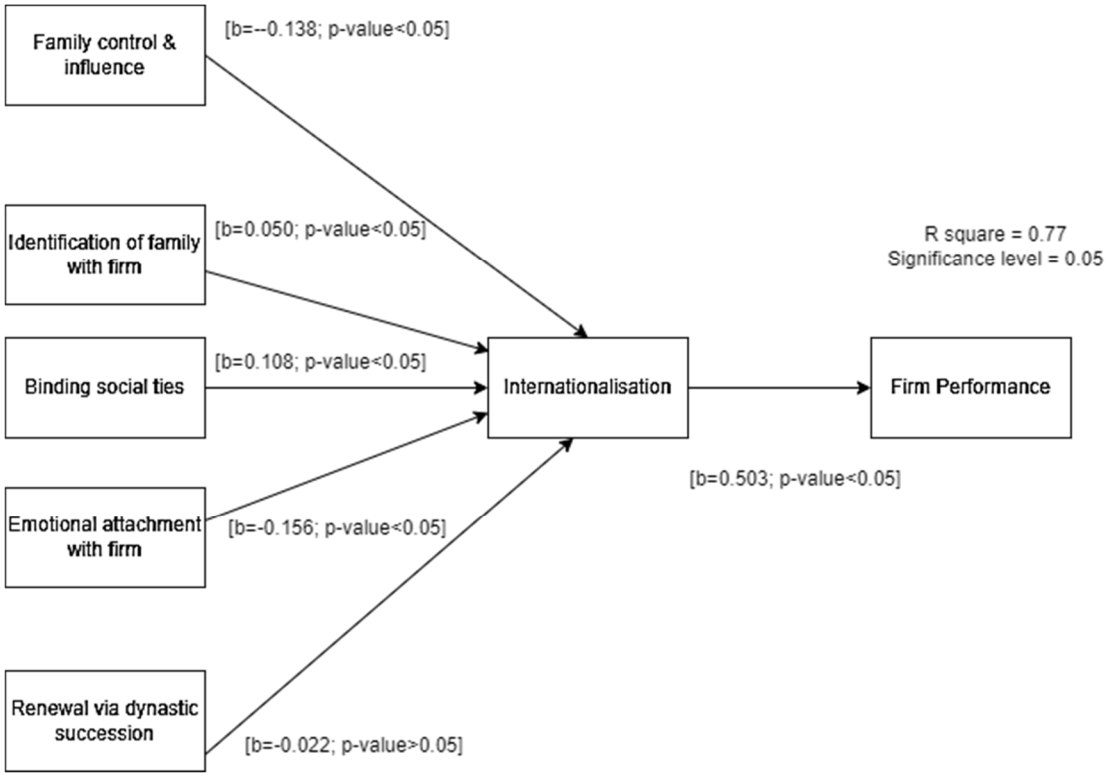

Figure 3. Model 2: Indirect relationship between individual SEW factors and firm performance
Source: own elaboration.

Discussion

The study used the SEW lens to analyse the relationship between the five dimensions of SEW (Berrone *et al*., 2012) and firm performance with internationalisation as the mediating variable. Based on the arguments of previous scholars that SEW has a dual nature, the study hypothesized that each dimension of SEW has a different effect on the output variable. While some dimensions can be drivers for growth, others tend to hinder riskier strategies. In this way, the study complied with the advice of scholars who suggested considering individual SEW dimensions for the investigation of relationships between variables (Gast *et al*., 2018; Hernández-Linares & López-Fernández, 2018). For example, Gast *et al*. (2018) put forward the argument that SEW must not be treated as a higher-order construct. Rather, the influence of each dimension on strategic choice must be examined individually. Similarly, Hernández-Linares and López-Fernández (2018) advise against using single proxies such as family involvement for its inability to capture the essence of family firms and suggested examining the strength and direction of each of the SEW dimensions on the variable under study.

The findings of the study coincided with the literature with some divergence. As hypothesized, the negative impact of family influence and control on internationalisation resonated with past results. For example, Yang *et al.* (2018) argue that when family firms try to establish their control over the firm, it causes resistance to riskier strategies like internationalisation, because such strategies would require getting help of an external company (in the form of partnership, for example) or hiring a professional to assist in the process. Jin *et al*. (2020) also report a negative influence of this dimension on internalisation. Other studies that used different endogenous variables also reported similar findings. For example, Razzak and Jassem (2019) found it to hurt family commitment. Others reported its negative effect on innovativeness (Bratnicka-Myśliwiec *et al*., 2019) and CSR (Campopiano, 2012). This implies that this dimension is more inclined towards developing a risk-aversive behaviour than a risk-taking one.

Identification of family with the firm had a significant positive effect on internationalisation. This counters the logic of scholars (*e.g*., Zahra, 2003) who argue that the more intertwined the family is with the firm, the more conservative they will be to internationalise. The findings imply that when a

family has a deep bond with the firm, it gives them the confidence to internationalise. We know from literature that positive feelings such as pride for being associated with the firm can drive positive strategic outcomes like improved quality and customer satisfaction (Carrigan & Buckley, 2008). It should not be surprising then that this dimension facilitates internationalization.

Binding social ties was also found to have a significant positive relationship with internationalisation, as hypothesized. This dimension assumes that family firms aim to strengthen their social networks which can help them leverage their internationalisation strategies by influencing their choice of international market (Basly & Saunier, 2020; Scholes *et al*., 2016). Thus, the social network approach implies that family firms utilize their networking to form partnerships with family, friends, or acquaintances relocated abroad and reduce the inherent risk linked with internationalisation.

Emotional attachment was found to have a significant negative relationship with internationalisation which is consistent with the literature (Zahra, 2003; Claver *et al*., 2009). Thus, emotional attachment discourages family firms from internationalising.

Renewal of family bonds through dynastic succession showed a negative but insignificant effect on internationalisation. Thus, the findings did not substantiate the hypothesis. Possible reasons could be the different contexts of the study. Most family firms in Pakistan are still in their second generation with children under eighteen (Chang *et al*., 2020). According to Hofstede's cultural dimensions, Pakistan is a short-term-oriented society and does not engage in long-term planning (Hofstede & Minkov, 2010). The study of Chang *et al.* (2020) also confirmed that most family firms do not have any formal succession plan devised. Since this dimension is concerned with preserving capital and business for the succeeding generation, we can conclude that it is not relevant in the context of internationalisation.

Finally, the findings indicated that while four dimensions of SEW (except *R*) directly related to firm performance, internationalisation partially mediated between them. As illustrated in Figure 2 and Figure 3, the indirect effect was greater than the direct effect of the dimensions on firm performance, implying internationalisation as a strong mediator. All three control variables had a significant impact on firm performance.

CONCLUSIONS

Our study answered to the call of Gast *et al*. (2018) who emphasized the need to delineate and examine the behaviour of individual dimensions of socioemotional wealth rather than treating it as a higher order construct. Furthermore, the study contributes to the literature by adding an Asian perspective, which is still scarce and was called for by scholars (Randerson *et al*., 2016). The study found support for all except one hypothesis. Thus, our study enriches the understanding on why most of the family businesses in Pakistan fail to internationalise. The findings also have practical and managerial implications for family firm owners, directors, and other family members at the executive level. Family firms that desire growth and expansion via the internationalisation route must be willing to tame the urge to exert rigid control over the firm. Similarly, family firm owner-managers can leverage positive dimensions such as *I* and *B* to increase internationalisation strategies. This can be done by promoting an entrepreneurial legacy (Chang *et al*., 2020) and utilizing social network approach. Lastly, we conclude that SEW is not inherently negative. Its effect changes when the mediating variables change (Hernández-Perlines *et al*., 2019, Ng *et al*., 2019). Thus, when interacting with certain variables such as internationalisation, some dimensions of SEW become growth inhibitors. In contrast, the same SEW dimensions became a catalyst for firm performance when the mediating variables changed. Thus, the debate on whether it is an asset or liability truly depends on its operating context. Therefore, researchers need to approach this phenomenon in the same light.

As with any other study, the study suffers from several limitations. Four FIBER dimensions of SEW were substantiated as antecedents to internationalisation. Like in the study by Ng *et al*. (2019), these relationships could only be generalizable for the Pakistani cultural context and may not apply to other cultures. Thus, future research can assess the mediating effect of internationalisation on firm performance in other countries for comparison purposes.

Likewise, being cross-sectional, the study cannot keep track of firms at the SEW level for the succeeding generations. Thus, future research can take the longitudinal approach to examine if the dimensions vary along the same lines with passing time.

Lastly, the family structure in Pakistan, characterized by a joint and extended family system, in addition to nuclear system raises questions on whether the conceptualization of 'family firms' used in the scale remains the sam. This is in line with Prugl's reservations (2019) who wonders if the cultural context influences the different dimensions of SEW since the very definition and conceptualization of 'family' becomes different in diverse cultural situations. Hence, more studies are needed from the subcontinental countries with common cultural, political, and social dynamics to validate the effect of SEW dimensions on family firms' strategic behaviours and firm performance.

REFERENCES

Afghan, N. (2011). Succession in family businesses: Kinship culture and Islamic law of inheritance. *Business Review*, *6*(2), 104-118.

Arregle, J. L., Chirico, F., Kano, L., Kundu, S. K., Majocchi, A., & Schulze, W. S. (2021). Family firm internationalization: Past research and an agenda for the future. *Journal of International Business Studies*, *52*(6), 1159-1198. https://doi.org/10.1057/s41267-021-00425-2

Astrachan, J. H., & Zellweger, T. (2008). Performance of family firms: A literature review and guidance for future research. *ZfKE – Zeitschrift Für KMU Und Entrepreneurship*, *56*(1-2), 1-22.

Ballal, J. M., & Bapat, V. (2020). Socioemotional Wealth and Its Effect on Family Firm Performance In: J.M. Palma_Ruiz, I. Barros-Contreras, & L. Gnan (Eds.), *Handbook of Research on the Strategic Management of Family Businesses* (pp. 201-227). Hershey: IGI Global. https://doi.org/10.4018/978-1-7998-2269-1.ch010

Basco, R., Calabrò, A., & Campopiano, G. (2018). Transgenerational entrepreneurship around the world: Implications for family business research and practice. *Journal of Family Business Strategy*, 10(4), 100249. https://doi.org/10.1016/j.jfbs.2018.03.004

Basly, S. (2016). Family involvement in the firm and exports in the family SME: Is the manager's international orientation influential? *Journal of Intercultural Management*, *7*(3), 69-99.

Basly, S., & Saunier, P.-L. (2020). Familiness, socio-emotional goals and the internationalization of French family SMEs. *Journal of International Entrepreneurship*, *18*(3), 270-311.

Berrone, P., Cruz, C., Gomez-Mejia, L. R., & Larraza-Kintana, M. (2010). Socioemotional wealth and corporate responses to institutional pressures: Do family-controlled firms pollute less? *Administrative Science Quarterly*, *55*(1), 82-113.

Bratnicka-Myśliwiec, K., Wronka-Pośpiech, M., & Ingram, T. (2019). Does socioemotional wealth matter for competitive advantage? A case of Polish family businesses. *Journal of Entrepreneurship, Management and Innovation*, *15*(1), 123-146.

Campopiano, G. (2012). *Corporate social responsibility and family business: Different perspectives to explore an under investigated topic* [PhD Dissertation]. Università degli studi di Bergamo.

Carney, M., Van Essen, M., Gedajlovic, E. R., & Heugens, P. P. M. A. R. (2015). What do we know about private family firms? A meta–analytical review. *Entrepreneurship Theory and Practice*, *39*(3), 513-544.

Carrigan, M., & Buckley, J. (2008). 'What's so special about family business?' An exploratory study of UK and Irish consumer experiences of family businesses. *International Journal of Consumer Studies*, *32*(6), 656-666.

Cassia, L., De Massis, A., & Pizzurno, E. (2012). Strategic innovation and new product development in family firms: An empirically grounded theoretical framework. *International Journal of Entrepreneurial Behavior & Research*, *18*(2), 198-232.

Cennamo, C., Berrone, P., Cruz, C., & Gomez-Mejia, L. (2012). Socioemotional wealth and proactive stakeholder engagement: Why family–controlled firms care more about their stakeholders. *Entrepreneurship Theory & Practice*, *36*(6), 1153-1173.

Chang, A. A., Mubarik, M. S., & Naghavi, N. (2020). Passing on the legacy: Exploring the dynamics of succession in family businesses in Pakistan. *Journal of Family Business Management*, *11*(2), 161-184.

Chua, J. H., Chrisman, J. J., & De Massis, A. (2015). A closer look at socioemotional wealth: Its flows, stocks, and prospects for moving forward. *Entrepreneurship Theory and Practice*, *39*(2), 173-182. https://doi.org/10.1111/etap.12155

Chua, J. H., Chrisman, J. J., & Sharma, P. (1999). Defining the family business by behavior. *Entrepreneurship Theory and Practice*, *23*(4), 19-39.

Classen, N., Carree, M., Gils, A. V., & Peters, B. (2014). Innovation in family and non-family SMEs: An exploratory analysis. *Small Business Economics*, *42*(3), 595-609.

Claver, E., Rienda, L., & Quer, D. (2009). Family firms' international commitment: The influence of family-related factors. *Family Business Review*, *22*(2), 125-135.

Cronbach, L. J., & Meehl, P. E. (1955). Construct validity in psychological tests. *Psychological Bulletin*, *52*(4), 281-302.

Debicki, B. J., Kellermanns, F. W., Chrisman, J. J., Pearson, A. W., & Spencer, B. A. (2016). Development of a socioemotional wealth importance (SEWi) scale for family firm research. *Journal of Family Business Strategy*, *7*(1), 47-57. https://doi.org/10.1016/j.jfbs.2016.01.002

Debicki, B. J., Miao, C., & Qian, S. (2020). Internationalization and family firm performance: A cross-cultural meta-analysis of the main effect and moderating factors. *Cross Cultural & Strategic Management*, *27*(1), 1-25. https://doi.org/10.1108/CCSM-04-2019-0075

Fornell, C., & Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research*, *18*(1), 39-50. https://doi.org/10.1177/002224378101800104

Fuller, C. M., Simmering, M. J., Atinc, G., Atinc, Y., & Babin, B. J. (2016). Common methods variance detection in business research. *Journal of Business Research*, *69*(8), 3192-3198. https://doi.org/10.1016/j.jbusres.2015.12.008

Garg, V. K., Walters, B. A., & Priem, R. L. (2003). Chief executive scanning emphases, environmental dynamism, and manufacturing firm performance. *Strategic Management Journal*, *24*(8), 725-744.

Gomez-Mejia, L., Cruz, C., Berrone, P., & Castro, J. de. (2011). The bind that ties: Socioemotional wealth preservation in family firms. *Academy of Management Annals*, *5*(1), 653-707.

Gomez-Mejia, L., Haynes, K. T., Núñez-Nickel, M., Jacobson, K. J. L., & Moyano-Fuentes, J. (2007). Socioemotional wealth and business risks in family-controlled firms: Evidence from Spanish olive oil mills. *Administrative Science Quarterly*, *52*(1), 106-137. https://doi.org/10.2189/asqu.52.1.106

Gomez-Mejia, L. R., Makri, M., & Kintana, M. L. (2010). Diversification decisions in family-controlled firms. *Journal of Management Studies*, *47*(2), 223-252.

Hair, J. F., Hult, G. T., Ringle, C. M., & Sarstedt, M. (2017). *A primer on partial least squares structural equation modeling (PLS-SEM)* (2nd ed.). Thaousand Oaks: SAGE Publications Ltd.

Hair, J. F., Risher, J. J., Sarstedt, M., & Ringle, C. M. (2019). When to use and how to report the results of PLS-SEM. *European Business Review*, *31*(1), 2-24.

Hair, J. F., Sarstedt, M., Hopkins, L., & G. Kuppelwieser, V. (2014). Partial least squares structural equation modeling (PLS-SEM): An emerging tool in business research. *European Business Review*, *26*(2), 106-121.

Harman, H. H. (1976). *Modern Factor Analysis* (Third Edition, Revised). Chicago: University of Chicago Press.

Hauck, J., Suess-Reyes, J., Beck, S., Prügl, R., & Frank, H. (2016). Measuring socioemotional wealth in family-owned and -managed firms: A validation and short form of the FIBER Scale. *Journal of Family Business Strategy*, *7*(3), 133-148. https://doi.org/10.1016/j.jfbs.2016.08.001

Henseler, J., Ringle, C. M., & Sarstedt, M. (2015). A new criterion for assessing discriminant validity in variance-based structural equation modeling. *Journal of the Academy of Marketing Science*, *43*(1), 115-135. https://doi.org/10.1007/s11747-014-0403-8

Henseler, J., Ringle, C. M., & Sinkovics, R. R. (2009). The use of partial least squares path modeling in international marketing. In R. R. Sinkovics & P. N. Ghauri (Eds.), *New Challenges to International Marketing* (Vol. 20, pp. 277-319). Emerald Group Publishing Limited.

Hernández-Linares, R., & López-Fernández, M. C. (2018). Entrepreneurial orientation and the family firm: Mapping the field and tracing a path for future research. *Family Business Review*, *31*(3), 318-351. https://doi.org/10.1177/0894486518781940

Hernández-Perlines, F., Moreno-García, J., & Yáñez-Araque, B. (2019). The influence of socioemotional wealth in the entrepreneurial orientation of family businesses. *International Entrepreneurship and Management Journal*, *15*(2), 523-544.

Hitt, M. A., Bierman, L., Uhlenbruck, K., & Shimizu, K. (2006). The importance of resources in the internationalization of professional service firms: The good, the bad, and the ugly. *Academy of Management Journal*, *49*(6), 1137-1157. https://doi.org/10.5465/amj.2006.23478217

Hofstede, G. (1991). Empirical models of cultural differences. In N. Bleichrodt & P. J. D. Drenth (Eds.), *Contemporary issues in cross-cultural psychology* (pp. 4-20). San Diego: Swets & Zeitlinger Publishers.

Hofstede, G., & Minkov, M. (2010). Long- versus short-term orientation: New perspectives. *Asia Pacific Business Review*, *16*(4), 493-504.

Jin, C., Wu, B., & Hu, Y. (2021). Family Business Internationalization in paradox: Effects of socioemotional wealth and entrepreneurial spirit. *Frontiers in Psychology*, *12*. https://www.frontiersin.org/article/10.3389/fpsyg.2021.667615

Kabbach de Castro, L. R., Crespi-Cladera, R., & Aguilera, R. V. (2016). An organizational economics approach on the pursuit of socioemotional and financial wealth in family firms: Are these competing or complementary objectives? *Management Research: Journal of the Iberoamerican Academy of Management*, *14*(3), 267-278.

Kammerlander, N., & Ganter, M. (2015). An attention-based view of family firm adaptation to discontinuous technological change: Exploring the role of family CEOs' noneconomic goals. *Journal of Product Innovation Management*, *32*(3), 361-383.

Kellermanns, F. W., Eddleston, K. A., & Zellweger, T. M. (2012). Article commentary: Extending the socioemotional wealth perspective: A look at the dark side. *Entrepreneurship Theory and Practice*, *36*(6), 1175-1182.

Kock, N., & Hadaya, P. (2018). Minimum sample size estimation in PLS-SEM: The inverse square root and gamma-exponential methods. *Information Systems Journal*, *28*(1), 227-261. https://doi.org/10.1111/isj.12131

Kosmidou, V. (2018). *A socioemotional wealth perspective on innovativeness and performance of family businesses.* [PhD Dissertation, University of Louisville]. https://ir.library.louisville.edu/etd/2992

Llach, J., & Nordqvist, M. (2010). Innovation in family and non-family businesses: A resource perspective. *International Journal of Entrepreneurial Venturing*, *2*(3/4), 381-399.

Lumpkin, G. T., Brigham, K. H., & Moss, T. W. (2010). Long-term orientation: Implications for the entrepreneurial orientation and performance of family businesses. *Entrepreneurship & Regional Development*, *22*(3-4), 241-264. https://doi.org/10.1080/08985621003726218

Martínez-Romero, M. J., Martínez-Alonso, R., & Casado-Belmonte, M. P. (2020). The influence of socio-emotional wealth on firm financial performance: Evidence from small and medium privately held family businesses. *International Journal of Entrepreneurship and Small Business*, *40*(1), 7-31. https://doi.org/10.1504/IJESB.2020.106930

Mubarik, M. S., Devadason, E. S., & Govindaraju, C. (2020). Human capital and export performance of small and medium enterprises in Pakistan. *International Journal of Social Economics*, *47*(5), 643-662.

Muñoz-Bullon, F., Sanchez-Bueno, M. J., & Suárez-González, I. (2018). Diversification decisions among family firms: The role of family involvement and generational stage. *BRQ Business Research Quarterly*, *21*(1), 39-52.

Naldi, L., Cennamo, C., Corbetta, G., & Gomez–Mejia, L. (2013). Preserving socioemotional wealth in family firms: Asset or liability? The moderating role of business context. *Entrepreneurship Theory and Practice*, *37*(6), 1341-1360.

Neubaum, D. O., Kammerlander, N., & Brigham, K. H. (2019). Capturing family firm heterogeneity: How taxonomies and typologies can help the field move forward. *Family Business Review*, *32*(2), 106-130.

Ng, P. Y., Dayan, M., & Di Benedetto, A. (2019). Performance in family firm: Influences of socioemotional wealth and managerial capabilities. *Journal of Business Research*, *102*, 178-190.

Nordqvist, M., Melin, L., Waldkirch, M., & Kumeto, G. (2015). *Theoretical perspectives on family businesses*. London: Edward Elgar Publishing.

Prügl, R. (2019). Capturing the heterogeneity of family firms: Reviewing scales to directly measure socioemotional wealth. In E. Memili & C. Dibrell (Eds.), *The Palgrave Handbook of Heterogeneity among Family Firms* (pp. 461-484). New York: Springer International Publishing.

Razzak, M. R., & Jassem, S. (2019). Socioemotional wealth and performance in private family firms: The mediation effect of family commitment. *Journal of Family Business Management*, *9*(4), 468-496.

Ringle, C. M., Wende, S., & Becker, J.-M. (2015). *SmartPLS 3*. SmartPLS. Retrieved from: www.smartpls.com on December 2021.

Saleem, I., Siddique, I., & Ahmed, A. (2019). An extension of the socioemotional wealth perspective: Insights from an Asian sample. *Journal of Family Business Management*, *ahead-of-print*(ahead-of-print).

Scholes, L., Mustafa, M., & Chen, S. (2016). Internationalization of small family firms: The influence of family from a socioemotional wealth perspective. *Thunderbird International Business Review*, *58*(2), 131-146.

Van Essen, M., Carney, M., Gedajlovic, E. R., & Heugens, P. P. M. A. R. (2015). How does family control influence firm strategy and performance? A meta-analysis of US publicly listed firms. *Corporate Governance: An International Review*, *23*(1), 3-24. https://doi.org/10.1111/corg.12080

Vij, S., & Bedi, H. S. (2016). Are subjective business performance measures justified? *International Journal of Productivity and Performance Management*, *65*(5), 603-621.

Vinzi, V. E., Chin, W. W., Henseler, J., & Wang, H. (Eds.). (2010). *Handbook of partial least squares: Concepts, methods and applications*. Berlin: Springer-Verlag.

Wagner, D., Block, J. H., Miller, D., Schwens, C., & Xi, G. (2015). A meta-analysis of the financial performance of family firms: Another attempt. *Journal of Family Business Strategy*, *6*(1), 3-13.

Ward, J. (2011). *Keeping the family business healthy: How to plan for continuing growth, profitability, and family leadership*. London: Palgrave Macmillan US.

Weimann, V., Gerken, M., & Hülsbeck, M. (2021). Old flames never die – the role of binding social ties for corporate entrepreneurship in family firms. *International Entrepreneurship and Management Journal*.

Wu, J. (2018). The theoretical framework and application frontier of socioemotional wealth theory: A literature review from the perspective of family firm. *Modern Economy*, *9*(1), 190-202.

Xu, K., Hitt, M. A., & Dai, L. (2020). International diversification of family-dominant firms: Integrating socioemotional wealth and behavioral theory of the firm. *Journal of World Business*, *55*(3), 1-12.

Yang, X., Li, J., Stanley, L. J., Kellermanns, F. W., & Li, X. (2020). How family firm characteristics affect internationalization of Chinese family SMEs. *Asia Pacific Journal of Management*, *37*(2), 417-448.

Zahra, S. A. (2003). International expansion of U.S. manufacturing family businesses: The effect of ownership and involvement. *Journal of Business Venturing*, *18*(4), 495-512. https://doi.org/10.1016/S0883-9026(03)00057-0

Zellweger, T. M., Kellermanns, F. W., Eddleston, K. A., & Memili, E. (2012). Building a family firm image: How family firms capitalize on their family ties. *Journal of Family Business Strategy*, *3*(4), 239-250.

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The contribution share of authors is equal and amounted to 50% for each of them. Asma Chang contributed to the literature review and data collection phase of the article, in addition to the entire write-up of the article. Shujaat Mubarik has contributed to the analysis, discussion, and conclusion section of the article. Both authors proofread the article and agreed on the final draft.

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Identifying factors affecting entrepreneurship education and entrepreneurial intention among Indonesian university students

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ABSTRACT

Objective: The shift from conventional to online learning activities may impact students' performance and entrepreneurial involvement. This research investigates the role of e-learning in determining entrepreneurship education and entrepreneurial self-efficacy, and students' intention on entrepreneurship.

Research Design & Methods: A quantitative method with structural equation modelling using the partial least squared was implemented to understand the phenomenon. The study involved students who enrolled in online entrepreneurship education in several universities in Malang of Indonesia.

Findings: The findings indicate that students' entrepreneurship education and self-efficacy can be performed using e-learning, and it is closely linked with lecturer competence, performance expectancy, and facilitating condition. The results also show a linkage between entrepreneurship education and entrepreneurial intention. This research confirms a crucial role of self-efficacy and entrepreneurship education in mediating teachers' competence and intention for entrepreneurship. This is the first step for further investigation regarding the effect of online learning on college students' entrepreneurial intentions.

Implications & Recommendations: This study implies that lecturers need to improve their competency on how to teach entrepreneurship more meaningful and involve all of students' psychological aspects. Furthermore, in cooperation with the government, the campus can provide adequate facilities and infrastructure to support online learning. Additionally, the government can consider improving the quality of the internet network so that geographical conditions do not constrain it.

Contribution & Value Added: This research provides an appropriate strategy to promote entrepreneurship education with e-learning that can be adopted during the global Covid-19 pandemic. Moreover, in a regular situation, the strategy may still enhance entrepreneurship promotion as it fosters familiarity with the use of educational technology.

Article type:	research article
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INTRODUCTION

The coronavirus disease (Covid-19) caused a global pandemic, and the education system has acknowledged this concern by implementing online learning using technological platforms such as e-learning (Almaiah *et al*., 2020; Widyanti & Rajiani, 2021). Since the massive shift from conventional learning activities to online-based learning, it has been challenging to boost the number of entrepreneurs as

the motor of economic welfare. The new business creation has been acknowledged as the driver of promoting new job opportunities, diminishing the unemployment rates, and alleviating poverty (Nakara *et al*., 2021; Neumann, 2021). However, many small and large businesses decided to shut down their activities during the pandemic (Bongaerts *et al*., 2021; Gavrila & Ancillo, 2021).

Considering that issue, there is a need to understand how to teach or link e-learning with entrepreneurship education and entrepreneurial intentions. Some prior studies uphold the belief that the students' intention to follow business career can be enhanced by entrepreneurship education in the schools or colleges (Mei *et* al., 2020; Looi & Maritz, 2021). Through its theoretical and practical activities, entrepreneurship education can stimulate students' mindset and self-efficacy, which in turn can lead to entrepreneurship intentions (Karyaningsih *et al*., 2020; Ratten & Usmanij, 2021). Educators' competence is a significant component in accomplishing learning purposes in entrepreneurship education (Rapanta *et al*., 2020). There are four components to educators' competence: pedagogical, professional, social, and personal. A prior study by Bell (2021) remarks that pedagogical competence is the most significant component in terms of entrepreneurship education success primarily in e-learning.

In addition to lecturers' competence, other variables such as effort expectancy are essential for supporting entrepreneurship education (Surachim *et al*., 2018). Effort expectancy happens when the students can conveniently access e-learning so that interest in online learning increases due to the ease of use (Tarhini *et al*., 2018; Samat *et al*., 2020). With regard to the effort expectancy, facilitating conditions and performance expectancy have been linked with entrepreneurship education success (Kaliisa *et al*., 2019; Ameen *et al*., 2018). Facilitating conditions refer to the degree to which an individual believes that the existing infrastructure, technicalities, and organizations can encourage the use of technology (Bervell & Arkoful, 2020), while performance expectations are illustrated as the stage at which personal believes that incorporating the system will improve their performance (McGill *et al*., 2020). These matters not only affect entrepreneurship education but also drive individual self-efficacy.

This study makes some contributions to the studied matter. First, it presents an insight into the literature on the linkage between e-learning and entrepreneurial intention that is largely lacking in the antecedent studies. The majority of studies attempt to identify psychological factors to then understand an individual's entrepreneurship intention (Karyaningsih *et al*., 2020; Bhatti *et al*., 2021). Additionally, the studies on e-learning are more focused on the correlation between educational achievements and the Covid-19 pandemic (Siron *et al*., 2020; Rafique *et al*., 2021), and their authors overlook the specific studies in the entrepreneurship field that require both theoretical and practical settings. Second, the focus in Indonesia is unique as it experiences an unsettled in the technological adoption for education purposes, including teaching and learning activities (Wardoyo *et al*., 2021). Third, through the empirical estimation, this study provides an appropriate strategy to promote entrepreneurship education with e-learning which can be adopted during the Covid-19 pandemic and to enhance entrepreneurship promotion in a regular situation as it fosters familiarity with the use of educational technology.

The article unfolds in the following manner. Section one will provide literature review on the determinant factors affecting entrepreneurial education, self-efficacy, and entrepreneurial intention. Section two will describe the results, followed by a discussion in Section three. Section four will conclude.

LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

Lecturer's Competence, Self-efficacy, and Entrepreneurship Education

The aim of the university is to continually promote students from job seekers to creator graduates (Kusmintarti *et al*., 2017; Gupta & Sharma, 2018). The widespread assumption is that the new business creations can involve a great opportunity to reduce employment rates and alleviate poverty levels (Sutter *et al*., 2019). Several scholars agree that entrepreneurial education takes a critical role in determining students' mindset and entrepreneurship intention (Wardana *et al*., 2020; Karyaningsih *et al*., 2020). Entrepreneurship education is a structured and formal transmission of competencies that refers to the provision of skills, concepts, and awareness of individuals towards entrepreneurship (Henry & Lewis, 2018). Entrepreneurship education can be performed by pedagogical competencies, including theory-based learning in the classroom and practice-based learning (Wardana *et al*., 2020).

In detail, providing entrepreneurship theories enables students to develop and understand the entrepreneurship theories. Meanwhile, practical-based pedagogy allows students to enhance self-efficacy and entrepreneurship skills (Karyaningsih *et al*., 2020). For this matter, we believe that the lecturers' competence will have a linkage with entrepreneurship educational success. In this matter, self-efficacy will play an important part in students' entrepreneurial intentions (Elnadi & Gheith, 2021). Self-efficacy is linked with the individuals' belief and ability to perform the expected actions (Fuller *et al*., 2018). Either entrepreneurship education model or students' self-efficacy depends on the lecturer's competencies in the entire learning process, including preparation, action, and evaluation (Fejes *et al*., 2019). For this matter, the study presents the following hypothesis:

H1: Lecturer's competence positively influences entrepreneurship education.

H2: Lecturer's competence positively influences self-efficacy.

H3: Entrepreneurship education positively promotes students' entrepreneurial intentions.

H4: Self-efficacy positively promotes students' entrepreneurial intention.

H5: Entrepreneurship education positively drives students' self-efficacy.

Effort Expectancy, Performance Expectancy, and Facilitating Condition

The underpinning theories for e-learning in education can be performed by the unified theory of acceptance and use of technology (UTAUT) that further developed technology acceptance model (TAM), theory of reasoned action (TRA), diffusion of innovations (DOI), and theory of planned behaviour (TPB).

According to UTAUT, users' acceptance of technology greatly influences their intentions and behaviour. The UTAUT is incorporated with four main dimensions of intention and usage of new technology, including performance expectancy, effort expectancy, social influence, and facilitating conditions (Decman, 2015). Furthermore, each dimension has a link of behavioural intention. In acquaintance with entrepreneurship education, effort expectancy takes an essential part in helping students to understand new model online learning of entrepreneurship education (Surachim *et al*., 2018). Effort expectancy happens when the students obtain convenience in accessing e-learning, including entrepreneurship subjects (Tarhini *et al*., 2018; Samat *et al*., 2020). Indeed, some scholars remarked that facilitating conditions and performance expectancy have been linked with entrepreneurship education success adopting e-learning (Kaliisa *et al*., 2019; Ameen *et al*., 2018). Referring to Decman (2015), the nexus between effort expectancy on self-efficacy and entrepreneurial education, in particular, can be explained through behavioural theory, especially TPB Ajzen (1991). Likewise, the effect of performance expectancy on self-efficacy and entrepreneurial education can be explained through the behavioural theory of TPB Ajzen (1991). Decman (2015) reinforced some previous studies by Chen (2011), Lin *et al*. (2013), which linked behavioural theory (TPB) with TAM and UTAUT theories. Therefore, the effect of facilitating conditions on self-efficacy and entrepreneurial education can be explained through the link between TPB and TAM.

H6: Effort expectancy positively affects entrepreneurial education.

H7: Effort expectancy positively affects self-efficacy.

H8: Performance expectancy positively affects entrepreneurial education.

H9: Performance expectancy positively affects self-efficacy.

H10: Facilitating conditions positively affects entrepreneurial education.

H11: Facilitating conditions positively affects self-efficacy.

The Mediating Role of Entrepreneurship Education and Self-efficacy

Entrepreneurship education and self-efficacy have become a crucial matter in the entrepreneurial field as it promotes entrepreneurship intention. Entrepreneurship education has proven to be an effective mediator for the development of an individual's self-efficacy and business intention (Wardana *et al*., 2020; Mukhtar *et al*., 2021). A number of articles document that entrepreneurship education can increase students' self-efficacy and entrepreneurial intentions (Tung *et al*., 2020). Preliminary studies by

Linan (2004), Piperopoulos and Dimov (2015) found that there was a difference between entrepreneurship education solely focusing on theoretical instead of practical activities in the classroom. Therefore, Piperopoulos and Dimov (2015) suggest that combining theory and practice for conducting entrepreneurship education will prepare students to face the real world. Additionally, entrepreneurship education that incorporates observations on a successful entrepreneur will intercede in individuals' cognitive dimensions (mindset, attitude, and self-efficacy) and promote them in determining the intentions and behaviour (Cardon *et al*., 2009). The meta-analysis study revealed that dominant factors influence the link between entrepreneurship education and entrepreneurial intention. The results of Li and Wu's study (2019) found several gaps from several previous studies, especially in providing an understanding of why and how entrepreneurship education increases entrepreneurial intentions. In detail, Li and Wu (2019) integrated social cognitive theory and self-regulation theory to dissect the dominant factors in entrepreneurial education influencing intention for entrepreneurship. Following the literature exposure, we propose the following hypothesis:

H12: Entrepreneurial education mediates the influence of lecturer's competence intention entrepreneurship intention.

H13: Self-efficacy mediates the influence of lecturer's competence and entrepreneurship intention.

RESEARCH METHODOLOGY

Research Design

The current research engaged a quantitative approach utilizing a cross-sectional survey. We examined four exogenous variables: two intervening variables and one endogenous variable. The exogenous variables in this study included lecturer competence (LC), effort expectancy (EE), performance expectancy (PE), and facilitating conditions (FC). The intervening variables covered entrepreneurial education (EU) and self-efficacy (SE), while the endogenous variable was intended towards entrepreneurship (ETE). The framework research of this study is depicted in Figure 1.

Sampling and Data Collection

The population consisted of university students involved in an online entrepreneurship course. The sampling frame of this study gathered students who enrolled in entrepreneurship education from some universities in Malang of Indonesia. The determination of this geographical location considering Malang is the educational city in Indonesia. We delivered 150 questionnaires and collected 130 valid questionnaires (86.66%) for further analysis. The detail of the demographic respondent was provided in Table 1.

Common Variance Method

To ensure the quality of the data collection in this research, common method variance (CMV) was performed using the Harman one-factor test. The statistical calculation shows that CMV is not a concern in this research due to the total variances extracted by a single factor for the Indonesian samples were 36.30%, in which this value is less than 50% of the variance. Furthermore, to determine CMV that is not a problem, SmartPLS software is performed to estimate the full collinearity test. To assess the existence of bias, this research adopted indicators from Kock and Lynn (2012) and Kock and Gaskins (2014) to accomplish the common method variance by involving the variance inflation factors (VIF). The VIF value higher than 3.3 indicates that the model might be contaminated by CMV and vice versa. The VIF value in this study ranges from 1.554 to 3.017, indicating to achieve the CMV criteria.

Measurement

We used a survey to collect data from the respondents. The instruments were taken from literature review and preliminary articles and enhanced with minor modifications in the context language and Indonesian context. The modification was intended to obtain a greater understanding of the questionnaires. The lecturer's competence was calculated on the base of eight items from Fauth *et al*. (2019). The effort expectancy construct was evaluated by four questionnaires from Venkatesh *et al*. (2012),

Decman (2015). Performance expectancy was performed by four items from Venkatesh *et al*. (2012). Furthermore, facilitating conditions were estimated by four items adapted from Decman (2015). To evaluate entrepreneurship education, we performed six items from Linan (2004), while entrepreneurship intention was evaluated using six items from Zhao *et al*. (2005), Ibrahim and Lucky (2014). The instruments were provided on seven-point Likert scales from one for strongly disagree and seven for strongly agree. The collected data was further analysed employing Structural Equation Modelling Partial Least Squares (SEM-PLS) with SmartPLS version 3.0.

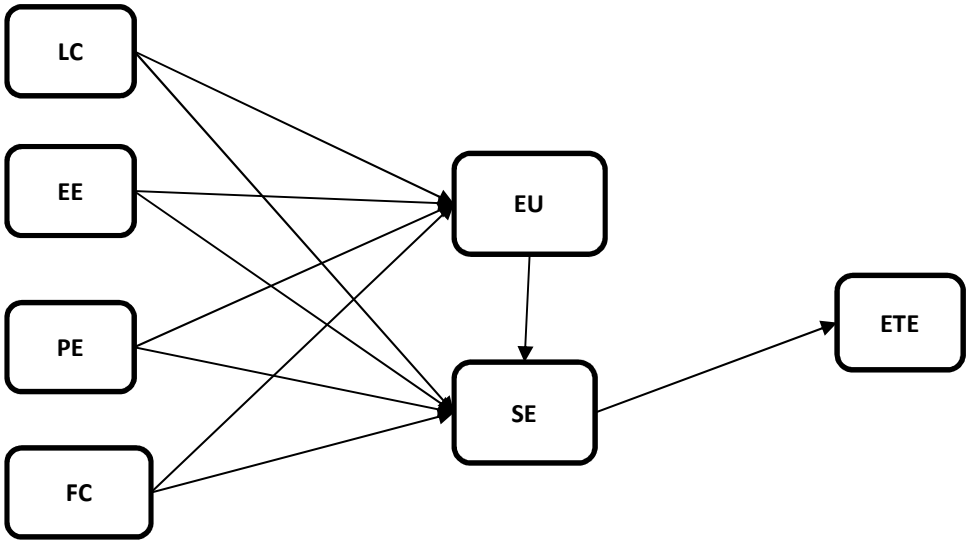

Figure 1. Theoretical Framework

Note: LC= lecturer competence; EE= effort expectancy; PE= performance expectancy; FC = facilitating conditions; EU = entrepreneurial education; SE = self-efficacy; ETE = intention towards entrepreneurship

Source: own elaboration based on Fauth *et al*. (2019), Venkatesh *et al*. (2012), Decman (2015), Linan (2004).

RESULTS AND DISCUSSION

Demographic Respondents

Table 1 provides information about the demographic of respondents from Indonesia. Overall, the participants in this survey were dominated by female students with a percentage of slightly higher than three quarters. In terms of the study year, most respondents were in their third year. Additionally, the majority of students involved in the online course for entrepreneurship were more than twelve (57.70%). Table 1 also informs that the respondent engaged in the online course using the government internet data program.

Table 1. The demographic of respondents

S/No.	Information	Frequency	%
1. Gender	Female	98	75.38
	Male	32	24.62
2. Semester	IV	35	26.92
	VI	95	73.08
3. Involvement for entrepreneurship online course	4 times	20	15.38
	6 times	35	26.92
	> 12 times	75	57.70
4. The Internet Data packages	From the government	130	100.00
	Private	0	00.00

Source: own study.

The outer model evaluation

We incorporated a multivariate data analysis method to analyse the data collected. Several procedures from Hair *et al.* (2020) were adopted to evaluate the validity and reliability of the construct. To estimate the construct reliability in the model, we used criteria of loading factors higher than 0.70. As illustrated in Table 2, the λ of LC ranged between 0.776 to 0.910 to achieve the construct reliability. Additionally, variable of EE, PE, PC had the loading factors (λ) between 0.751 to 0.885, and the variable of EU, SE, and ETE had loading factors (λ) ranging from 0.719 to 0.879, implicating that the criteria would be reached. At the same time, the construct achieved the discriminant validity when the cross-loading value was more than 0.70. As depicted in Table 3, the cross-loading value ranged from 0.800 to 0.950 to meet the discriminant validity criteria. Thus, the model to meet the composite reliability when the CR score is greater than 0.70 and the Cronbach's Alpha (α) was greater than 0.70. As illustrated in Table 7, the value of EE, ETE, EU, FC, LC, PE, and SE achieved the composite reliability.

Table 2. Outer model estimation

VA	Code	Items	λ
LC	Lc1	My lecturer actively participates in learning activities	0.910
	Lc2	My lecturer develops student potential	0.903
	Lc3	My lecturer motivates students' to learn	0.906
	Lc4	My lecturer ensures the adequate level of understanding and adjustment of learning activities	0.896
	Lc5	My lecturer improved his/her teaching method	0.799
	Lc6	My lecturer pays attention to the learning objectives	0.909
	Lc7	My lecturer provides opportunities to ask and gives opinion	0.777
	Lc8	My lecturer analyses the results of the assessment of students	0.862
EE	Ee1	It is easy to follow on how to implement e-learning	0.776
	Ee2	The use of e-learning is comprehensive and understandable	0.811
	Ee3	E-learning is easy to be followed	0.864
	Ee4	It is easy to become skilled in the adoption of e-learning	0.833
PE	Pe1	E-learning will be useful in learning activities	0.800
	Pe2	With e-learning, I will accomplish my learning purposes more easily	0.881
	Pe3	By using e-learning, I will increase learning efficiency	0.875
	Pe4	With e-learning, I can reach a better competency	0.885
FC	Fc1	I have the supporting resources to adopt e-learning	0.751
	Fc2	I have the knowledge and information to adopt e-learning	0.793
	Fc3	E-learning is similar to other platforms I use.	0.865
	Fc4	Other people can help me incorporate e-learning	0.789
EU	Eu1	Entrepreneurship need to be provided in high school/universities	0.790
	Eu2	If there is an opportunity, I will enlarge the theme of entrepreneurship	0.804
	Eu3	Entrepreneurship need to be presented as compulsory course to enhance entrepreneurship in the school/college	0.863
	Eu4	University needs to have various entrepreneurship activities that will help students to promote business.	0.850
	Eu5	University courses are well prepared for entrepreneurship course	0.745
SE	Se1	Through e-learning, I am able to identify new business/business opportunities	0.816
	Se2	I can create a new product	0.849
	Se3	I can think creatively	0.819
	Se4	I can commercialize new ideas or developments	0.879
ETE	Ete1	I have willingness and do many efforts to be an entrepreneur	0.788
	Ete2	I have willingness to initiate and run my business	0.872
	Ete4	I have decided to set up a company in the near future	0.794
	Ete5	My career purpose is to be an entrepreneur	0.719

Source: own study.

Table 3. Discriminant validity

Variable	EE	ETE	EU	FC	LC	PE	SE
EE	0.822						
ETE	0.292	0.95					
EU	0.312	0.495	0.812				
FC	0.529	0.411	0.456	0.800			
LC	0.368	0.286	0.400	0.402	0.872		
PE	0.529	0.120	0.186	0.371	0.708	0.861	
SE	0.307	0.369	0.201	0.393	0.655	0.632	0.841

Source: own study.

The discriminant validity criteria in this study also pursued the criteria from Henseler *et al*. (2015) to estimate the heterotrait-monotrait (HTMT) of each variable in the model. Table 4 informs that the HTMT ratio of each variable was under 0.90 to reach the discriminant validity criteria.

Table 4. Heterotrait-monotrait ratio

Variable	EE	ETE	EU	FC	LC	PE	SE
EE							
ETE	0.347						
EU	0.358	0.562					
FC	0.638	0.471	0.530				
LC	0.406	0.330	0.432	0.438			
PE	0.612	0.155	0.221	0.435	0.770		
SE	0.353	0.443	0.234	0.452	0.717	0.715	

Source: own elaboration. Inner model evaluation.

We adopted indicators from Hair *et al*. (2020) to evaluate the structural model, which covers collinearity test, R-squared (R^2), F-square (f^2), and (4) Q-squared predictive (Q^2). The model meets the collinearity criteria when the coefficient of Variance Inflation Factor (VIF) is lower than 5.00. Table 5 and Table 6 illustrate that the variables involved in this study (EE, ETE, EU, FC, LC, PE, and SE) are under 5.00, meaning that the collinearity did not occur in this construct (Hair *et al*., 2013). Therefore, the indicator construct can be used for further analysis.

In addition to collinearity estimation, we followed the R^2 criteria from Chin (1998). Moreover, the previous estimation noted that the EU has 0.311, meaning that 31.1 per cent of variable EU could be performed by LC, EE, PE, and FC, the moderate category. Furthermore, the variant of SE could be explained by LC, EE, PE, FC, and EU with a moderate prediction level. Indeed, ETE had a value R^2 of 0.331, implying that ETE could be provided by LC, EE, PE, FC, EU, and SE with moderate criteria. Furthermore, f^2 evaluation was conducted using criteria from Hair *et al*. (2020) with categories of 0.02 (small), 0.15 (moderate), 0.35 (large). From the statistical calculation, it is be known that LC, EE, PE, and FC influence the EU at a moderate level (f2=0.322). Similarly, LC, EE, PE, FC, and EU impact SE with medium level (f^2= 0.30). Lastly, LC, EE, PE, FC, EU, and SE influence ETE with a moderate level (f^2= 0.383). Moreover, the model to achieve Q^2 criteria when the value of Q^2 is higher than 0, remarking that the construct has predictive relevance. From the preliminary testing, it can be concluded that the Q^2 score of LC, EE, PE, FC, EU, SE, and ETE were upper than 0, implicating that the model has a predictive relevance value.

Table 5. Variance inflation factor (VIF) outer

Indicator	Ee1	Ee2	Ee3	Ee4	Ete1	Ete2	Ete4	Ete5	Eu1	Eu2	Eu3
VIF	1.940	1.960	2.106	1.739	1.585	2.065	1.787	1.554	2.184	2.138	2.586
Indicator	Eu4	Eu5	Fc1	Fc2	Fc3	Fc4	Lc1	Lc2	Lc3	Lc4	Lc5
VIF	3.107	2.289	1.497	1.725	1.908	1.758	2.702	2.586	2.546	2.336	2.603
Indicator	Lc6	Lc7	Lc8	Pe1	Pe2	Pe3	Pe4	Se1	Se2	Se3	Se4
VIF	2.711	2.162	2.694	1.797	2.878	2.717	2.469	1.833	2.216	1.988	2.431

Source: own study.

Table 6. Variance inflation factor (VIF) inner

Variable	**EE**	**ETE**	**EU**	**FC**	**LC**	**PE**	**SE**
EE			1.713				1.747
ETE							
EU		1.042					1.451
FC			1.498				1.644
LC			2.131				2.426
PE			2.420				2.581
SE		1.042					

Source: own study.

Goodness of Fit Assessment

The last procedure in this study was the goodness of fit (GoF) evaluation model by following criteria from Hair *et al*. (2013; 2020). The model reaches the GoF criteria when the value of Cronbach's Alpha (α) is higher than 0.70, composite reliability (CR) is more than 0.70, and Average Variance Extracted (AVE) is greater than 0.50. Table 7 informs the value of α, CR, and AVE of the variables to achieve the GoF criteria. Therefore, it indicates that the structural model in this study was in a good category.

Table 7. The Goodness of Fit for Outer Model

Variable	**Cronbach's Alpha (α)**	**rho_A**	**CR**	**AVE**
EE	0.843	0.867	0.893	0.675
ETE	0.807	0.829	0.872	0.632
EU	0.870	0.876	0.906	0.659
FC	0.814	0.841	0.877	0.641
LC	0.954	0.960	0.962	0.760
PE	0.883	0.888	0.920	0.741
SE	0.862	0.865	0.906	0.708

Source: own study.

Hypothesis Testing

In this study, we used SEM-PLS to propose hypothesis testing using a resampling bootstrap. The hypothesis to determine to be accepted when the t-value is higher than 1.645, and the p-value is less than 0.05. From Table 8 and Figure 2, it informs that eleven hypotheses were approved with t-value ranging from 2.258 to 5.091 (> 1.645), and p-values range from 0.000 to 0.033 (< 0.050). However, two other hypotheses were declined due to the t-values were less than 1.645, and p-values were more than 0.05.

Table 9 illustrates the bootstrapping estimation of the two indirect effects: β = 0.198 and β = 0.114, which are significant with t-values of 3.737and 2.382. The indirect effects use 95% Boot Confidence Internal Bias Corrected: [LL = 0.100, UL = 0.298], and [LL = 0.034, UL = 0.217], do not straddle a 0 in between, implicating that there is mediation effect. Thus, this can indicate that the mediation effect follows a significant level. H12 and H13 were confirmed that EU and SE can mediate the linkage between LC and ETE (Preacher & Hayes, 2008).

Table 8. The summary of hypothesis testing

Hypothesis	Linkage	β	SE	T-value	CI		Supported
					LL	UL	
H_1	LC → EU	0.451	0.091	4.974	0.261	0.618	Yes
H_2	LC → SE	0.404	0.105	3.896	0.212	0.612	Yes
H_3	EE → EU	0.155	0.090	1.697	0.031	0.333	Yes
H_4	EE → SE	-0.099	0.093	1.116	-0.292	0.069	No
H_5	PE → EU	0.333	0.122	2.764	0.088	0.581	Yes
H_6	PE → SE	0.404	0.102	3.409	0.124	0.540	Yes
H_7	FC → EU	0.316	0.106	3.074	0.112	0.529	Yes
H_8	FC → SE	0.193	0.086	2.161	0.016	0.355	Yes
H_9	EU → SE	-0.081	0.073	1.100	-0.292	0.069	No
H_{10}	EU → ETE	0.439	0.086	4.909	0.264	0.594	Yes
H_{11}	SE → ETE	0.281	0.091	3.097	0.101	0.465	Yes

Source: own study.

Table 9. Structural model evaluation (mediating effect)

Hypothesis	Linkage	β	SE	T-value	CI		Decision
					LL	UL	
H_{12}	LC → EU → ETE	0.198	0.053	3.737	0.100	0.298	Supported
H_{13}	LC → SE → ETE	0.114	0.048	2.382	0.034	0.217	Supported

Note: t-value >1.645; $p < 0.05$; CI, confidence internal; BC, bias corrected; UL, upper level; LL, lower level; SE, standard error; β, path coefficient.
Source: own study.

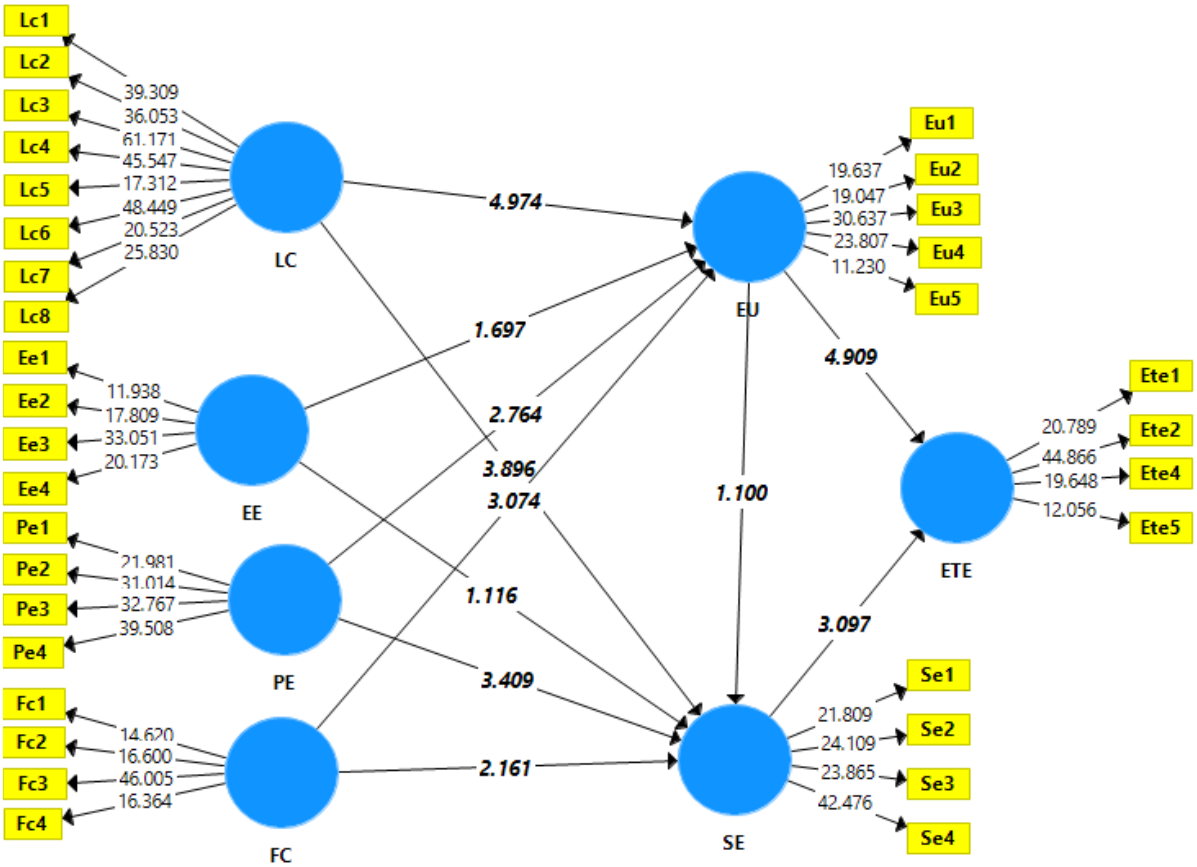

Figure 2. Model development test results
Source: own elaboration based on investment results.

The research aimed to examine the influence of e-learning on students' entrepreneurial intentions in the era of the Covid-19 pandemic. This study adopted the TAM and UTAUT models, which were proven effective in predicting student acceptance of online learning in association with students' self-efficacy and entrepreneurial intentions. The general assumption is that when online entrepreneurship education is implemented effectively, it will increase students' self-efficacy and intention to become entrepreneurs. The assumption is also inseparable from the belief that entrepreneurship learning needs to adapt to the conditions of the Covid-19 pandemic, which will last for an unpredicted time in the whole world, including Indonesia.

The results of the study indicate that the lecturer's competence has a direct effect on entrepreneurship education and students' self-efficacy. The results corroborate many studies conducted by previous scholars, such as Surachim *et al.* (2018), Samat *et al*. (2020), Tarhini *et al.* (2018), Rapanta *et al*. (2020), Qashou (2021), Bell (2021). The findings of this study are logical considering that lecturer's competence is a pivotal aspect in entrepreneurship education not only under normal conditions but also during the Covid-19 pandemic. Lecturers who do not have competence will not teach entrepreneurship properly and effectively. Because they cannot teach well, it is reasonable that their self-efficacy and intention to enter the world of entrepreneurship is also insufficient. The findings of this research confirm that entrepreneurship education will increase students' self-efficacy and entrepreneurial intentions if the lecturer has competence both in teaching and competence in the field of entrepreneurship. This should be a concern for campuses to place competent lecturers in entrepreneurship theory and practice courses. These competent lecturers will increase students' self-efficacy and intention to enter the world of entrepreneurship. The lecturers' competence can be improved by proposing either individually or in teams to attend workshops, training/courses, and education in the theme of entrepreneurship.

Furthermore, the results found that students' effort expectancy did not affect their entrepreneurship education and self-efficacy. However, the results of this work oppose most earlier studies by Tarhini *et al*. (2018), Samat *et al*. (2020), or Bervell and Arkoful (2020). The underlying reason to explain this result is that in the context of online learning in Indonesia, facilities and infrastructure moderately support these activities. Even though the Indonesian government provides free data quotas/packages to students and lecturers during online learning during the Covid-19 pandemic, this policy is not accompanied by the provision of supporting facilities and infrastructure. Moreover, geographical conditions have not been resolved with the provision of an adequate internet network. As a result, the respondents of this study felt many obstacles during online learning, such as online applications that were not optimal, internet signal problems, and other supporting facilities. Considering these obstacles, the learning process is not optimal and ineffective. Consequently, students' expectations of entrepreneurship learning become smaller and their self-efficacy for entrepreneurship is insufficient. This research provides valuable insight, especially for the government that wants to carry out online entrepreneurship learning and needs to provide adequate supporting facilities and infrastructure. Without good facilities and infrastructure, entrepreneurship education will not positively impact self-efficacy and students' intentions to engage in the world of entrepreneurship.

The findings of the study report that performance expectancy has a direct effect on students' entrepreneurship education and entrepreneurial self-efficacy. The results confirm some studies conducted by preliminary scholars such as Tarhini *et al*. (2018), Samat *et al*. (2020), and Bervell and Arkoful (2020). The results of our research came as a surprise in the context of learning entrepreneurship in Indonesia during the Covid-19 pandemic. This implies that despite the limited conditions in terms of facilities and infrastructure, students showed high-performance expectations towards the results of entrepreneurship education. The respondents still expect that even in an emergency, entrepreneurship education will still be effective in increasing students' self-efficacy and intentions to enter the entrepreneurial world after they graduate. Entrepreneurship learning continues to be carried out despite the restricted conditions. This surprising phenomenon should be responded to positively by the university to provide the best educational services to students. Entrepreneurship learning must be designed as attractively as possible, interactively, and involve all of students' psy-

chological aspects. This is both an opportunity and a challenge for campuses in Indonesia. The challenge is that lecturers must carry out entrepreneurship learning effectively and on target so that students' high hopes are not counter-productive.

In addition to previous findings, the results also indicate that facilitating conditions affect entrepreneurship education and entrepreneurial self-efficacy. Even though this is relevant to the basic theory of TAM and UTAUT as studied by a number of scholars (Tarhini *et al*., 2018; Samat *et al*., 2020; Bervell & Arkoful, 2020), the results of our study are surprising. This is because constraints in the form of limited facilities and infrastructure do not prevent students from increasing students' self-efficacy and entrepreneurial intentions. In other words, facilitating conditions positively affect entrepreneurship education, self-efficacy, and students' intentions to become entrepreneurs. The respondents perceive that online facilities and infrastructure limitations are not an obstacle to participating in entrepreneurship education. It seems that respondents have adapted to online entrepreneurship education carried out in normal conditions. The surprising results must be responded to positively by the university by providing effective learning services. The creativity of lecturers and the campus must be enhanced considering that the implementation of the online learning model is not easy but complex. This finding becomes an entry point for further researchers to explore why research respondents in Indonesia do not make limited facilities and infrastructure an obstacle in participating in online entrepreneurship learning.

Finally, the results show that entrepreneurship education has a linkage with students' entrepreneurial intentions. This study confirms some of the previous studies by Linan (2004), Piperopoulos and Dimov (2015), Li and Wu (2019), Saptono *et al*. (2020), Karyaningsih *et al.* (2020), Wardana *et al*. (2020), and Saparuddin *et al*. (2020). Despite the fact that the learning has been conducted using the online platform, students still perceive it normal conditions. In general, students believe that online entrepreneurship education still has a linear impact on their entrepreneurial intentions, just as under regular conditions. However, entrepreneurship education in this study failed to increase students' self-efficacy. Although in contrast to the majority of previous researchers such as Wardana *et al*. (2020), Ratten and Jones (2020), Saptono *et al*. (2020), we may conclude from the result of this research that in the conditions of the Covid-19 pandemic entrepreneurship education has not been able to increase student self-efficacy as in normal conditions. The results provide a valuable input for lecturers and campus parties to improve online entrepreneurship education learning services effectively and efficiently. This is an opportunity and a challenge for the lecturers and the campus. A strategic step to respond positively to these findings is for lecturers to improve their online entrepreneurship education competencies while the campus provides adequate facilities and infrastructure for students. The research also provides inspiration for further researchers regarding how to package online entrepreneurship education so that it can increase student entrepreneurial self-efficacy.

CONCLUSIONS

We adopted the TAM and UTAUT models to determine how online entrepreneurship education influences student self-efficacy and entrepreneurial intentions during the Covid-19 pandemic. Surprisingly, the online learning model affects students' intentions to become entrepreneurs. On the other hand, the results found that online learning has not increased student's entrepreneurship and self-efficacy. The findings answer our overall assumption that if online entrepreneurship education is carried out effectively, it will increase students' intention to enter the world of entrepreneurship. The results of this research imply that lecturers need to improve their competence, especially concerning the e-learning incorporation. The lecturers need to change the conventional learning model as in normal conditions into an online learning model that is interactive, interesting and involves all of students' psychological aspects. This is an opportunity and a challenge for lecturers. Furthermore, in cooperation with the government, the campus needs to provide adequate facilities and infrastructure to support online learning. In addition to continuously provide quota package assistance to students and lecturers, the government must also improve the quality of the internet network so that geographical conditions are not a constraint. As for the limitations of this study, it did not involve the TAM and UTAUT models completely, thus some variables were not included in the construct.

Further researchers can elaborate on the TAM and UTAUT models to predict the dominant variables that affect students' entrepreneurial intentions. Moreover, this study used only a cross-sectional sample with a limited number of samples. Future researchers would benefit from considering data longitudinally so that the results can represent the actual conditions of the research field. Furthermore, we solely involved partial indicators of measuring lecturer's competence, thus it is suggested to involve complete indicators. Future research also needs to incorporate with more respondents and use personal and contextual variables so that students who are involved in research really become entrepreneurs or choose a profession as entrepreneurs when they graduate.

REFERENCES

Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, *50*(2), 179-211. https://doi.org/10.1016/0749-5978(91)90020-T

Almaiah, M. A., Al-Khasawneh, A., & Althunibat, A. (2020). Exploring the critical challenges and factors influencing the e-learning system usage during COVID-19 pandemic. *Education and Information Technologies*, *25*, 5261-5280. https://doi.org/10.1007/s11365-018-0529-0

Ameen, A., Almari, H., & Isaac, O. (2018, June). Determining underlying factors that influence online social network usage among public sector employees in the UAE. In International Conference of Reliable Information and Communication Technology (pp. 945-954). Berlin: Springer, Cham. https://doi.org/10.1007/978-3-319-99007-1_87

Bell, R. (2021). Underpinning the entrepreneurship educator's toolkit: conceptualising the influence of educational philosophies and theory. *Entrepreneurship Education*, *4*(1), 1-18. https://doi.org/10.1007/s41959-020-00042-4

Bervell, B., & Arkorful, V. (2020). LMS-enabled blended learning utilization in distance tertiary education: establishing the relationships among facilitating conditions, voluntariness of use and use behaviour. *International Journal of Educational Technology in Higher Education*, *17*(1), 1-16. https://doi.org/10.1186/s41239-020-0183-9

Bhatti, M. A., Al Doghan, M. A., Saat, S. A. M., Juhari, A. S., & Alshagawi, M. (2021). Entrepreneurial intentions among women: does entrepreneurial training and education matters? (Pre-and post-evaluation of psychological attributes and its effects on entrepreneurial intention). *Journal of Small Business and Enterprise Development*, *28*(2), 167-184. https://doi.org/10.1108/JSBED-09-2019-0305

Bongaerts, D., Mazzola, F., & Wagner, W. (2021). Closed for business: The mortality impact of business closures during the Covid-19 pandemic. *PloS one*, *16*(5), e0251373. https://doi.org/10.1371/journal.pone.0251373

Cardon, M. S., Wincent, J., Singh, J., & Drnovsek, M. (2009). The nature and experience of entrepreneurial passion. *Academy of management Review, 34*(3), 511-532. https://doi.org/10.5465/amr.2009.40633190

Chen, J. L. (2011). The effects of education compatibility and technological expectancy on e-learning acceptance. *Computers & Education*, 57(2), 1501-1511. http://dx.doi.org/10.1016/j.compedu.2011.02.009

Chin, W. W. (1998). The partial least squares approach to structural equation modeling. *Modern Methods for Business Research*, *295*(2), 295-336.

Decman, M. (2015). Modeling the acceptance of e-learning in mandatory environments of higher education: The influence of previous education and gender. *Computers in Human Behavior*, *49*, 272-281. https://doi.org/10.1016/j.chb.2015.03.022

Elnadi, M., & Gheith, M. H. (2021). Entrepreneurial ecosystem, entrepreneurial self-efficacy, and entrepreneurial intention in higher education: Evidence from Saudi Arabia. *The International Journal of Management Education*, *19*(1), 100458. https://doi.org/10.1016/j.ijme.2021.100458

Fauth, B., Decristan, J., Decker, A.-T., Büttner, G., Hardy, I., Klieme, E., & Kunter, M. (2019). The effects of teacher competence on student outcomes in elementary science education: The mediating role of teaching quality. *Teaching and Teacher Education*, 86, 102882. https://doi.org/10.1016/j.tate.2019.102882.

Fejes, A., Nylund, M., & Wallin, J. (2019). How do teachers interpret and transform entrepreneurship education?. *Journal of Curriculum Studies*, *51*(4), 554-566. https://doi.org/10.1080/00220272.2018.1488998

Fuller, B., Liu, Y., Bajaba, S., Marler, L. E., & Pratt, J. (2018). Examining how the personality, self-efficacy, and anticipatory cognitions of potential entrepreneurs shape their entrepreneurial intentions. *Personality and Individual Differences*, *125*, 120-125. https://doi.org/10.1016/j.paid.2018.01.005

Gavrila, S. G., & Ancillo, A. D. L. (2021). Entrepreneurship, innovation, digitization and digital transformation toward a sustainable growth within the pandemic environment. *International Journal of Entrepreneurial Behavior & Research*, 28(1), 45-66. https://doi.org/10.1108/IJEBR-05-2021-0395

Gupta, S. L., & Sharma, A. (2018). Exploring the moderating role of entrepreneurial education and mediating role of entrepreneurial attitude on the relation of entrepreneurial characteristics and entrepreneurial intention. *The Business & Management Review*, *9*(3), 267-267.

Hair, J. F., Ringle, C. M., & Sarstedt, M. (2013). Partial least squares structural equation modeling: Rigorous applications, better results and higher acceptance. *Long Range Planning*, *46(*1-2), 1-12. https://doi.org/10.1108/EBR-10-2013-0128

Hair Jr, J. F., Howard, M. C., & Nitzl, C. (2020). Assessing measurement model quality in PLS-SEM using confirmatory composite analysis. *Journal of Business Research, 109*, 101-110. https://doi.org/10.1016/j.jbusres.2019.11.069

Henry, C., & Lewis, K. (2018). A review of entrepreneurship education research. *Education+ Training*, *60*(3), 263-286. https://doi.org/10.1108/ET-12-2017-0189

Ibrahim, N. A., & Lucky, E. O. I. (2014). Relationship between entrepreneurial orientation, entrepreneurial skills, environmental factor and entrepreneurial intention among Nigerian students in UUM. *Entrepreneurship and Innovation Management Journal, 2*(4), 203-213.

Kaliisa, R., Palmer, E., & Miller, J. (2019). Mobile learning in higher education: A comparative analysis of developed and developing country contexts. *British Journal of Educational Technology*, *50*(2), 546-561. https://doi.org/10.1111/bjet.12583

Karyaningsih, R. P. D., Wibowo, A., Saptono, A., & Narmaditya, B. S. (2020). Does entrepreneurial knowledge influence vocational students' intention? Lessons from Indonesia. *Entrepreneurial Business and Economics Review*, *8*(4), 138-155. https://doi.org/10.15678/EBER.2020.080408

Kock, N., & Gaskins, L. (2014). The mediating role of voice and accountability in the relationship between Internet diffusion and government corruption in Latin America and Sub-Saharan Africa. *Information Technology for Development, 20*(1), 23-43. https://doi.org/10.1080/02681102.2013.832129

Kock, N., & Lynn, G. (2012). Lateral collinearity and misleading results in variance-based SEM: An illustration and recommendations. *Journal of the Association for information Systems*, 13(7), 1-40.

Kusmintarti, A., Asdani, A., & Riwajanti, N. I. (2017). The relationship between creativity, entrepreneurial attitude and entrepreneurial intention (case study on the students of State Polytechnic Malang). *International Journal of Trade and Global Markets*, *10*(1), 28-36.

Li, L., & Wu, D. (2019). Entrepreneurial education and students' entrepreneurial intention: does team cooperation matter?. *Journal of Global Entrepreneurship Research, 9*(1), 1-13. https://doi.org/10.1186/s40497-019-0157-3

Lin, P.-C., Lu, H.-K., & Liu, C. (2013). Towards an education behavioral intention model for e-learning systems: an extension of UTAUT. *Journal of Theoretical and Applied Information Technology*, 47(3), 1120-1127.

Linan, F. (2004). Intention-based models of entrepreneurship education. *Piccolla Impresa/Small Business, 3*(1), 11-35.

Looi, K. H., & Maritz, A. (2021). Government institutions, entrepreneurship education and entrepreneurship education programmes in Malaysia. *Education+ Training*, *63*(2), 271-291. https://doi.org/10.1108/ET-07-2020-0217

McGill, C. M., Heikkila, M., & Lazarowicz, T. (2020). Professional development, performance expectations and academic advisors' perceptions of relational skills: a sequential explanatory mixed methods study. *New Horizons in Adult Education and Human Resource Development*, *32*(4), 50-69. https://doi.org/10.1002/nha3.20296

Mei, H., Lee, C. H., & Xiang, Y. (2020). Entrepreneurship Education and Students' Entrepreneurial Intention in Higher Education. *Education Sciences*, *10*(9), 257. https://doi.org/10.3390/educsci10090257

Mukhtar, S., Wardana, L. W., Wibowo, A., & Narmaditya, B. S. (2021). Does entrepreneurship education and culture promote students' entrepreneurial intention? The mediating role of entrepreneurial mindset. *Cogent Education, 8(*1), 1918849. https://doi.org/10.1080/2331186X.2021.1918849

Nakara, W. A., Messeghem, K., & Ramaroson, A. (2021). Innovation and entrepreneurship in a context of poverty: a multilevel approach. *Small Business Economics*, *56*(4), 1601-1617. https://doi.org/10.1007/s11187-019-00281-3

Neumann, T. (2021). The impact of entrepreneurship on economic, social and environmental welfare and its determinants: a systematic review. *Management Review Quarterly*, *71*(3), 553-584. https://doi.org/10.1007/s11301-020-00193-7

Preacher, K. J., & Hayes, A. F. (2008). Asymptotic and resampling strategies for assessing and comparing indirect effects in multiple mediator models. *Behavior Research Methods, 40*(3), 879-891. https://doi.org/10.3758/BRM.40.3.879

Piperopoulos, P., & Dimov, D. (2015). Burst bubbles or build steam? Entrepreneurship education, entrepreneurial self-efficacy, and entrepreneurial intentions. *Journal of Small Business Management, 53*(4), 970-985.

Qashou, A. (2021). Influencing factors in M-learning adoption in higher education. *Education and information technologies*, *26*(2), 1755-1785. https://doi.org/10.1007/s10639-020-10323-z

Rafique, G. M., Mahmood, K., Warraich, N. F., & Rehman, S. U. (2021). Readiness for Online Learning during COVID-19 pandemic: A survey of Pakistani LIS students. *The Journal of Academic Librarianship, 47(*3), 102346. https://doi.org/10.1016/j.acalib.2021.102346.

Rapanta, C., Botturi, L., Goodyear, P., Guàrdia, L., & Koole, M. (2020). Online university teaching during and after the Covid-19 crisis: Refocusing teacher presence and learning activity. *Postdigital Science and Education*, *2*(3), 923-945.

Ratten, V., & Jones, P. (2020). Covid-19 and entrepreneurship education: Implications for advancing research and practice. *The International Journal of Management Education,* 100432. https://doi.org/10.1016/j.ijme.2020.100432.

Ratten, V., & Usmanij, P. (2021). Entrepreneurship education: Time for a change in research direction?. *The International Journal of Management Education*, *19*(1), 100367. https://doi.org/10.1016/j.ijme.2020.100367

Samat, M. F., Awang, N. A., Hussin, S. N. A., & Nawi, F. A. M. (2020). Online Distance Learning amidst COVID-19 Pandemic among University Students: A Practicality of Partial Least Squares Structural Equation Modelling Approach. *Asian Journal of University Education*, *16*(3), 220-233.

Siron, Y., Wibowo, A., & Narmaditya, B. S. (2020). Factors affecting the adoption of e-learning in Indonesia: Lesson from Covid-19. *JOTSE: Journal of Technology and Science Education*, *10*(2), 282-295. https://doi.org/10.3926/jotse.1025

Surachim, A., Hurriyati, R., Lisnawati, L., Sulastri, S., & Mulyadi, H. (2018). Using social media to promote student entrepreneurship. *Pertanika Journal of Social Science and Humanities*, *26*, 73-183.

Sutter, C., Bruton, G. D., & Chen, J. (2019). Entrepreneurship as a solution to extreme poverty: A review and future research directions. *Journal of Business Venturing*, *34*(1), 197-214. https://doi.org/10.1016/j.jbusvent.2018.06.003

Tarhini, A., Al-Busaidi, K. A., Mohammed, A. B., & Maqableh, M. (2017). Factors influencing students' adoption of e-learning: a structural equation modeling approach. *Journal of International Education in Business*, *10*(2), 164-182. https://doi.org/10.1108/JIEB-09-2016-0032

Tung, D. T., Hung, N. T., Phuong, N. T. C., Loan, N. T. T., & Chong, S. C. (2020). Enterprise development from students: The case of universities in Vietnam and the Philippines. *The International Journal of Management Education, 18*(1), 100333. https://doi.org/10.1016/j.ijme.2019.100333

Venkatesh, V., Thong, J., & Xu, X. (2012). Consumer acceptance and use of information technology: Extending the unified theory of acceptance and use of technology. *Management Information Systems Quarterly*, 36(1), 157-178. https://doi.org/10.2307/41410412

Wardana, L. W., Narmaditya, B. S., Wibowo, A., Mahendra, A. M., Wibowo, N. A., Harwida, G., & Rohman, A. N. (2020). The impact of entrepreneurship education and students' entrepreneurial mindset: the mediating role of attitude and self-efficacy. *Heliyon*, *6*(9), e04922. https://doi.org/10.1016/j.heliyon.2020.e04922

Wardoyo, C., Satrio, Y. D., Narmaditya, B. S., & Wibowo, A. (2021). Do technological knowledge and game-based learning promote students' achievement: lesson from Indonesia. *Heliyon*, *7*(11), e08467. https://doi.org/10.1016/j.heliyon.2021.e08467

Widyanti, R., & Rajiani, I. (2021). Nascent entrepreneurs of millennial generations in the emerging market of Indonesia. *Entrepreneurial Business and Economics Review, 9*(2), 151-165.

Zhao, H., Seibert, S. E., & Hills, G. E. (2005). The mediating role of self-efficacy in the development of entrepreneurial intentions. *Journal of Applied Psychology, 90*(6), 1265. https://doi.org/10.1037/0021-9010.90.6.1265

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The effect of research and development personnel on innovation activities of firms: Evidence from small and medium-sized enterprises from the Visegrad Group countries

Aleksandra Zygmunt

ABSTRACT

Objective: This study aims to assess whether research and development (R&D) personnel from firms, the research system, and governmental institutions contribute to innovation activities of firms from the Visegrad Group countries.

Research Design & Methods: Fixed effects panel regression with robust standard errors was used for hypothesis testing over the period 2009-2017. The data for the study was extracted from Eurostat, the European Innovation Scoreboard and the Organisation for Economic Cooperation and Development with a particular focus on R&D personnel from firms, the research system, and governmental institutions. The empirical analysis was focused on small and medium-sized enterprises (SMEs).

Findings: The results provide evidence about significant linkage between R&D personnel from governmental institutions and innovation activities of firms from the Visegrad Group countries. The research also highlights the lack of a significant effect of R&D personnel from firms and the research system on firms' innovation activities in the analysed former Soviet satellite economies distinguished by innovation performance below the average for the European Union.

Implications & Recommendations: Policy and practical implications that should be indicated include the necessity to further develop knowledge cooperation between governmental institutions and firms in order to reinforce innovation processes. There is also a need to enhance cooperation between the research system and firms to support SMEs from the Visegrad Group countries with highly-skilled human resources.

Contribution & Value Added: This article adds to the literature on drivers and sources of firms' innovation activities by providing new empirical evidence on the effect of R&D personnel on innovation activities of firms from the Visegrad Group countries, which are former Soviet satellite economies with a moderate level of innovativeness and belong to peripheral countries in the European Union.

Article type: research article

Keywords: R&D personnel; innovation activities of firms; the Visegrad Group countries

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INTRODUCTION

A growing body of literature discusses and evaluates firms' innovation activities as crucial for the growth of firms, regions and countries (Fritsch *et al.*, 2020; Whitacre, 2019; Klewitz & Hansen, 2014). Because innovation activities affect many aspects of competitive advantages, explicit attention is paid to the sources and drivers of innovation processes (Frangenheim *et a*l., 2020; Godlewska-Dzioboń *et al.*, 2019; Zygmunt J., 2017; Isaksen & Jakobsen, 2017; Edler & Fagerberg, 2017). One im-

portant strand of literature has highlighted the effect of knowledge diffusion on innovation performance of firms (Tijssen & Winnink, 2017; Frangenheim *et al.*, 2020; Rosenbusch *et al.*, 2011). Studies have found here a substantial role of knowledge networks between, among others, firms, the research system and governmental institutions (Thomas *et al.*, 2020; Rodríguez-Pose, 2013). The need to build knowledge networks to stimulate firms' innovation activities is based on theoretical arguments. According to knowledge spillovers and endogenous growth theories, the pivotal element for growth is innovation performance supported by efficient knowledge cooperation between firms, the research system, and governmental institutions (Audretsch & Belitski, 2020; Grillitsch *et al*., 2019). Over the years, the rising relevance of knowledge cooperation has increased discussions about the involvement of research and development (R&D) in knowledge diffusion (Tijssen *et al.*, 2016; Asheim *et al*., 2011). This is because R&D contributes to new knowledge creation (Odei *et al.*, 2020) and to innovation processes (Clausen, 2009). In line with this, research has noted that R&D is related to firms' innovation performance together with knowledge from diverse sources (Audretsch & Belitski, 2020) and should play a central role in knowledge diffusion processes (Huggins *et al*., 2019). When considering the linkage between R&D, knowledge cooperation and innovation processes, the involvement of human resources cannot be neglected. This is especially vital since recent studies have indicated the effect of human resources involved with R&D on economic growth of countries and regions (Wang *et al*., 2013; Tijssen & Winnink, 2017).

Prior studies suggest that R&D personnel from firms and from the research system may play an important role in effective knowledge diffusion (Teirlinck & Spithoven, 2013) leading to firms' innovation performance (Wang *et al.*, 2013). However, there is still little empirical evidence on the importance of R&D personnel from governmental institutions in encouraging firms' innovation activities (Raghupathi & Raghupathi, 2019). Furthermore, even though the earlier literature has dealt with the linkage between R&D personnel and firms' innovation performance, the empirical evidence concentrated mainly on countries with a high level of innovativeness (Tijssen *et al*., 2016; Clausen, 2009). The question is whether the results of the previous studies also hold for countries with a moderate level of innovativeness. Concerning this, a lack of relevant studies was identified in relation to the Visegrad Group countries (Czechia, Hungary, Poland, and Slovakia) which are former Soviet satellite economies with innovation performance below the average for the European Union and belong to peripheral countries in the European Union. In this situation, whether R&D personnel affect innovation activities of firms from this group of countries is an attractive topic. To fill this gap, this article aims to assess whether R&D personnel from firms, the research system, and governmental institutions contributes to innovation activities of firms from the Visegrad Group countries. Fixed effects panel regression with robust standard errors allows testing the hypotheses. The empirical analysis relies on data from Eurostat, the European Innovation Scoreboard (2019, 2020), and the Organisation for Economic Cooperation and Development (OECD), and it concentrates on small and medium-sized enterprises. The research concerned the period 2009-2017.

This study contributes to the literature twofold. Firstly, the empirical evidence was tested for the Visegrad Group countries as former Soviet satellite economies. Concentrating on the Visegrad Group countries may bring substantial findings regarding similar innovation performance of these countries, which are below the average for the European Union (European Commission, 2020; European Commission, 2019) and belong to peripheral countries in the European Union. Secondly, the research shed more light on the relevance of human resources involved with R&D for innovation performance of firms.

This article proceeds as follows. The next section will discuss relevant literature on innovation activities of firms, knowledge diffusion, and R&D personnel. The following section will describe the data and variables used in the study and introduce the research method applied to recognise the significance of R&D personnel for innovation activities of firms from the Visegrad Group countries. The next section will report the results from the estimation of the panel regression model and robustness checks. This part will also present the discussion of the findings. The last section will conclude with the main policy and practical implications, limitations, and future research directions.

LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

Recent studies have attracted considerable interest in the linkage between knowledge diffusion, R&D, and innovation activities of firms (Audretsch & Belitski, 2020; Lehnert *et al*., 2020; Tijssen *et al*, 2016). Some argue that knowledge diffusion focused on R&D, as crucial in building innovation potential of firms (Clausen, 2009), contributes to achieving a competitive advantage of firms and, consequently, the growth of countries and regions (Bilbao-Osorio & Rodríguez-Pose, 2011; Tödtling & Grillitsch, 2015). The growing theoretical and empirical body of work investigates here various aspects of knowledge networks related to R&D between, among others, firms, the research system and governmental institutions (Thomas *et al*., 2020; Isaksen & Jakobsen, 2017) as a triple helix essential for innovation processes (Thomas *et al.*, 2020). Most of these studies focused, among other things, on the effect of patents (Tijssen & Winnink, 2017), co-publications (Tijssen *et al*., 2016), or the educational level of human resources (Hauser *et al*., 2018, Baptista *et al.*, 2015) on firms' innovation performance. Policy instruments encouraging R&D and innovation processes have also attracted the attention of many scholars referring to, among others, R&D expenditures (Bianchini *et al*., 2019; Bilbao-Osorio & Rodríguez-Pose, 2011; Clausen, 2009; Hunady *et al.*, 2017). The discussion on the importance of knowledge networks and firms' innovation activities raises questions about the role of human resources associated with R&D in knowledge diffusion (Huggins *et al.*, 2019; Rodríguez-Pose, 2013; Wang *et al*., 2013; Tijssen & Winnink, 2017). In this regard, recent research argues that human resources associated with R&D (R&D personnel), as highly-skilled workers involved directly with the processes related with innovation (Wang *et al.*, 2013), may provide essential support to firms' innovation performance (Bianchini *et al*., 2019). Such research became in recent years part of the debate on the relation between knowledge networks and innovation performance of firms (Lehnert *et al*., 2020). That research also motivates and guides this study by providing a basis for analysing the effect of R&D personnel on firms' innovation activities.

Considering the role of human resources associated with R&D in firms' innovation performance, there is a need to broadly define R&D personnel. Consistent with this, the study comprises both personnel directly related with R&D and personnel supporting R&D processes as administrative and office staff and managers (Raghupathi & Raghupathi, 2019; Eurostat, 2020). Furthermore, on the basis of the assumption that combining knowledge from different sources, related to the triple helix, is crucial for firms' innovation activities (Bianchini *et al.*, 2019), there is a strong theoretical reason to assume that firm's innovation processes require not only firms' R&D personnel but also the R&D personnel from the research system and from governmental institutions (Asheim *et al*., 2011). For this reason, this research focuses on the R&D personnel from firms, the research system, and government institutions. Such an approach is in line with knowledge spillovers and endogenous growth theories that indicate the need for efficient knowledge cooperation between firms, the research system, and governmental institutions to develop innovation processes and achieve the growth of regions and countries. These theories also offer a relevant ground for this study, allowing for the analysis and interpretation of the results.

The analysis of studies indicates that in the context of the R&D personnel, there are relatively few empirical studies concerning directly R&D personnel in relation to firms' innovation performance. In this regard, especially R&D personnel from firms and from the research system have received attention, with relatively little consideration of R&D personnel from governmental institutions. It is also observed that empirical studies provide ambiguous results. Considering R&D personnel from firms, Teirlinck and Spithoven (2013) posit that such human resources became a crucial driver of firms' innovation activities. Recent works highlight especially the relevance of the quality of firms' human resources associated with R&D (Wang *et al*., 2013), arguing that firms should create conditions for building the R&D personnel capacity to support the process of knowledge diffusion (Solheim *et al*., 2020; Sauermann & Cohen, 2010). For instance, the rank of developing entrepreneurial attitudes of the R&D personnel is seen as a key to strengthening the R&D potential of firms (Wang *et al*., 2013). This corresponds to regarding firms' highly-skilled personnel as bringing knowledge for encouraging innovation performance (Isaksen & Jakobsen, 2017), suggesting a positive effect on innovation activities of firms,

and, consequently, regions' and countries' growth (Audretsch & Belitski, 2020; Solheim *et al*., 2020). In this context, Raghupathi and Raghupathi (2019) analyse the relationship between country-level innovation in both OECD member and non-member countries and R&D processes and provide empirical results indicating a positive relation between firms' R&D personnel and innovation performance of firms. Similarly, Teirlinck and Spithoven (2013) have linked positively the qualifications and training of R&D personnel with innovation processes in small and medium-sized enterprises from Belgium (Teirlinck & Spithoven, 2013). This research highlights that personnel directly related with R&D, research managers, and personnel with second-stage tertiary education are necessary for knowledge diffusion and firms' innovation performance (Teirlinck & Spithoven, 2013). Lehnert, Pfister, and Backes-Gellner (2020) also suggest that firms' human resources associated with R&D positively affect firms' innovation activities. In this respect, conducted research on Swiss firms allows stating that firms' R&D personnel with tertiary education could positively affect innovation processes (Lehnert *et al*., 2020). Furthermore, a positive relationship between R&D personnel of firms and firms' innovation performance is claimed by Koschatzky,, Bross and Stanovnik (2001) with regard to Slovenian firms from different sectors.

The lack of unambiguous results is noticeable in the research discussing how the R&D personnel from the research system affect innovation activities of firms. The debate points to an essential role of the research system, referring to universities and research organisations, in providing highly-skilled personnel (Isaksen & Jakobsen, 2017; Audretsch & Belitski, 2020). From this point of view, an understanding is emerging that human resources with tertiary and second-stage tertiary education, provided especially by the research system, are highly relevant to firms' innovation processes (Hauser *et al*. 2018, Baptista *et al*., 2015). However, the research system encourages firms' innovation processes not only thought supporting firms with high-quality human resources. Following the literature on knowledge spillovers and endogenous growth, the research system is also believed to contribute knowledge crucial for fostering firms' competitive advantage (Lehnert *et al*., 2020) through providing of the R&D research results (Thomas *et al.*, 2020). Therefore, there exists a considerable number of studies focusing on various forms of knowledge networks between the research system and firms (Huggins *et al*., 2019). Growing attention is focused especially on patents as the results of firms' capability to absorb of knowledge from the research system (Tijssen & Winnink, 2017). Apart from patents, some studies suggest the role of co-publication in enhancing firms' innovation performance as a result of effective knowledge diffusion (Tijssen *et al*., 2016). Following the premise that the research system is regarded as an important participant of knowledge networks supporting firms' innovation activities (Tödtling *&* Grillitsch, 2015), researchers are regarded as a crucial contributor of R&D. The results of the literature analysis indicate here the significance of the research system personnel involved with applied R&D rather than basic research and suggest a positive link between the R&D personnel from the research system and innovation activities of firms (Asheim *et al.*, 2011). In this context, Asheim, Moodysson, and Tödtling (2011) show that the research system personnel connected with R&D are found to be positively linked with innovation performance of firms. On the other hand, estimating "R&D excellence" as the capability of scientific research to develop of innovative technologies, Tijssen and Winnink (2017) recognise that the R&D personnel from the research system are not significantly correlated with firms' innovation performance. Accordingly, the research of Raghupathi and Raghupathi (2019) also found the lack of a significant linkage between the R&D personnel from the research system and innovation activities of firms.

Although existing studies mainly focus on knowledge diffusion between the research system and firms, the role of governmental institutions in innovation processes could not be overlooked. It results from the fact that governmental institutions affect firms' competitiveness and, consequently, the growth of regions and countries (Fitjar *et al*., 2019). Thus, scholars have extended the focus on the capability of the government to create favourable conditions for innovation performance of firms (Rodríguez-Pose & Di Cataldo, 2015; Cortinovis *et al*., 2017). The analysis of the literature highlights at least two areas in which governmental institutions are regarded as an essential participant of knowledge networks. Firstly, governmental institutions are attached great importance since providing policy instruments is pivotal for encouraging innovation activities of firms (Frangenheim *et al*., 2020).

In this context, studies suggest that national and regional policies are crucial in assisting firms' innovation performance by providing background for R&D (Whitacre, 2019; Edler & Fagerberg, 2017) through suitable services and public goods (Isaksen & Jakobsen, 2017; Bianchini *et al*., 2019). Secondly, governmental institutions are regarded as an important supplier of firms' highly-skilled human resources through creating conditions for accessibility of knowledge and education (Fitjar *et al*., 2019; Rodríguez-Pose & Di Cataldo, 2015; Bianchini *et al.*, 2019). As studies have consistently found a linkage between governmental institutions and innovation processes (Rodríguez-Pose, 2013), a new question arises about the significance of R&D personnel from governmental institutions in knowledge diffusion and innovation performance of firms. The analysis of the literature leads to the conclusion that this question has received surprisingly little attention so far. Compared to the research on R&D personnel from firms and research system, empirical studies related to R&D personnel from governmental institutions remain scant. Empirical evidence is limited but supports the view that personnel from governmental institutions dealing with R&D may have a positive effect on firms' innovation activities. Such a relation has been recognized by Raghupathi and Raghupathi (2019). Similarly, Bianchini, Llerena, and Martino (2019) studying public support for Spanish firms suggest a positive linkage between human resources of governmental institutions associated with R&D and innovation processes.

The described background helped to highlight the importance of further research on the R&D personnel and firms' innovation performance. Firstly, the studies suggest that there is an ongoing concern to comprehend how R&D personnel affect firms' innovation performance. Secondly, the knowledge spillovers and endogenous growth theories provide ground for explaining the effect of R&D personnel on firms' innovation activities. Next, existing studies mainly focus on the linkage of the R&D personnel from firms, the research system, and innovation processes, whereas less attention has been devoted to the relationship between the R&D personnel from governmental institutions and innovation activities of firms. This offers a relevant ground for further research. There is also a noticeable lack of unambiguous results concerning the role of R&D personnel in innovation activities of firms. In line with this, the effect of human resources associated with R&D on firms' innovation performance is seen as an emerging research field. Furthermore, the analysis of the previous studies reveals various measurements both of R&D personnel and of innovation activities of firms. In this regard, some scholars use a percentage of R&D personnel in the business enterprise sector in active population, a percentage of the R&D personnel in the higher education sector in active population or a percentage of the R&D personnel in the government sector in active population to study the relationship between R&D personnel and firms' innovation performance. However, in this respect, other studies apply, among others, a percentage of the R&D personnel in the total number of workers or percentages of workers with a university degree. When considering innovation activities of firms, previous research adopts, for example, such measures referring to innovators construed as firms with product or processes innovation. Such research concerned firms of different sizes operating in various sectors, with data basically sourced from publicly available databases. Other studies, on the other hand, employed a survey method with a binary indication of firms' innovation performance. This implies the need for further research on the relationship between R&D personnel and firms' innovation activities. Furthermore, recent studies refer mainly to countries with a high level of innovativeness, while only few studies concern countries with a moderate level of innovativeness. Thus, it seems important to carry out further research to investigate how R&D personnel affect firms' innovation activities in such countries in order to verify whether the results also hold for countries with a moderate level of innovativeness. Following this gap, the question arises if the results hold for the Visegrad Group countries as the countries with innovation performance below the average for the European Union. However, despite expanding literature and empirical evidence on drivers and sources of innovation performance of firms from this group of countries (Wielechowski *et al*., 2021; Zygmunt A., 2020; Paliokaitė, 2019; Hunady *et al*., 2017), relatively little is known about the importance of human resources related to R&D for firms' innovation activities in Czechia, Hungary, Poland, and Slovakia. This study focuses on the Visegrad Group countries to address this gap and investigate the relation between R&D personnel from firms, from the research system and from governmental institutions and innovation activities of firms in these countries with innovation performance below the average for the European Union. This group

of countries also represents former Soviet satellite economies. Such economies are distinguished by a relationship between foreign direct investment and knowledge diffusion and firms' innovation processes (Hardy *et al.*, 2011). The Visegrad Group countries belong also to peripheral countries in the European Union. Because peripheral countries are distinguished by R&D expenditures that are greater for the public and universities sectors than for the private sector and are relatively less inclined to firms' innovation and have relatively underdeveloped knowledge networks (Rodriguez-Pose, 2014), the study relating to the Visegrad Group countries may provide new insight on sources and drivers of innovation processes. It is expected that there exists a positive effect of R&D personnel from firms, the research system, and governmental institutions on innovation performance of firms from the Visegrad Group countries.

Thus, the hypotheses of this research are stated as follows:

H1: Firms' R&D personnel positively contribute to innovation activities of firms from the Visegrad Group countries.

H2: The R&D personnel from the research system positively contribute to innovation activities of firms from the Visegrad Group countries.

H3: The R&D personnel from governmental institutions positively contribute to innovation activities of firms from the Visegrad Group countries.

RESEARCH METHODOLOGY

Data

The aim of this study is to assess whether the R&D personnel from firms, the research system, and governmental institutions contribute to innovation activities of firms from the Visegrad Group countries. Since SMEs play a vital role in the growth of the European Union's regions and countries (Rosenbusch *et al.*, 2011), representing 99% of the European Unions' firms (European Commission, 2021), this study focuses on small and medium-sized enterprises. The data used to carry out this research were retrieved from various sources of data. The primary data source was Eurostat as a database gathering information on the European Union member states. Eurostat was used to supply data about R&D and drivers of firms' innovation activities in the Visegrad countries such as: the R&D personnel from firms, the research system, and governmental institutions, R&D expenditures, education level of human resources, economic growth. Secondly, the European Innovation Scoreboard (2019, 2020) was used as database providing information about innovation performance of member states of the European Union. The European Innovation Scoreboard provides set of data on innovative firms in Czechia, Hungary, Poland, and Slovakia. The employed data set allows identifying whether R&D personnel support innovation activities of firms from the Visegrad Group countries.

Variables

In this research, three dependent variables were adopted to measure innovation activities of firms' from the Visegrad Group countries (*SME_INNOV*): (i) percentage of small and medium-sized enterprises with product or process innovation (*SME_INNOV_PROD_PROC*), (ii) percentage of small and medium-sized enterprises with marketing or organisational innovation (*SME_INNOV_MARK_ORG*), (iii) percentage of small and medium-sized enterprises with in-house innovation (*SME_INNOV_IN_HOUSE*). Such measurements of firms' innovation activities result from the analysis of previous research which indicates a lack of unambiguous specification of how to express innovation performance of firms. Here, previous studies refer to, among others, firms of different sizes and sectors, with product or processes innovation. Regarding the importance of SMEs in the growth of the European Union's regions and countries (Rosenbusch *et al.*, 2011), this research concentrates on small and medium-sized enterprises. Following the approach of Żelazny and Pietrucha (2017) and the European Commission to the differentiation of innovation performance (Żelazny & Pietrucha, 2017; European Commission, 2020), this research also adopts a broad approach to define firms' innovation activities. This approach comprises a diverse nature of innovation performance of firms and includes innovators construed as a percentage of SMEs with product or processes innovation and a percentage

of SMEs with marketing or organisational innovation and a percentage of SMEs with in-house innovation (European Commission, 2020a). Applying this approach allows for indicating the relationship between R&D personnel and firms' innovation performance associated not only with technological innovation, but also with non-technological innovation. While technological innovation are perceived to be related with a predominantly higher level of firms' innovation activities (expressed as product or processes innovation related to the introduction of at least one new or significantly improved product or process to a firm on market and in-house innovation related to a new or significantly improved product or process innovated in house), non-technological innovation (expressed as the introduction of at least one new marketing concept or organisational method) illustrate innovation activities of many firms related particularly to services sectors (European Commission, 2020b). Considering the above, this study adopts the measurements of innovation activities of firms in accordance with the European Innovation Scoreboard (2019, 2020). The independent variables expressed the R&D personnel, addressing Asheim, Moodysson, and Tödtling's (2011) and Teirlinck and Spithoven's (2013) argument that human resources involved in innovation processes matter for innovation performance of firms. As posited earlier, previous studies imply various measurements of the R&D personnel. This research follows Raghupathi and Raghupathi (2019) approach to define human resources involved with R&D as a percentage of the R&D personnel in business, higher education and government sectors in active population. The advantage is that this approach considers not only the R&D personnel from firms, but also the R&D personnel from the research system and from governmental institutions. Therefore, following these authors' approach allows finding out more about the relationship between the R&D personnel and innovation activities of firms from the Visegrad Group countries. The relevance of the quality of firms' human resources was also included in the study as highly significant for firms' innovation processes. Based on these, to understand how the R&D personnel affect firms' innovation activities four independent variables were employed. The first of them, the R&D personnel in the business enterprise sector (*FIRM_R&D_PERSONNEL*), proxied by a percentage of the R&D personnel in business enterprise sector in active population, intends to measure the effect of firms' human resources involved in the R&D on innovation performance of firms (Teirlinck & Spithoven, 2013). The next variable, the R&D personnel in the higher education sector (*HIGH_R&D_PERSONNEL*) allows investigating if the research system supports firms' innovation performance by offering cooperation with their the R&D personnel. This is in line with the evidence that cooperation between the research system and firms mainly concerns the R&D research rather than basic research (Asheim *et al*., 2011). *HIGH_R&D_PERSONNEL* was calculated as a percentage of the R&D personnel in the higher education sector in active population. The third variable, the R&D personnel in the government sector (*GOVER_R&D_PERSONNEL*), intends to capture the importance of the R&D personnel from governmental institutions for innovation activities of firms (Bianchini *et al.*, 2019, Cortinovis *et al*., 2017) as providing background for R&D. This variable was measured as a percentage of the R&D personnel in the government sector in active population. Since firms' innovation activities may be affected by highly-skilled human resources (D'Este *et al*., 2014), the fourth independent variable (*TERITARY_EDUC*) was applied to capture the significance of human resources with tertiary education for innovation processes of firms (Lehnert *et al.*, 2020). *TERITARY_EDUC* was measured as percentage of population aged 25-34 with tertiary education.

The research also included two control variables with the aim of better isolating the effect of the R&D personnel on innovation activities of firms from the Visegrad Group countries as peripheral countries with innovation performance below the average for the European Union. As peripheral countries' R&D expenditures are greater for the public and universities sectors than the private sector (Rodriguez-Pose, 2014), gross domestic expenditure on R&D in the enterprise sector *(GERD)* was introduced to the research to verify whether the Visegrad Group countries are less inclined to firms' innovation. Because previous studies have found a close correlation between gross domestic expenditure and economic growth of firms and countries and regions (Tijssen & Winnink, 2017), it is expected that *GERD* positively influences the importance of the R&D personnel for firms' innovation performance. This variable was measured as gross domestic expenditure in the enterprise sector in EURO per inhabitant. The next control variable introduced to the study expresses gross domestic

product (*GDP*). As many scholars have found that GDP is related to economic development of firms, countries, and regions (Cortinovis *et al*., 2017), this variable allows for controlling for economic conditions of the Visegrad Group countries and the capability of human resources involved with R&D to affect innovation activities of firms. The *GDP* was measured as gross domestic product per capita in PPS. Table 1 displays the main statistics related to the variables.

Table 1. Presentation of variables' statistics

Variables	Mean	Standard Deviation	Minimum	Maximum
FIRM_R&D_PERSONNEL	0.36	0.21	0.08	0.76
HIGH_R&D_PERSONNEL	0.28	0.07	0.16	0.40
GOVER_R&D_PERSONNEL	0.17	0.05	0.02	0.26
TERITARY_EDUC	31.71	6.46	20.20	43.60
GERD	82.94	49.99	15.70	204.00
GDP	74.17	8.58	60.00	91.00

Source: own study.

Research method

Panel regression is a method commonly used to estimate the relationship between knowledge diffusion, R&D, and innovation performance (Raghupathi & Raghupathi, 2019; Rodríguez-Pose & Di Cataldo, 2015) as it offers, among others, a greater ability to uncover the relationships between variables (Hsiao, 2007). A potential limitation of this method is related to the number of unknown parameters, which increase with the number of observations (Hsiao, 2007). To examine whether the R&D personnel affect innovation activities of firms from the Visegrad Group countries, fixed effects panel regression with robust standard errors was employed. The research concerned the period 2009-2017.[1] Empirical analysis focused on SMEs. The model used for the study was as follows:

$$SME\_INNOV_{it} = FIRM\_R\&D\_PERSONNEL_{it}\beta_1 + HIGH\_R\&D\_PERSONNEL_{it}\beta_2 + GOVER\_R\&D\_PERSONNEL_{it}\beta_3 + TERITARY\_EDUC_{it}\beta_4 + GERD_{it}\beta_5 + GDP_{it}\beta_6 + \alpha_i + e_{it} \quad (1)$$

with one cross-section dimension *i* for the Visegrad Group countries (Czechia, Hungary, Poland, and Slovakia) and with one time dimension *t*=2009,…, 2017.

For the purpose of empirical analysis, three models were estimated for various dependent variables. Previously, following Raghupathi and Raghupathi (2019), the data for panel analysis was analysed to detect the stationarity of and multicollinearity among the variables. Stationarity was checked using the Kwiatkowski-Phillips-Schmidt-Shin test (KPSS). Multicollinearity among the variables was verified with the variance inflation factor (VIF). To explore the potential autocorrelation the Wooldridge test was used. The heteroscedasticity was tested applying the Wald statistic.

RESULTS AND DISCUSSION

The Effect of the R&D Personnel on Firms' Innovation Activities

The effects indicated a lack of stationarity for all variables. Thus, there was a need to log the values of variables used in the research. The results of the variance inflation factor emphasised a high correlation between certain variables (Table 2).

Since some VIFs were higher than 10, confirming multicollinearity (Raghupathi & Raghupathi, 2019), the elimination of selected variables and repetition of the VIF test was necessary. After the removal of *log GERD*, all VIFs were lower than 10 indicating that multicollinearity was not an issue in this research (Table 3).

[1] Since the last European Innovation Scoreboard 2021, firms' innovation activities have started to be defined differently from how they where classified in the earlier European Innovation Scoreboards. The inclusion to the study of the data from the last European Innovation Scoreboard 2021 would entail the lack of comparability and relevance of the results. Therefore, the study applied the latest data about firms' innovation activities from the European Innovation Scoreboard (2019, 2020), referring to the period 2009-2017.

Table 2. Effects of multicollinearity estimation

Variables	*SME_INNOV_ PROD_PROC*	*SME_INNOV_ MARK_ORG*	*SME_INNOV_ IN_HOUSE*
log FIRM_R&D_ PERSONNEL	21.215	21.215	21.215
log HIGH_R&D_ PERSONNEL	7.093	7.093	7.093
log GOVER_R&D_ PERSONNEL	3.034	3.034	3.034
log TERITARY_EDUC	1.629	1.629	1.629
log GERD	21.803	21.803	21.803
log GDP	10.549	10.549	10.549

Source: own study.

Table 3. Effects of multicollinearity estimation after elimination of selected variables

Variables	*SME_INNOV_ PROD_PROC*	*SME_INNOV_ MARK_ORG*	*SME_INNOV_ IN_HOUSE*
log FIRM_R&D_ PERSONNEL	5.030	5.030	5.030
log HIGH_R&D_ PERSONNEL	7.076	7.076	7.076
log GOVER_R&D_ PERSONNEL	3.012	3.012	3.012
log TERITARY_EDUC	1.585	1.585	1.585
log GDP	9.636	9.636	9.636

Source: own study.

Table 4 reports the results for fixed effects panel regression with robust standard errors, investigating the effect of the R&D personnel on innovation activities of firms from the Visegrad Group countries. These results concerned three models with various measurements of firms' innovation activities.

Table 4. The results for fixed effects panel regression with robust standard errors

Specification	Model 1 *(SME_INNOV_ PROD_PROC)*	Model 2 *(SME_INNOV_ MARK_ORG)*	Model 3 *(SME_INNOV_ IN_HOUSE)*
const	1.122 (1.344)	0.892 (0.639)	2.090 (1.421)
log FIRM_R&D_PERSONNEL	0.080 (0.096)	0.025 (0.036)	0.085 (0.113)
log HIGH_R&D_PERSONNEL	0.256 (0.275)	0.067 (0.192)	0.049 (0.313)
log GOVER_R&D_ PERSONNEL	0.067 (0.085)	0.162* (0.063)	0.049 (0.095)
log GDP	1.714* (0.623)	1.098** (0.306)	2.248** (0.653)
log TERITARY_EDUC	0.373 (0.175)	0.969*** (0.079)	0.452 (0.193)
p-value for test F	0.009	0.004	0.003
LSDV R-squared	0.825	0.828	0.835
Within *R-squared*	0.822	0.823	0.833
Observations	171306	193670	146359
Autocorrelation	YES	NO	YES
Heteroscedasticity	YES	NO	YES

Note: *** $p \leq 0.01$; ** $p \leq 0.05$; * $p \leq 0.10$.
Source: own study.

Since Model 1 (*SME_INNOV_ PROD_PROC*) and Model 3 (*SME_INNOV_ IN_HOUSE*) were distinguished by autocorrelation and heteroscedasticity, there was a need to exclude these two models from further analysis. As a consequence, technologically innovative SMEs from the Visegrad Group countries were excluded from further analysis. In relation to Model 2 (*SME_INNOV_ MARK_ORG)*, the

coefficient of determination (*LSDV R-squared*=0.828) was adequate to explain innovation performance of SMEs from the Visegrad countries representing non-technological innovation. The results showed that the coefficients of the R&D personnel from firms and from the research system were not significant, whereas the coefficient of the R&D personnel from governmental institutions was positive and significant. This suggests that the R&D personnel from firms and from the research system did not affect innovation activities of firms from the Visegrad Group countries. Such findings did not support Hypothesis 1 and Hypothesis 2 suggesting positive contribution of firms' and the research system's R&D personnel to innovation activities of firms from Czechia, Hungary, Poland, and Slovakia. Neither did these results fit with established theories indicating a pivotal role of efficient knowledge cooperation between firms and the research system in innovation performance. Furthermore, such observations are not consistent with the results of research by Teirlinck and Spithoven (2013) and Raghupathi and Raghupathi (2019) indicating that firms' R&D personnel is perceived as essential for innovation performance of firms. These findings are not in line with the effect of the studies by Asheim, Moodysson, and Tödtling (2011) either, pointing out a positive linkage between the R&D personnel from the research system and firms' innovation activities. On the other hand, lack of significant effect of the R&D personnel from the research system is in line with research by Raghupathi and Raghupathi (2019). This analysis suggests that contrary to the expectations, the R&D personnel from firms and from the research system do not affect innovation activities of firms from the Visegrad Group countries. Therefore, it is arguable that peripherality may cause insufficient involvement of highly-skilled personnel associated with R&D from firms and from the research system in firms' innovation performance. These outcomes conform to the argument of Rodriguez-Pose that peripheral countries are distinguished by a relatively slighter inclination towards firms' innovation and relatively underdeveloped knowledge networks (Rodriguez-Pose, 2014). This reflects the need to strengthen the cooperation between the research system and firms in the Visegrad Group countries. Furthermore, the lack of a significant relationship between firms' human resources associated with R&D and innovation activities of firms may result from insufficient conditions for firms to build the R&D personnel's capacity in order to support the process of innovation. The results showed a strong positive effect of the R&D personnel from governmental institutions on firms' innovation activities. This finding upholds Hypothesis 3 and is consistent with the discussion on the role of governmental institutions in knowledge diffusion, R&D and innovation performance of firms as presented by knowledge spillovers and endogenous growth theories and is similar to studies by Raghupathi and Raghupathi (2019) and Bianchini, Llerena, and Martino (2019). This proves that the R&D personnel from governmental institutions play an important role in innovation performance of firms from the Visegrad Group countries. Such findings suggest that national and regional policies in former Soviet satellite economies with a moderate level of innovativeness are crucial in assisting firms' innovation performance as they provide background for R&D and support innovation processes. The relative importance of governmental institutions in the Visegrad Group countries for firms' innovation activities is as expected for peripheral countries. The outcomes also indicate that the coefficient for human resources with tertiary education becomes positive and significant. This suggests that, as expected, human resources with tertiary education are linked positively with firms' innovation activities. Such findings emphasise the importance of highly-skilled human resources in enhancing innovation processes and, consequently, the growth of regions and countries. This evidence is in line with established theories and follows the studies by Lehnert, Pfister and Backes-Gellner (2020). This result implies that firms from the Visegrad Group countries benefit from human resources with tertiary education, even though the linkage between firms' R&D personnel as highly-skilled human resources and innovation activities of firms turns out to be not significant. This suggests that firms' policy is needed to improve skills of firms' R&D personnel and strengthen knowledge networks with the research system to get access to human resources with tertiary education. The results for control variables revealed that the coefficient for gross domestic product was as expected: positive and significant. The GDP is directly related to innovation processes, which is in line with the research by Cortinovis, Xiao, Boschma, and van Oort (2017). This finding highlights that economic conditions of the Visegrad Group countries support innovation activities of firms from Czechia, Hungary, Poland, and Slovakia.

Robustness Checks

To ensure the validity of the empirical results, research was replicated using three sets of panel regressions (related to three dependent variables) with slightly different independent variables than previously. Because the importance of human resources with tertiary education has been identified for innovation activities of firms from the Visegrad Group countries, a question arises about the role of human resources with second-stage tertiary education in innovation performance of firms from these former Soviet satellite economies with innovation performance below the average for the European Union. For this purpose, since highly-skilled human resources for firms' innovation activities were previously expressed by tertiary education, two new independent variables were applied: second-stage tertiary education graduates (*PHD_EDUC*) and foreign doctorate students (*FOREIGN_PHD_EDUC*). The first of them, *PHD_EDUC,* was employed to capture the influence of doctorate graduates on firms' innovation performance (Baptista *et al*., 2015), because personnel with a PhD are regarded as crucial in efficient knowledge diffusion (Teirlinck & Spithoven, 2013). This variable was measured as new PhD graduates per 1000 population at the age of 25-34. The data were retrieved from Eurostat. The second independent variable was applied following Leydesdorff, Wagner, and Bornmann's (2014) approach, according to which foreign doctorate students contribute to knowledge diffusion processes through providing external knowledge. This variable, measured as a percentage of foreign students in the total number of PhD students, reflects the relevance of high-quality human resources to innovation activities of firms. The data were collected from Eurostat. Table 5 presents descriptive statistics for the new independent variables.

Table 5. Presentation of new independent variables' statistics

Variables	Mean	Standard Deviation	Minimum	Maximum
PHD_EDUC	1.34	0.71	0.50	3.20
FOREIGN_PHD_EDUC	7.84	4.23	1.59	15.91

Source: own study.

The analysis of stationary properties of the new independent variables suggests a lack of stationarity of *PHD_EDUC* indicating the necessity to log the values of this variable. Because new independent variables were included in the model, some VIFs appear higher than 10 highlighting multicollinearity (Table 6).

Table 6. Effects of multicollinearity estimation

Variables	*SME_INNOV_ PROD_PROC*	*SME_INNOV_ MARK_ORG*	*SME_INNOV_ IN_HOUSE*
log FIRM_R&D_PERSONNEL	7.220	7.220	7.220
log HIGH_R&D_PERSONNEL	7.294	7.294	7.294
log GOVER_R&D_PERSONNEL	3.396	3.396	3.396
log PHD_EDUC	5.480	5.480	5.480
FOREIGN_PHD_EDUC	7.516	7.516	7.516
log GDP	10.257	10.257	10.257

Source: own study.

This meant the need for elimination of selected variables and repetition of the VIF test. Since *log GDP* was removed from the model and the variance inflation factor was repeated, all VIFs were lower than 10 (table 7).

As *log GDP* was eliminated, the model suffered from a lack of control variables. To address this issue and to ensure the effect of the analysis, new control variables were applied. Because patents are regarded as a driver of firms' innovation activities (Fritsch *et al*., 2020; Tödtling & Grillitsch, 2015; Raghupathi & Raghupathi, 2019), it was relevant to introduce PCT patent applications as a new control variable (*PCT PATENT*) to capture the influence of knowledge diffusion on innovation performance in peripheral countries distinguished by relatively underdeveloped knowledge networks (Rodriguez-Pose, 2014). *PCT*

PATENT was calculated as PCT patent applications per billion GDP. The data was retrieved from the European Innovation Scoreboard (2019, 2020). Foreign direct investment (*FDI*) was also applied as a new control variable due to firms' benefits from foreign knowledge (Bilbao-Osorio & Rodríguez-Pose, 2011). This variable indicates a relationship between foreign direct investment and knowledge diffusion and firms' innovation processes in former Soviet satellite economies. The *FDI* is measured as a percentage of foreign direct investment in relation to gross domestic product. The data was collected from the OECD database and Eurostat. Descriptive statistics for the new control variables are presented in Table 8.

Table 7. Effects of multicollinearity estimation after elimination of selected variable

Variables	*SME_INNOV_ PROD_PROC*	*SME_INNOV_ MARK_ORG*	*SME_INNOV_ IN_HOUSE*
log FIRM_R&D_ PERSONNEL	3.334	3.334	3.334
log HIGH_R&D_ PERSONNEL	2.478	2.478	2.478
log GOVER_R&D_ PERSONNEL	2.360	2.360	2.360
log PHD_EDUC	5.263	5.263	5.263
FOREIGN_PHD_EDUC	7.153	7.153	7.153

Source: own study.

Table 8. Presentation of new control variables' statistics

Variables	Mean	Standard Deviation	Minimum	Maximum
PCT PATENT	0.82	0.41	0.38	1.56
FDI	55.86	13.87	31.00	81.00

Source: own study.

The findings provide evidence about a lack of stationarity resulting in the necessity to log the values of variables. After the addition of the new control variables, the VIFs were lower than 10 showing that multicollinearity is not an issue in this research (Table 9).

Table 9. Effects of multicollinearity estimation

Variables	*SME_INNOV_ PROD_PROC*	*SME_INNOV_ MARK_ORG*	*SME_INNOV_ IN_HOUSE*
log FIRM_R&D_ PERSONNEL	5.946	5.946	5.946
log HIGH_R&D_ PERSONNEL	6.915	6.915	6.915
log GOVER_R&D_ PERSONNEL	2.398	2.398	2.398
log PHD_EDUC	7.599	7.599	7.599
FOREIGN_PHD_ EDUC	7.277	7.277	7.277
log PCT PATENT	7.348	7.348	7.348
log FDI	4.278	4.278	4.278

Source: own study.

The results indicated the lack of autocorrelation and heteroscedasticity of Model 5 (*SME_INNOV_MARK_ORG*). Thus, further analysis refered to SMEs from the Visegrad countries representing non-technological innovation. The coefficient of determination for Model 5 (*LSDV R-squared*=0.646) showed a sufficient explanation of innovation activities of firms from Czechia, Hungary, Poland, and Slovakia. The findings revealed that the coefficients for the R&D personnel from firms and from the research system were not significant, while the coefficient for the R&D personnel from governmental institutions was significant and positive. These results confirmed the main findings: the R&D personnel from firms and from the research system do not affect innovation activities of firms from the Visegrad countries, whereas the R&D personnel from governmental institutions do. As a result, only Hypothesis 3 was accepted. The findings demonstrated that personnel from governmental institutions dealing with R&D contributed to firms' innovation performance. These results imply that the Visegrad Group countries are the European Union peripheral countries where firms' innovation processes are more strongly stimulated by governmental institutions than by firms itself. Regarding second-stage tertiary education graduates and

foreign doctorate students, the results showed that the coefficients for these variables are not significant. These findings are not in line with the studies by Baptista, Frick, Holley, Remmik, Tesch and Âkerlind (2015), Teirlinck, and Spithoven (2013) and Leydesdorff, Wagner, and Bornmann (2014), which indicate the relevance of human resources with a PhD and foreign doctorate students for innovation processes. Such results emphasise that innovation activities of firms from the Visegrad countries are not affected by human resources with second-stage tertiary education. This suggests that the Visegrad countries, as former Soviet satellite economies with a moderate level of innovativeness suffer from still underdeveloped knowledge cooperation for effective knowledge diffusion. This suggests a necessity for further strengthening knowledge cooperation and knowledge diffusion to provide highly-skilled human resources with a PhD for the stimulation of firms' innovation processes.

Table 10. Robustness check. The results for fixed effects panel regression with robust standard errors

Specification	Model 4 *(SME_INNOV_PROD_PROC)*	Model 5 *(SME_INNOV_MARK_ORG)*	Model 6 *(SME_INNOV_IN_HOUSE)*
const	2.868***	2.114**	2.623**
	(0.385)	(0.404)	(0.471)
log FIRM_R&D_PERSONNEL	0.362*	0.062	0.358
	(0.147)	(0.238)	(0.156)
log HIGH_R&D_PERSONNEL	0.322	0.520	0.426
	(0.226)	(0.408)	(0.277)
log GOVER_R&D_ PERSONNEL	0.220**	0.423**	0.182*
	(0.051)	(0.082)	(0.059)
log PHD_EDUC	0.264	0.181	0.267
	(0.170)	(0.212)	(0.194)
FOREIGN_PHD_EDUC	0.004	0.004	0.011
	(0.010)	(0.014)	(0.012)
log PCT PATENT	0.039	0.141	0.055
	(0.099)	(0.233)	(0.096)
log FDI	0.625**	0.038	0.236
	(0.192)	(0.273)	(0.236)
p-value for test F	0.233	0.099	0.320
LSDV R-squared	0.819	0.646	0.819
Within *R-squared*	0.816	0.634	0.817
Observations	171306	193670	146359
Autocorrelation	YES	NO	YES
Heteroscedasticity	YES	NO	YES

Note: *** $p \leq 0.01$; ** $p \leq 0.05$; * $p \leq 0.10$.
Source: own study.

The outcomes indicated that the coefficients of both control variables were not significant. This reveals that patents and foreign direct investment are not linked with innovation activities of firms. This is different from the results by Fritsch, Titze, and Piontek (2020) and Bilbao-Osorio and Rodríguez-Pose (2011). Because patents are not related to innovation performance of firms from the Visegrad Group countries a question arises about the reasons for that. One of explanations is that Model 5, significant for the dependent variable depicting small and medium-sized enterprises with marketing or organisational innovation, may not directly depict patents as the results of innovation activities. In relation to foreign direct investment, the lack of a significant linkage with innovation performance of firms from the Visegrad Group countries indicates insufficient capabilities of conversion of foreign direct investment and, consequently, foreign knowledge to an increase in firms' innovation activities. Because former Soviet satellite economies are distinguished by the relationship between foreign direct investment and knowledge diffusion and firms' innovation processes, such insufficient capabilities may impact the growth of regions and countries. This implies the need for providing effective instruments to strengthen the impact of foreign direct investment on stimulating the innovativeness of firms from the Visegrad Group countries.

CONCLUSIONS

This article has investigated the drivers and sources of firms' innovation activities. Specifically, this study has addressed the relevance of human resources involved with R&D for firms' innovation activities referring to the ongoing discussion about the relationship between knowledge diffusion, R&D, and innovation processes. Special focus has been put on the R&D personnel from firms, from the research system and from governmental institutions, as essential for knowledge diffusion. The attention has been devoted to countries with a moderate level of innovativeness addressing a dearth of evidence in this field. In this regard, the study has concentrated on the Visegrad Group countries as former Soviet satellite economies, whose innovation performance is similar and below the average for the European Union and which belong to peripheral countries in the European Union. The empirical analysis has focused on small and medium-sized enterprises. This study contributes to the growing literature analysing the R&D personnel in relation to innovation processes by providing a new set of results. Applying fixed effects panel regression with robust standard errors, the study provides evidence about the lack of a significant relation between the R&D personnel from firms and from the research system and innovation activities of firms in the Visegrad Group countries. These results are important, because they raise questions about the insufficient involvement of highly-skilled personnel associated with R&D from firms and the research system in firms' innovation performance. The findings confirm that when it comes to the relationship between R&D and innovation performance, peripheral countries in the European Union feature a relatively slighter inclination towards firms' innovation and relatively underdeveloped knowledge networks (Rodriguez-Pose, 2014). The main results of this study are not in line with streams of literature and empirical evidence provided for countries with a high level of innovativeness (Teirlinck & Spithoven, 2013; Lehnert, Pfister & Backes-Gellner, 2020; Isaksen & Jakobsen, 2017; Audretsch & Belitski, 2020). Contrary to countries with a high level of innovativeness, in the analysed group of countries with a moderate level of innovativeness, human resources associated with R&D from firms and from the research system do not affect firms' innovation activities. Furthermore, human resources with second-stage tertiary education and foreign doctorate students appear not to be engaged with innovation activities of firms from the Visegrad Group countries. There emerges a need to strength knowledge cooperation between the research system and firms in the Visegrad Group countries in order to provide highly-skilled human resources. This work also expands scant studies on the role of human resources associated with R&D from governmental institutions in innovation processes (Raghupathi & Raghupathi, 2019), suggesting a significant and positive linkage of the R&D personnel from governmental institutions with firms' innovation performance.

The findings have implications for policymakers and for practice. Since the R&D personnel from governmental institutions have proven to be crucial for innovation performance of firms, there is a need to provide effective instruments to further strengthen and develop knowledge cooperation between governmental institutions and firms so as to further reinforce innovation processes. Considering the research system, the cooperation between the research system and firms should be strengthened in the Visegrad Group countries to support SMEs with highly-skilled human resources. The findings also suggest the necessity to enhance firms' conditions for building the R&D personnel's capacity to support the innovation process. Furthermore, the study shows the need to strengthen effective instruments that would allow for greater interactions between foreign direct investments and foreign doctorate students and reinforce innovation processes of firms from the Visegrad Group countries.

The research has some limitations that pose further questions to be addressed. Firstly, the study relies mainly on measures of variables and data from Eurostat and the European Innovation Scoreboard. For this purpose, it would be beneficial to use other measurements of the R&D personnel and firms' innovation activities to observe if the research would lead to similar results. Secondly, as the application of fixed effects panel regression with robust standard errors has resulted in the exclusion from the analysis of technologically innovating SMEs from the Visegrad Group countries, research should further investigate whether the obtained results would also be true if a different research method were applied. Future research should also focus on in-depth studies on the sources of a lack

of significant contribution by the R&D personnel from firms and from the research system to innovation performance of firms from the Visegrad Group countries.

REFERENCES

Audretsch, D.B., & Belitski, M. (2020). The role of R&D and knowledge spillovers in innovation and productivity. *European Economic Review, 123*, 103391. https://doi.org/10.1016/j.euroecorev.2020.103391

Asheim, B.T., Moodysson, J. & Tödtling, F. (2011). Constructing Regional Advantage: Towards State-of-the-Art Regional Innovation System Policies in Europe? *European Planning Studies, 19*:7, 1133-1139. https://10.1080/09654313.2011.573127

Baptista, A., Frick, L., Holley, K., Remmik, M., Tesch, J. & Âkerlind, G. (2015) The doctorate as an original contribution to knowledge: Considering relationships between originality, creativity, and innovation. *Frontline Learning Research*, 55-67. https://doi.org/10.14786/flr.v3i3.147

Bianchini, S., Llerena, P., & Martino, R. (2019). The impact of R&D subsidies under different institutional frameworks. *Structural Change and Economic Dynamics, 40*, 65-78. https://doi.org/10.1016/j.strueco.2019.04.002

Bilbao-Osorio, B., & Rodríguez-Pose, A. (2011). From R&D to Innovation and Economic Growth in the EU. Growth and Change. *A Journal of Urban and Regional Policy, 35*(40), 434-455. https://doi.org/10.1111/j.1468-2257.2004.00256.x

Clausen, T.H. (2009). Do subsidies have positive impacts on R&D and innovation activities at the firm level? *Structural Change and Economic Dynamics, 20*, 239-253. https://doi.org/10.1016/j.strueco.2009.09.004

Cortinovis, N., Xiao, J., Boschma, R., & van Oort, F. (2017). Quality of government and social capital as drivers of regional diversification in Europe. *Journal of Economic Geography*, *17*(6), 1179-1208. https://doi.org/10.1093/jeg/lbx001.

D'Este, P., Rentocchini, F., & Vega Jurado, J. (2014). The role of human capital in lowering the barriers to engaging in innovation: Evidence from the Spanish innovation survey. *Industry and Innovation, 21*(1), 1-19. https://doi.org/10.1080/13662716.2014.879252

Edler, J., & Fagerberg, J. (2017). Innovation policy: What, why, and how. *Oxford Review of Economic Policy, 33*(1), 2-23. https://doi.org/10.1093/oxrep/grx001

Eurostat (2020). *Research and development personnel, by sectors of performance*. Retrieved from https://ec.europa.eu/eurostat/databrowser/view/tsc00002/default/table? Lang=en on 13 September 2021

European Commission (2021). *SME definition*. Retrieved from https://ec.europa.eu/growth/smes/sme-definition_pl on December 18, 2021

European Commission (2020a). *European Innovation Scoreboard 2020*. Retrieved from https://ec.europa.eu/docsroom/documents/42981 on 21 September 2021

European Commission (2020b). *European Innovation Scoreboard 2020*. *Methodology Report.* Retrieved from https://ec.europa.eu/docsroom/documents/41861 on 21 September 2021

European Commission (2019). *European Innovation Scoreboard 2019*. Retrieved from https://op.europa.eu/en/publication-detail/-/publication/d156a01b-9307-11e9-9369-01aa75ed71a1/language-en/format-PDF/source-136061387 on 21 September 2021

Fitjar, R.D., Benneworth, P., & Asheim, B.T. (2019). Towards regional responsible research and innovation? Integrating RRI and RIS3 in European innovation policy. *Science and Public Policy*, *46*(5), 772-783. https://doi.org/10.1093/scipol/scz029

Frangenheim, A., Trippl, M., & Chlebna, C. (2020). Beyond the Single Path View: Interpath Dynamics in Regional Contexts. *Economic Geography, 6:1*, 31-51. https://doi.org/10.1080/00130095.2019.1685378

Fritsch, M., Titze, M., & Piontek, M. (2020). Identifying cooperation for innovation—a comparison of data sources. *Industry and Innovation*, *27:*6, 630-659. https://doi.org/10.1080/13662716.2019.1650253

Godlewska-Dzioboń, B., Klimczyk, P., & Witoń, A. (2019). Knowledge-Intensive Services Development in the EU: Forecasts for Selected Countries and Implications for Poland. *Entrepreneurial Business and Economics Review*, *7*(2), 101-118. https://doi.org/10.15678/EBER.2019.070206

Grillitsch, M., Schuber, T., & Srholec, M. (2019). Knowledge base combinations and firm growth. *Research Policy, 48*, 234-247. https://doi.org/10.1016/j.respol.2018.08.009

Hardy, J., Micek, G., & Capik, P. (2011). Upgrading Local Economies in Central and Eastern Europe? The Role of Business Service Foreign Direct Investment in the Knowledge Economy, *European Planning Studies, 19*:9,

1581-1591. https://doi.org/10.1080/09654313.2011.586180

Hauser, Ch., Siller, M., Schatzer, T., Walde, J., Tappeiner, G. (2018). Measuring regional innovation: A critical inspection of the ability of single indicators to shape technological change. *Technological Forecasting and Social Change*, *129*, 43-55. https://doi.org/10.1016/j.techfore.2017.10.019

Hsiao, C (2007). Panel data analysis—advantages and challenges. *TEST, 16***,** 1-22. https://doi.org/10.1007/s11749-007-0046-x

Huggins, R., Prokop, D. & Thompson, P. (2019). Universities and open innovation: the determinants of network centrality. *The Journal of Technology Transfer, 45*, 718-757. https://doi.org/10.1007/s10961-019-09720-5

Hunady, J., Pisar, P., Musa, H., & Musova, Z. (2017). Innovation support and economic development at the regional level: panel data evidence from Visegrad countries. *Journal of International Studies, 10*(3), 147-160. https://doi.org/10.14254/2071-8330.2017/10-3/11

Isaksen, A., & Jakobsen, S-E. (2017). New path development between innovation systems and individual actors, *European Planning Studies*, *25*(3), 355-370. https://doi.org/10.1080/09654313.2016.1268570

Klewitz, J., & Hansen, E.G. (2014). Sustainability-oriented innovation of SMEs: a systematic review, *Journal of Cleaner Production*, *65*, 57-75. http://dx.doi.org/10.1016/j.jclepro.2013.07.017

Koschatzky, K., Bross, U., Stanovnik, P. (2001). Development and innovation potential in the Slovene manufacturing industry: analysis of an industrial innovation survey. *Technovation*, *21*(5), 311-324. https://doi.org/10.1016/S0166-4972(00)00050-X

Lehnert, P., Pfister, C. & Backes-Gellner, U. (2020). Employment of R&D personnel after an educational supply shock: Effects of the introduction of Universities of Applied Sciences in Switzerland. *Labour Economics, 66*, 101883. https://doi.org/10.1016/j.labeco.2020.101883

Leydesdorff, L.Wagner, C.S., Bornmann, L. (2014). The European Union, China, and the United States in the top-1% and top-10% layers of most-frequently cited publications: Competition and collaborations. *Journal of Informetrics*, *8*(3), 606-617. https://doi.org/10.1016/j.joi.2014.05.002

Organisation for Economic Cooperation and Development (2021). *Foreign Direct Investment Statistics: Data, Analysis and Forecasts*. Retrieved from https://www.oecd.org/corporate/mne/statistics.htm on 21 September 2021

Odei, S.A., Stejskal, J., & Prokop, V. (2020). Revisiting the Factors Driving Firms' Innovation Performances: the Case of Visegrad Countries. *Journal of the Knowledge Economy*, *12*, 1331-1344. https://doi.org/10.1007/s13132-020-00669-7

Paliokaitė, A. (2019). An innovation policy framework for upgrading firm absorptive capacities in the context of catching-up economies. *Journal of Entrepreneurship, Management and Innovation, 15*(3), 103-129. https://doi.org/10.7341/20191534

Raghupathi, V., Raghupathi, W. (2019). Exploring science-and-technology-led innovation: a cross-country study. *Journal of Innovation and Entrepreneurship, 8:5,* 1-45. https://doi.org/10.1186/s13731-018-0097-0

Rodríguez-Pose, A. (2013). Do Institutions Matter for Regional Development? *Regional Studies, 47*(7), 1034-1047. https://doi.org/10.1080/00343404.2012.748978

Rodríguez-Pose, A. & Di Cataldo, M. (2015). Quality of government and innovative performance in the regions of Europe, *Journal of Economic Geography*, *15*(4), 673-706, https://doi.org/10.1093/jeg/lbu023

Rodríguez-Pose, A. (2014). Leveraging research, science and innovation to strengthen social and regional cohesion. *Policy paper by the Research, Innovation, and Science Policy Experts, RISE*. Retrieved from https://ec.europa.eu/info/sites/info/files/research_and_innovation/groups/rise/rodriguez-pose-leveraging_science.pdf on 08.03.2022

Rosenbusch, N. , Brinckmann, J., & Bausch, A. (2011). Is innovation always beneficial? A meta-analysis of the relationship between innovation and performance in SMEs. *Journal of Business Venturing, 26*, 441-457. https://doi.org/10.1016/j.jbusvent.2009.12.002

Sauermann, H., & Cohen, W.M. (2010). What Makes Them Tick? Employee Motives and Firm Innovation. *Management Science, 56*(12), 2134-2153. https://doi.org/10.1287/mnsc.1100.1241

Solheim, M.C.W., Boschma, R., & Herstad, S.J. (2020). Collected worker experiences and the novelty content of innovation. *Research Policy*, *49*(1), 103856. https://doi.org/10.1016/j.respol.2019.103856

Teirlinck, P., & Spithoven, A. (2013). Research collaboration and R&D outsourcing: Different R&D personnel requirements in SMEs. *Technovation, 33*, 142-153. http://dx.doi.org/10.1016/j.technovation.2012.11.005

Thomas, E., Faccin, K., & Asheim, B.T. (2020). Universities as orchestrators of the development of regional innovation ecosystems in emerging economies. *Growth and Change*, *52*, 1-20. https://doi.org/10.1111/grow.12442

Tijssen, RJ.W., & Winnink, J.J. (2017). Capturing 'R&D excellence': indicators, international statistics, and innovative universities. *Scientometrics, 114*, 687-699. https://doi.org/10.1007/s11192-017-2602-9

Tijssen, RJ.W., Yegros-Yegros, A., & Winnink, J.J. (2016). University–industry R&D linkage metrics: validity and applicability in world university rankings. *Scientometrics, 109*, 677-696. https://doi.org/10.1007/s11192-016-2098-8

Tödtling, F., & **Grillitsch**, M. (2015). Does Combinatorial Knowledge Lead to a Better Innovation Performance of Firms? *European Planning Studies 23*(9), 1741-1758. https://doi.org/10.1080/09654313.2015.1056773

Wang, Y., Ellinger, A.D., & Jim Wu, Y. (2013). Entrepreneurial opportunity recognition: an empirical study of R&D personnel. *Management Decision*, *51*(2), 248-266. https://doi.org/10.1108/00251741311301803

Whitacre, B.E., Meadowcroft, D., & Gallardo, R. (2019). Firm and regional economic outcomes associated with a new, broad measure of business innovation. *Entrepreneurship & Regional Development, 31:9-10*, 930-952. https://doi.org/10.1080/08985626.2019.1630486

Wielechowski, M., Cherevyk, D., Czech, K., Kotyza, P., Grzęda, Ł., & Smutka, L. (2021). Interdependence between human capital determinants and economic development: K-means regional clustering approach for Czechia and Poland. *Entrepreneurial Business and Economics Review, 9*(4), 173-194. https://doi.org/10.15678/EBER.2021.090411

Zygmunt, A. (2020). Do Human Resources and the Research System Affect Firms' Innovation Activities? Results from Poland and the Czech Republic. *Sustainability*, *12*(6), 2519. https://doi.org/doi:10.3390/su12062519

Zygmunt, J. (2017). Enterprises' development in peripheral regions: patterns and determinants. *Problemy Zarządzania, 15, 1*(65), 226-236. https://doi.org/doi:10.7172/1644-9584.65.14

Żelazny, R., & Pietrucha, J. (2017). Measuring innovation and institution: the creative economy index. *Equilibrium. Quarterly Journal of Economics and Economic Policy*, *12*(1), 43-62. https://doi.org/10.24136/eq.v12i1.3

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Exploring the impact of social media influencers on customers' purchase intention: A sequential mediation model in Taiwan context

Anu Kanwar, Yu-Chuan Huang

ABSTRACT

Objective: The objective of the article is to investigate the impact of social media influencers (SMI) on Taiwanese customers' intent to buy, using sequential mediating effects of parasocial interaction, perceived value, and brand image.

Research Design & Methods: The study focused on Taiwan and 384 samples were gathered using a convenience-based sampling technique. Variance-based structural equation modelling (SEM) was used to evaluate the sequential mediating effects through Smart PLS 3.0 statistical software.

Findings: The study's findings suggested that social media influencers' credibility has a statistically significant impact on generating a parasocial relationship with the audience, leading to positive perceived quality and brand image that eventually results in purchase intention.

Implications & Recommendations: The full sequential mediating model reflected that brand managers should choose the right social media figure who can connect with consumers and who simultaneously acts as a catalyst for the advertising industry.

Contribution & Value Added: This study contributes in anticipating consumer behaviour and understanding the role of social media influencers credibility in developing a sense of intimacy with the audience and examining its antecedents in one conceptual model in the form of the comprehensive and sequential model, which is a novel theoretical insight for media figures and consumer purchase behaviour literature.

Article type:	research article
Keywords:	social media influencers; parasocial interaction; perceived quality; brand image; purchase intention
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INTRODUCTION

Taiwan is one of Asia's most connected economies, with 86.5% of the total population connected to the internet and 93% of people using a cell phone. Taiwan's population is highly reliant on social media, with around 88% of the entire population active on social media platforms (Kemp, 2021). YouTube, Facebook, Line, and Instagram are the topmost-used social media platforms in Taiwan. As markets grow and change, consumers' tastes for goods and services become more specialised. The collaboration between marketers and social media influencers is one of the more recent developments in marketing. Marketers may get a competitive edge by working with the proper social media influencers.

Social media has become a vital part of Taiwan's population as it is used by the younger generation and different age groups. In 2018, Taiwanese marketers spent over 510 million US dollars on social media advertising and were considered one of the greatest per-capita penetration rates. Facebook is

the most popular social networking site in Taiwan (Social Media in Taiwan, Statista, 2021). The study looked at the impact of social media influencers on the Taiwanese audience and the impact of parasocial interaction on audience perceived value and brand image, which influences customer purchase intent. Moreover, as customers today get closer to their favourite social media influencers by following them online, the study aimed at investigating antecedents of developing parasocial interaction and the impact of parasocial interaction on perceived value, brand image, and buying behaviour. The latest studies (Kemp, 2021) indicate that 97% of the Taiwanese population use smartphones to create an opportunity for businesses to reach most of the target audience and thus brands have more chance to become viral and influence prospective customers. Social media influencer marketing appears to be the next best thing for marketers in Taiwan as influencers are deliver authentic and touched-up content sharing brands' values and engaging people.

There is a dearth of research focusing on Taiwan's influencers' marketing and its impact on the population. Furthermore, parasocial interaction has emerged as a fruitful process that can entice followers through influencers' continuous exposure on various social media platforms that eventually leads and incline customers towards intent to buy endorsed products. Finally, the sequential mediating impact of parasocial interaction, perceived value, and brand image has never been studied earlier. This study showed the effects of an evolutionary trend in marketing communication with the emergence of social media marketing and social media influencers' origin in influencing customers' purchasing behaviour.

Social media influencers are online media figures who create content with their knowledge, skills, and creativity, influencing the audience (DeVeirman *et al*., 2017). Additionally, the growing social media trend has paved the way for social media influencers who became famous online with their knowledge and expertise on different topics like food, fashion, travel, music, and a lot more (Lou & Yuan, 2019). Moreover, different brands have started hiring social media influencers who have already made a name in different domains with millions of followers following them online, and it is believed that consumers prefer the recommendation of these influencers, and thus, using social media influencers for communicating and advertising their brands has emerged as an effective and profitable means for the marketers (DeVeirman *et al.*, 2017; Godey *et al*., 2016).

Influencer marketing has to be researched to learn how social media influencers forge connections with their followers and further affect purchase intentions in today's digital environment, which is characterised by a rapidly rising trend across multiple social media platforms. Many studies used and investigated various constructs, including brand image, self-concepts, fear of missing out, social comparison, consumerism, parasocial relationships, and personal self-disclosure (Hermanda *et al.*, 2019; Leite *et al*., 2022). In addition, this article aims to enrich research on the relationship between social media influencer's credibility and customer's buying intent through sequential mediating effects of parasocial interaction, perceived value, and brand image, since prior research on this topic was quite limited. To the best of our knowledge, the model is novel, and it makes a significant contribution to the field of parasocial bonds between media figures and audiences, which encourage customers to follow their favourite media figures and buy the brands that their favourite media figures promote.

The study began with a deductive approach, which aided in the development and confirmation of theory, which began with abstract notions and theoretical relationships and progresses to more concrete empirical evidence (Neuman, 2014). In addition, the current study is based on larger, more representative population samples. As a result, the authors used a quantitative research approach that focuses on collecting numerical data and extrapolating it to large groups of people or investigating a specific issue through survey-based approach. In this research study, the convenience sampling method was used to subjectively select people at random who willingly participated in the study, and samples were readily available (Neuman, 2014). To test structural model, IBM SPSS Statistics software v. 25 was employed to transform the negative coded items and analyse respondents' demographic profiles, whereas SMART PLS 3.0 was employed to test and evaluate the outer measurement and inner structural models. The mediation paths were analysed with the bootstrap approach using 5000 samples (Hayes, 2009). The study helped in exploring following objectives:

- Does the credibility of social media influencers increase the parasocial interaction relationship with the audience, hence increasing the favourable sense of product value and brand image in customers' minds?
- Does influencers' credibility influence consumers' perceptions of value and brand image, causing them to be more likely to buy a specific brand?
- Is the credibility of social media influencers sufficient to persuade customers to purchase products?

The remainder of the article is organized as follows. The second section will review the relevant literature and develop the hypotheses. The model, data, and estimation method will be presented in section three. Section four will present the empirical findings and discuss them. Section five will wrap up the article by discussing theoretical and practical implications.

LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

Influencer Marketing

Influencer marketing is a digital version of word-of-mouth marketing that focuses on employing media figures to spread a brand's message to a bigger audience (Byrne *et al*., 2017). Influencer marketing is considered more cost-effective and successful compared to traditional marketing methods (Sharma, 2016) and a way to reach out to potential customers who might have been overlooked by conventional methods (Momtaz *et al.*, 2011). Today's consumers rely on social media platforms to communicate their opinions, views, and much more. With such significant potential customers, these platforms have also become requisite marketing channels for marketers to market their brands (Kaplan & Haenlein, 2010).

Marketers use influencer marketing to reach out to influencers with large followers, educate them about different brands, and create a clear picture in the minds of their followers with the help of engaging content (Funk, 2013). Marketers have realized the value of working with social media influencers (Pöyry *et al*., 2019) to disseminate vital information to the target market while also lowering the perceived risk associated with brands (Chatterjee, 2011; Pang *et al*., 2016). As more people use social media to seek information, marketers employ influencers and celebrities to market their brands on social media channels to reach a wider audience and increase their response rate (Woods, 2016). Customers pay more attention to reviews given by influencers than to the brand's corporate page; therefore, influencer marketing has become critical for spreading knowledge about freshly launched items and building a reputation in customers' minds (Saima & Khan, 2020).

According to the latest report, influencer marketing is expected to rise to $16.4 Billion in upcoming years, and 89% of marketers claim that influencer marketing has an advantage over other forms of marketing (Geyser, 2022). In Taiwan, up to 88% of the population uses social media. On average, they spend two hours every day on social media. With 90% of Internet users in Taiwan, YouTube and Facebook are the most frequently used sites, while Line places third with 82.6% of users. Instagram is in the fifth place, with 54% of people using it and is increasing popularity among young people (Kemp, 2021).

Social Media Influencers' Credibility

Social media influencers are a modern category of independent third-party supporters who shape the audience's attitude with social media through tweets and blogs (Gorry & Westbrook, 2009). Consumers trust influencers more than other online media figures, and influencer marketing is also less invasive and more engaging than typical internet ads such as pop-ups and banners (Chopra *et al.*, 2021). Influencers also contribute to new knowledge and can influence the perceptions and actions of others, such as helping prospective customers to make buying decisions (Liu *et al*., 2015). According to a few studies, using famous influencers to attract prospective consumers can enhance the likelihood of customer involvement and offer value to them, resulting in advantages for marketers (Ananda *et al*., 2016).

The source credibility model describes a message's success and identifies the three most significant elements influencing purchase intent. Firstly, the product endorser's beauty is viewed as sensual, gorgeous, refined, and elegant. Secondly, the message is trustworthy as it relies on endorser's presumed

dependability, fairness, and reliability (Erdogan, 1999). When an influencer's social media content resonates with followers, they trust their viewpoint (Sudha & Sheena, 2017). A high level of source credibility indicates a strong connection among the endorser and the audience, improving brand image and leading to buying intent. Choosing the correct media figure is critical for marketers since consumers grasp messages swiftly if the endorser is well-known, reputable, and attractive, which will increase the customer's interest in purchasing the products/services (Lee, 2017).

H1: Social media influencers' credibility significantly impacts consumer buying intention.

Impact of Social Media Influencers on Parasocial Interaction

Parasocial interaction is characterised as an illusionary experience in which users interact with media personas as if they were physically present and involved in a mutually beneficial interaction. Essentially, people feel as though they are having a direct two-way communication with another person, not a mediated one (Rubin *et al*., 1985). Influencers on social media apps regularly utilize various channels to affect their followers' attitudes through lucrative posts, vlogs, and blogs (Lin *et al.*, 2021). Followers frequently regard their favourite social media influencers as friends and this closeness leads to the formation of a parasocial relationship (Yuksel & Labrecque, 2016). Moreover, strong parasocial interaction between influencers and followers is elicited by a good fit between social media influencers and products endorsed by influencers. Social media influencers' credibility (attractiveness, similarity, trustworthiness, expertise) is crucial in developing parasocial relationships between influencers and followers (Bond, 2018; Yuan & Lou, 2020). The chances of parasocial interaction increase with an increase in perception of media figures' similarity in the minds of social media users (Ballantine & Martin, 2005). Social media figures create exciting and entertaining information that matches their personalities and preferences, developing and strengthening parasocial bonds with their followers that impact the audience's decision-making. Parasocial contact not only improves mutual understanding between endorsers and followers, but also strengthens the credibility rating of endorsers, resulting in good customer sentiments towards the brand and increased buy intent (Song & Zinkhan, 2008).

Parasocial Interaction and Perceived Value

Consumers assess the worth of a product based on an overall judgment of the product and compare its benefits and the cost incurred while buying the product (Asgarpour *et al.*, 2014; Zeithaml, 1988). Marketers select influencers to communicate their brands to bring sufficient value to target audiences, leading audiences to search for and buy suggested brand items (Uzunoğlu & Misci Kip, 2014). With the help of building large audiences, targeting and attracting them, and gaining their attention, influencers can bring value to prospective customers (Campbell & Farrell, 2020).

The emergence of influencer marketing has become a great way to connect with the audience as consumers depend more on influencers' recommendations that ultimately influence their buying intention (Hu *et al*., 2020). Social media influencers have such a grasp on their followers that they may trigger their psychological responses (Yuan & Dennis, 2019), and followers start aligning their emotions, evaluate and show positive perception towards a brand in the presence of a strong parasocial relationship with social media figures (Liu *et al*., 2019). Parasocial interaction (PSI) transfers the positive value of media figures to endorsed products, enhancing followers' attitudes towards endorsed brands (Gong & Li, 2017). Social interaction has also proven to impact perceived value and purchase intention in research on smartphone addiction and instant messaging (Zhang *et al.*, 2017).

H2: The relationship between the social media influencer (SMI) and consumer purchase intent is mediated by parasocial interaction and perceived value.

Parasocial Interaction and Brand Image

Brand image plays a beneficial role in influencing consumer behaviour as consumers always choose brands on their image. When consumers have no prior experience with the product, they are more likely to 'trust' a well-known or familiar face (Schiffman & Kanuk, 2000). Few researchers have concluded that Social media influencers utilize the products that match their lifestyles, and they share the

reviews about these products online, and in turn, products that are recommended by social media influencers are more trustable resulting in the majority of customers purchasing the recommended products (Sekhon *et al*., 2015).

Marketers use media characters that have built a strong parasocial relationship with their followers to push their products to gain a sustainable competitive edge (Kim *et al*., 2015). Moreover, PSI can positively or negatively influence followers based on the fond or antipathetic feeling followers show towards media figures that affect the evaluation and image of the brand. Strong PSI improves brand image and can generate more value for brands (Ballantine & Martin, 2005). The connection created by media figures with their followers through PSI helps transfer the same relationship to endorsed brands in the minds of their followers that finally leads to buying decisions (Lueck, 2015). Some studies have concentrated on enhancing and improving the connection between social media figures and their followers to boost the brand's perceived value and customer satisfaction (Vendemia, 2017). Thus, we posit:

H3: Parasocial interaction and brand image mediate the relationship between SMIs and purchase intention.

Effects of Perceived Value and Brand Image on Purchase Intention

Brand image is expressed by consumers' association with the brand and contains a significant meaning in consumer memory that helps create a positive memory in the customer's mind and form a positive attitude towards the specific brand (Aaker, 2014). As a result of a positive brand image, customers feel inspired and inclined to purchase that brand. Brand image is divided into Functional and hedonic brand image (Mao *et al*., 2020). In functional, customers gather quality and value information about brands and identify with brands based on information whereas, in hedonic image, customers have expectations and feeling towards brands, and these brand images have a significant impact on purchase intention (Adetunji *et al.*, 2017; Lien *et al.*, 2015). Thus, customers have high purchase intentions towards products having a positive brand image.

The ratio of advantages or benefits customers obtain from marketers' products/services to costs borne by customers is known as perceived value (Yang & Peterson, 2004). As customers judge product value by evaluating the gap between perceived benefits and perceived costs, increased perceived value typically leads to positive outcomes like satisfaction and loyalty (Ledden *et al.*, 2007). For marketers, perceived value plays a vital role as customers prefer buying products/services with high perceived value (Chen & Quester, 2006). When a social media figure endorses a brand, there is high probability audience will exhibit positive and favourable impressions of the brand and have a preference for the brand, which fosters a positive perception of the brand when they have a closer parasocial bond (Liu M.T. *et al.*, 2019). Through social media influencers and brand collaborations, audiences are continually exposed to companies, products, and services. This collaboration improves brand recognition and creates a brand image to which the target audience can relate. Followers who identify with SMIs are more likely to notice and associate the cooperating brand with some of the influencers' appealing attributes and traits (Aljafari, 2019; Khamis *et al*., 2017).

H4: Perceived value and brand image mediate the relationship between SMIs and purchase intention.

Followers gravitate towards social media characters who are more persuasive and credible, resulting in strong parasocial relationships between influencers and followers (Djafarova & Rushworth, 2017). Parasocial interaction is an essential aspect of consumers' lives since it can influence their views and behaviour (Dwivedi & Johnson, 2013; Schramm & Wirth, 2010). We have argued that strong parasocial interaction has a favourable impact on perceived value and that positive perceived value influences brand image in customers' perceptions, resulting in consumers' intent to buy a specific product. Thus, we conclude:

H5: Parasocial interaction, perceived value, and brand image sequentially mediate the relationship between SMIs and purchase intention.

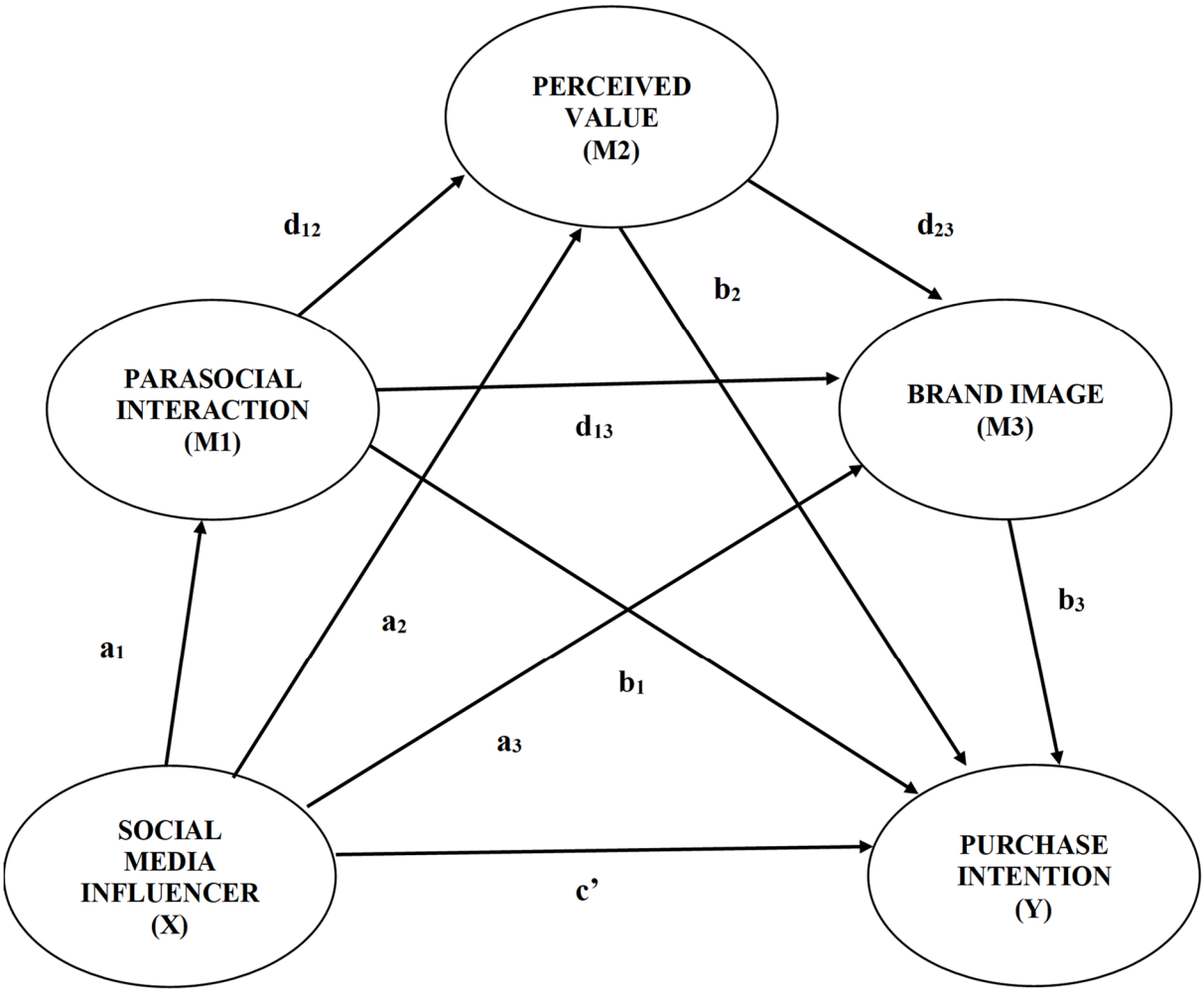

Figure 1. Theoretical model

Notes: H1= Social Media Influencer → Purchase Intention= c'; H2= Social media influencer → Parasocial interaction → Perceived value → Purchase intention = $a_1d_{12}b_2$; H3= Social media influencer → Parasocial Interaction → Brand image → Purchase intention = $a_1d_{13}b_3$; H4= Social media influencer → Perceived value → Brand image → Purchase intention = $a_2d_{23}b_3$; H5= Social media influencer → Parasocial interaction → Perceived value → Brand image → Purchase intention = $a_1d_{12}d_{23}b_3$

Source: own elaboration.

RESEARCH METHODOLOGY

To evaluate the measurement and structural model, 384 samples of the Taiwanese population were gathered. To meet the study's objectives, participants must have belonged to the population of social media users, which includes having access to the Internet, an Instagram account, and following influencers. This is necessary since the participants must be familiar with social media platforms and be exposed to influencer marketing. The online survey was created using Google Forms and disseminated via social media platforms (Facebook, LINE, and Instagram). The survey questionnaire was based on validated scales from previous studies and the analysis includes five variables: social media influencers, parasocial interaction, perceived value, brand image, and purchase intention. The authors used a 5-point Likert scale with 1-5 scales (1 – disagree, 2 – strongly disagree, 3 – neutral, 4 – agree, 5 – strongly agree). The survey questionnaire was first designed in English and then translated to the mandarin version.

The survey questions are created based on a review of the literature and previously validated scales. There are six sections total in the survey, each with a 5-point Likert scale. Sample characterizations are presented in the first section. The second section consists of social-media influencers' credibility construct (SMI's attractiveness, expertise, credibility) with six items and the questionnaires are adopted from previously validated study (Munnukka *et al.*, 2016). The third section consists of par-

asocial interaction construct reflecting six items and questions are adopted and modified from previously validated study (Dibble *et al*., 2016). The fourth section consists of perceived value construct with five items and questions adopted from validated study (Walsh *et al*., 2014). The fifth section consists of brand image construct reflecting five items and questions adopted and modified from previously validated study (Schlecht, 2003). The sixth section consists of purchase intention indicating five items and questions adopted and modified from previously validated study (Cosenza *et al*., 2015; Magno, 2017). On a 5-point Likert scale from "strongly disagree (=1)" to "strongly agree (=5)," respondents stated how much they agreed or disagreed with each section's item.

Data Analysis Tools

The SPSS v. 25 was employed to transform the negative coded items and analyse respondents' demographic profiles, whereas SMART PLS 3.0 was employed to test and evaluate the outer measurement and inner structural models. The mediation paths were analysed with the bootstrap approach using 5000 samples (Hayes, 2009).

Descriptive Statistics

Throughout a five-week survey period, we received 408 questionnaires, 24 of which were found to be invalid due to incomplete questionnaires, leaving us with a final sample of 384 respondents. This sample size was also sufficient to handle key convenience sampling issues like generalizability and representativeness (Alalwan *et al*., 2016; Wang & Yu, 2017). Table 1 below displays the respondents' demographic profile, representing 384 people who took part in the study. Out of 384 responses, 135 were male (35.2%), 207 were female (53.9%), and 42 choose not to reveal their gender (10.9%). The sample population's age ranged from 18 to 50 years old and above. Out of 384 respondents, 172 (44.8%) were between the ages of 18 and 24, 116 respondents (30.2%) were between the ages of 25 and 30, 42 respondents (10.9%) were between the ages of 31 and 40, 26 respondents were between the ages of 41 and 50, and 28 (7.3%) respondents were between the ages of 51 and above. Out of 384 respondents, 204 were students, 146 were working professionals, and the remaining picked 'others' as their vocation.

Respondents were also asked if they followed any social media influencers on social media sites (Facebook, Instagram, Tik-Tok, and YouTube) and if they bought any items recommended by their favourite social media influencers. Table 2 reveals that 297 (77.3%) of the 384 respondents supported following social media influencers on various social media applications, whereas 87 (22.7%) said they did not follow any social media influencers on any social media platform. In addition, 218 (56.8%) of the 384 respondents had purchased items suggested by their favourite social media influencers at least once, while 166 (43.2%) had never purchased products recommended by social media influencers.

Table 1. Respondent's demographic profile

DEMOGRAPHIC PROFILE	VARIABLES	FREQUENCY	PERCENT	VALID PERCENT	CUMULATIVE PERCENT
GENDER	Male	135	35.2	35.2	35.2
	Female	207	53.9	53.9	89.1
	I prefer not to say	42	10.9	10.9	100
Total:		384	100	100	
AGE	18-24	172	44.8	44.8	44.8
	25-30	116	30.2	30.2	75
	31-40	42	10.9	10.9	85.9
	41-50	26	6.8	6.8	92.7
	51 and above	28	7.3	7.3	100
Total:		384	100	100	
OCCUPATION	Student	204	53.1	53.1	53.1
	Working professional	146	38	38	91.1
	Others	34	8.9	8.9	100
	TOTAL	384	100	100	

Source: own study.

Table 2. Frequency of following influencers and buying recommended products

VARIABLES	VARIABLES	FREQUENCY	PERCENT	VALID PERCENT	CUMULATIVE PERCENT
FOLLOW AT LEAST ONE INFLUENCER	YES	297	77.3	77.3	77.3
	NO	87	22.7	22.7	100
Total:		384	100	100	
BUYING RECOMMENDED PRODUCTS	YES	218	56.8	56.8	56.8
	NO	166	43.2	43.2	100
Total:		384	100	100	

Source: own study.

RESULTS AND DISCUSSION

Smart PLS statistical software helped examine the internal reliability and validity of constructs for the outer model and assesses the relationship between defined constructs for the inner structural model (Barroso *et al*., 2010). The measurement model was evaluated to ensure that the structural model included research constructs with acceptable reliability and validity. On the other hand, the structural model was evaluated using bootstrapping technique to determine the research model's predictive utility and path coefficients and their statistical significance. Partial least squares structural equation modelling (PLS-SEM) variance-based statistical software are appropriate for exploratory study, theory development & supporting complex model (Hair *et al*., 2011; Latan, 2018).

Measurement Model

To check the quality of the measurement (outer) model, the factor loading, convergent validity, and internal consistency were examined (Hair *et al.*, 2019). The result of the outer model showed that the factor loadings of most of the indicators were above the cut-off value of 0.7 (Hair *et al.*, 2019). One indicator (PV3) was retained with factor loading less than 0.7 to achieve the composite reliability and average variance extracted, and the indicators with factor loading less than 0.40 were omitted.

Table 3. Factor loadings of constructs

Constructs	Brand image	Purchase intention	Parasocial interaction	Perceived value	Social media influencers
BI1_	0.728				
BI2	0.776				
BI3_	0.794				
BI5_	0.706				
PI1		0.763			
PI2_		0.807			
PI3_		0.803			
PI5_		0.753			
PSI3_			0.852		
PSI4_			0.861		
PSI5_			0.817		
PV1				0.774	
PV2_				0.754	
PV3_R				0.689	
PV4_				0.727	
PV5_R				0.722	
SMI1					0.856
SMI2_					0.838
SMI6_					0.704

Note: BI= Brand image; PI= Purchase intention; PSI= Parasocial interaction; PV= Perceived value; SMI= Social media influencer.
Source: own study.

Convergent Validity

Internal reliability and validity of outer model was tested by looking into convergent reliability and discriminant validity. Cronbach's alpha value demonstrated the constructs' internal consistency. As shown in Table 3, Cronbach's alpha value of SMI was 0.752, PSI was 0.82, perceived value was 0.787, brand image value was 0.742, and purchase intention value was 0.805. Each construct's Cronbach's alpha value was greater than the standardized value of 0.7 (Taber, 2018), indicating the strong reliability of each item.

Each item must load with respect to its constructs with values larger than 0.6 in order to ensure convergent validity, which determines whether each item reflects in accordance with the indicators mentioned and measures that construct (Ur Rehman *et al.*, 2019). As shown in Table 4, the factor loading are greater than 0.6 for each item of constructs. Moreover, the Average Variance Extracted for each construct should be more than 0.5, and the value of composite reliability should be more than 0.7 (Hair et al., 2017). As per Table 4, the AVE and Composite reliability results exceeded the cut-off value, showing no issues with measurement constructs' convergent validity.

Table 4. Convergent reliability of constructs

Constructs	Cronbach's alpha	rho_A	Composite reliability	Average Variance Extracted (AVE)
Brand image	0.742	0.744	0.838	0.565
Purchase intention	0.788	0.790	0.863	0.612
Parasocial interaction	0.798	0.801	0.881	0.712
Perceived value	0.787	0.794	0.854	0.539
Social media influencers	0.720	0.735	0.843	0.643

Source: own study.

Discriminant Validity

Discriminant validity is 'the extent to which the measure is adequately distinguishable from related constructs within the nomological net' (Dinev &Hart, 2004). Table 5 shows the Fornell-Larcker criterion that reflects constructs square root of Average Variance Extracted. Square root value of average variance extracted for brand image is (0.752), for purchase intention is (0.782), for parasocial interaction is (0.844), for perceived value is (0.734), and for social media influencer is (0.802) resulting in established discriminant validity as mentioned in Table 5.

Table 5. Fornell and Larcker criterion for discriminant validity

Constructs	BI	PI	PSI	PV	SMI
BI	0.752				
PI	0.686	0.782			
PSI	0.677	0.663	0.844		
PV	0.650	0.709	0.612	0.734	
SMI	0.611	0.571	0.624	0.590	0.802

Source: own study.

Structural Model

The R^2 (coefficient of determination) and Q^2 (cross-validated redundancy) values were calculated with the help of SMART PLS to evaluate the overall predictive power of the structural model. The R^2 values reflect the variance explained by each variable, and its cut-off values (0.19, 0.33, 0.67) showed small, moderate, and substantial variance explained by different endogenous variable (Chin, 1998). Table 6 shows R^2 value brand image was 0.57 (moderate), indicating that brand image explained 57% of the variance; Parasocial interaction R^2 value was 0.389 (moderate), indicating that parasocial interaction explained 38.9% variance; Perceived value had an R^2 value of 0.445 (moderate), indicating that perceived value explained 44.5 % variance, and purchase intention had an R^2 value of 0.621 (moderate) that explained 62.1% variance.

The Q^2 value evaluates the inner model's predictive relevance (Hair *et al*., 2014), and if the value of Q^2 is greater than 0, it indicates good predictive relevance of the inner model (Hair *et al*., 2014). As per Table 6 below, the outcome of Q^2 values of all endogenous variables, *i.e*., brand image had Q^2 value 0.317, purchase intention Q^2 value was 0.371, parasocial interaction had Q^2 value 0.273, and perceived value's Q^2 value was 0.233,which thus, explains inner model predictive relevance. Finally, the common method bias was evaluated using the full collinearity VIF (Variance Inflation Factor) test. The full collinearity VIF scored range from 1.27 to 1.95, suggesting no multicollinearity issues.

Global Goodness of Fit (GoF)

The global goodness of fit was calculated to determine the model's overall predictive power and was calculated by: GoF = $\sqrt{AVE} \times \sqrt{R^2}$ = 0.616.

The goodness of fit for the present model was 0.616 which shows good explaining power (GoF_{small}= 0.10, GoF_{Medium}= 0.25, GoF_{Large}= 0.36) (Wetzels *et al.*, 2009).

Table 6. Determination of coefficients and predictive relevance of endogenous variables

Endogenous variable	R^2 values	Threshold	Q^2 values	Threshold
Brand image	0.57 (moderate)	0.19 (small) 0.33 (moderate) 0.67 (substantial)	0.317	>0
Purchase intention	0.621 (moderate)		0.371	
Parasocial interaction	0.389 (moderate)		0.273	
Perceived value	0.445 (moderate)		0.233	

Source: own study.

Hypothesis Testing

The present study's model was designed based on Model 6 (3 mediators) of the SPSS PROCESS (Hayes, 2018), and SMART PLS 3.0 statistical software was employed to test the designed hypothesis with bootstrap resampling of 5000 to examine the mediation model and 95% bias-corrected confidence interval was generated for mediators.

According to the data analysis findings in Table 7, the direct effect of social media influencers on purchase intention was non-significant (c'=0.052, p=0.327), while the total effect of social media influencers on buying intent was statistically significant (c=0.571, p=0.000). According to Baron and Kenny (1986), the first condition of mediation analysis is that the total effect of an independent variable on a dependent variable is statistically significant. As a result, we can move on with our investigation of mediating variables.

Table 7. Test results of structural effects (*p<0.05, **p<0.01, ***p<0.001)

STRUCTURAL PATH	Path Coefficient	T Statistics	P Values	f^2 (effect size)
BI -> PI (b_3)	0.258	4.476	0.000	0.075 (small)
PSI -> BI(d_{13})	0.360	5.850	0.000	0.157 (medium)
PSI -> PI (b_1)	0.230	4.030	0.000	0.063 (small)
PSI -> PV (d_{12})	0.399	7.019	0.000	0.175 (medium)
PV -> BI (d_{23})	0.310	5.621	0.000	0.124 (small)
PV -> PI (b_2)	0.370	6.752	0.000	0.178 (medium)
SMI -> BI (a_3)	0.204	3.764	0.000	0.052 (small)
SMI -> PI (c')	0.052	0.980	0.327	0.004 (negligent)
SMI -> PSI (a_1)	0.624	16.951	0.000	0.638 (large)
SMI -> PV (a_2)	0.340	6.143	0.000	0.127 (small)

Source: own elaboration in Stata.

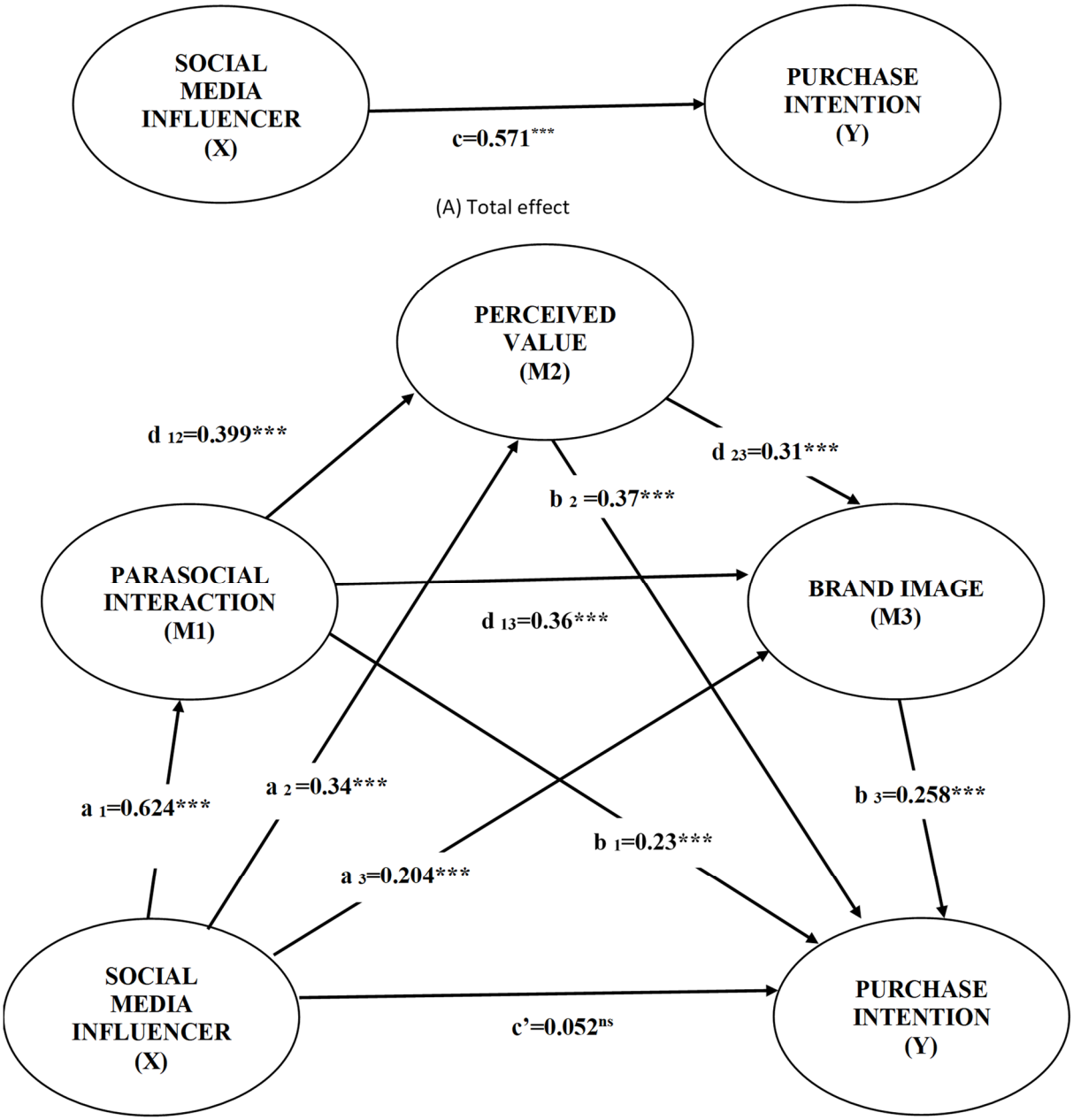

Figure 2. Structural model
Source: own elaboration.

Mediating Effects

The next stage was to look at the impact of mediators on purchase intention. Table 8 demonstrates that the specific indirect impact of social media influencers on purchase intention via parasocial interaction and perceived value was statistically significant (β=0.092, t=4.801, p value=0.000). The mediating effect of parasocial interaction and brand image on the relationship between social media influencer credibility and purchase intention was statistically significant at (β =0.058, t=3.425, p=0.001). Further, the mediating effect of perceived value and brand image on purchase intention was also statistically significant (β =0.027, t=2.875, p=0.004) Thus, the results of data analysis were in alignment with the designed hypothesis that results in supporting the below hypothesis:

H2: Parasocial interaction and perceived value mediate the effect of SMIs on purchase intention.

H3: Parasocial interaction and brand image mediate the effect of SMIs on purchase intention.

H4: Perceived value and brand image mediate the effect of SMIs on purchase intention.

Finally, the indirect effect with three mediators' parasocial interaction, perceived value, and brand image on purchase intention was statistically significant (β=0.02, t=2.955, p=0.003), which supports the final hypothesis:

H5: Parasocial interaction, perceived value, and brand image indirectly impact the relationship between SMIs and purchase intention.

Table 8. The summary of mediation analysis results (*p<0.05, **p<0.01, ***p<0.001)

(A) Total effect			
Structural path	Path coefficients	T-statistics	p-value
SMI -> PI (c)	0.571	14.205	0.000
(B) Direct effect (H1)			
Structural path	Path coefficients	T-statistics	p-value
SMI -> PI (c')	0.052	0.98	0.327
(c) Indirect effect (H2, H3 & H4)			
Structural path	Path coefficients	T-statistics	p-value
SMI -> PSI -> PV -> PI ($a_1d_{12}b_2$)	0.092	4.801	0.000
SMI -> PSI -> BI -> PI ($a_1d_{13}b_3$)	0.058	3.425	0.001
SMI -> PV -> BI -> PI ($a_2d_{23}b_3$)	0.027	2.875	0.004
(D) Indirect effect (H5)			
Structural path	Path coefficients	T-statistics	p-value
SMI -> PSI -> PV -> BI -> PI ($a_1d_{12}d_{23}b_3$)	0.02	2.955	0.003

Source: own elaboration in Stata.

Results and Discussion

The study results contribute to the existing literature by investigating the impact of social media influencers (credibility), parasocial interaction, perceived value, and brand image on user purchase intention. We also provided empirical data to support the multivariate influence of these four dimensions on purchase intent among customers. According to the study's findings, social media influencers had no significant direct effect on consumer purchase intent. The findings contradicted previous research, which investigated social media influencers' direct and indirect effects on purchase intent (Lou & Yuan, 2019; Pamela Lukito & Yustini, 2019). The reason for this contradiction is the fully mediating effects of the other three dimensions parasocial interaction, perceived value, and brand image on the relationship between social media influencers' credibility and user purchase intent. While the findings were consistent with those of other studies that have concluded that source trustworthiness had an impact on the establishment and strengthening of parasocial relationships, which aids in increasing customer purchasing intent (Bond, 2018; Lou & Kim, 2019), it is important to note that social media influencers significantly impact user purchase intent without introducing all three mediators*, i.e*. parasocial interaction, perceived value, and brand image. However, the direct effect of social media influencers on purchase intent becomes non-significant after introducing multiple mediators.

The study showed that social media influencers' credibility had a beneficial effect on parasocial interaction and the perceived value aligned with the previous findings (Bond, 2018; Pamela Lukito & Yustini, 2019). The more attractive, knowledgeable, similar, and familiar social media influencers appear to users, the stronger the parasocial interaction was. The perception of social media influencers improved the perceived value of endorsed products in buyers' eyes. Furthermore, results showed the channelled effect of social media influencers on parasocial interaction and the implications of parasocial interaction on perceived value, which increased consumers' purchase intention, implying that parasocial interaction and perceived value mediate the relationship between social media influencers and consumers' purchase intent.

The parasocial interaction was then hypothesized to influence brand image, which was hypothesized to influence purchase intention. These study findings supported this hypothesis and confirmed

prior research that parasocial interaction impacts brand image and that brand image is a predictor of consumer purchase intent (Febriyantoro, 2020; Sokolova & Kefi, 2020). Customers' perceptions of brands is essential, impacting their purchasing decisions. When a brand's image deteriorates in customers' minds, they might simply switch to a competitor's brand and vice versa.

Finally, the sequential inclusion of multiple mediators provides a broader understanding of how social media influencers influence customers' purchase intention. The study results showed that parasocial interaction, perceived value, and brand image sequentially mediated social media influencers' relationship with customers' purchase intention.

CONCLUSIONS

Marketers are increasingly promoting their businesses through digital platforms. Social media marketing and influencer marketing have shown to be the most effective when it comes to building a marketing strategy and reaching out to a large audience.

In this study, we looked at the credibility of social media influencers (attractiveness, experience, and similarity) and their impact on the development of parasocial interaction. Furthermore, we investigate the sequential mediating effect of social media influencers on customer buying intention via perceived value and brand image and the direct relationship between social media influencers' credibility and consumer buying intention. The findings of this study could help brand marketers better comprehend the persuasive cues used by influencers who promote their products (Sokolova & Kefi, 2020).

The present research adds value to the literature in several ways. Prior studies looked at parasocial interaction role as mediators and moderators independently. This study aimed to add to our understanding of the parasocial interaction, perceived value, and brand image in the relationship between social media influencers and users' purchase intent. Therefore, it contributes to the further understanding of consumer buying intent.

Secondly, this research contributes to the literature on the influence of social media influencers credibility on their followers in anticipating consumer behaviour and understanding the role of influencer credibility, which develops a sense of intimacy and bond because of influencers' repeated exposure to different social media platforms and including their followers as participants who can comment and provide their reviews on contents that aids in closely connecting influencers and followers, enhancing the value and brand image.

Thirdly, this study adds to our knowledge of the phenomenon by exploring the antecedents of consumer purchase intent in one conceptual model. Although studies have shown that parasocial relationships, perceived value, and brand image are all antecedents of purchase intent, conceptualising these antecedents as a comprehensive and sequential mediation model is a novel theoretical insight for media figures and consumer purchase behaviour literature.

The study findings are crucial for marketers facilitating celebrities and influencers to help spread the word about their brands. In today's connected world, consumers spend much time on the internet and social media platforms, trying to imitate their favourite celebrities and influencers and increasing their desire to try the recommended products at least once. If satisfied, they will continue to use the specific products/services in the long run. Influencers create unique content with a higher chance of resonating with consumers and increasing overall conversion rates. When influencers look trustworthy, educated, and appealing to their followers, a web of parasocial relationships forms, making people feel involved and motivated. Marketers may target technologically savvy clients, recognise their demands, and capitalise on emerging trends as a consequence of this partnership, allowing them to stay ahead of the competition in highly competitive areas.

According to the research study results, the credibility of social media influencers increases and establishes a parasocial relationship between influencers and their followers, reinforcing the brands' perceived value and image in customers' minds, resulting in the intention to buy. When people feel like they belong to a group, they become more motivated and inspired, which improves their opinion of the value of the brand's products. This boosts the brand's image, which leads customers to buy specific recommended products. Thus, managers of brands should focus on collaborating with the right

influencers to maintain a stronghold over their potential targets and position their brands in the customers' minds to enhance their buying decision.

Limitations and Future Study

This study provided substantial theoretical and practical contributions to academics and practitioners by studying the sequential mediation role of parasocial relationship, perceived value, and brand image on the relationship between social media influencers and consumer intention to buy. However, it had some limitations that suggest the direction for future research. Firstly, the study was conducted in Taiwan, and responses were obtained using a convenient sampling approach. Thus, future research should investigate the sequential model in different nations to improve the study's generalizability.

Secondly, the study gathered responses based on respondents' favourite social media influencers and asked them to consider them to answer the survey questions. However, social media influencers from different domains, such as fashion, travel, beauty, food vloggers, and bloggers, may influence their followers differently. As a result, future research studies could focus on social media influencers in certain domains and investigate the factors that impact followers' intent to buy specific brands.

Thirdly, we studied the role of social media influencers' credibility that builds a parasocial relationship between influencers and followers. However, social media influencers' credibility and other factors can play a significant role as the antecedents of parasocial relationships like personality (Big five personality model) match between social media influencers and followers, attitude, cost, and benefits evaluation of following social media influencers. Thus, exploring these factors as antecedents of parasocial relationship can aid future research study to identify consumers' actual buying behaviour.

REFERENCES

Aaker, D. A. (2014). *Aaker on branding*. New York, NY: Morgan James Publishing.

Adetunji, R. R., Sabrina, M. R., & Sobhi, I. M. (2017). User-Generated Contents in Facebook, Functional and Hedonic Brand Image and Purchase Intention. *SHS Web of Conferences*, *33*, 1-6. https://doi.org/10.1051/shsconf/20173300084

Alalwan, A. A., Dwivedi, Y. K., Rana, N. P., & Simintiras, A. C. (2016). Jordanian consumers' adoption of telebanking: Influence of perceived usefulness, trust and self-efficacy. *International Journal of Bank Marketing*, *34*(5), 690-709. https://doi.org/10.1108/IJBM-06-2015-0093/FULL/XML

Aljafari, D. (2019). *Examining the Effects of Parasocial Interaction and Identification with Social Media Influencers on Collaborating Brands* (Unpublished doctoral dissertation or master's thesis). Quatar University.

Ananda, A. S., Hernández-García, Á., & Lamberti, L. (2016). N-REL: A comprehensive framework of social media marketing strategic actions for marketing organizations. *Journal of Innovation and Knowledge*, *1*(3), 170-180. https://doi.org/10.1016/j.jik.2016.01.003

Asgarpour, R., Hamid, A. B. A., & Sulaiman, Z. (2014). A Review on Customer Perceived Value and Its Main Components. *GATR Global Journal of Business Social Sciences Review*, *1*(2), 632-640. https://doi.org/10.35609/gjbssr.2014.2.2(1)

Ballantine, P. W., & Martin, B. A. S. (2005). Forming Parasocial Relationships in Online Communities Forming Parasocial Relationships in Online Communities. *Advances in Consumer Research*, *32*(32), 197-201.

Baron, R. M., & Kenny, D. A. (1986). The moderator-mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology*, *51*(6), 1173-1182. https://doi.org/10.1037//0022-3514.51.6.1173

Barroso, C., Carrión, G. C., & Roldán, J. L. (2010). Applying Maximum Likelihood and PLS on Different Sample Sizes: Studies on SERVQUAL Model and Employee Behavior Model. In Espositio Vinzi V., Chin, W.W., Henseler, J, & Wang, H. (eds.), *Handbook of Partial Least Squares* (pp. 427-447). Berlin: Springer Berlin Heidelberg. https://doi.org/10.1007/978-3-540-32827-8_20

Bond, B. J. (2018). Parasocial Relationships with Media Personae: Why They Matter and How They Differ Among Heterosexual, Lesbian, Gay, and Bisexual Adolescents. *Media Psychology*, *21*(3), 457-485. https://doi.org/10.1080/15213269.2017.1416295

Byrne, E., Kearney, J., & MacEvilly, C. (2017). The Role of Influencer Marketing and Social Influencers in Public Health. *Proceedings of the Nutrition Society*, *76*(OCE3), E103. https://doi.org/10.1017/S0029665117001768

Campbell, C., & Farrell, J. R. (2020). More than meets the eye: The functional components underlying influencer marketing. *Business Horizons*, *63*(4), 469-479. https://doi.org/10.1016/j.bushor.2020.03.003

Chatterjee, P. (2011). Drivers of new product recommending and referral behaviour on social network sites. *International Journal of Advertising*, *30*(1), 77-101. https://doi.org/10.2501/IJA-30-1-077-101

Chen, S. C., & Quester, P. G. (2006). Modeling store loyalty: Perceived value in market orientation practice. *Journal of Services Marketing*, *20*(3), 188-198. https://doi.org/10.1108/08876040610665643

Chin, W. W. (1998). The partial least squares approach to structural equation modelling. In Marcoulides, G. A. (ed.). *Modern Methods for Business Research* (pp. 295-336), Mahwah: Lawrence Erlbaum Associates Publishers.

Chopra, A., Avhad, V., & Jaju, S. (2021). Influencer Marketing: An Exploratory Study to Identify Antecedents of Consumer Behavior of Millennial. *Business Perspectives and Research*, *9*(1), 77-91. https://doi.org/10.1177/2278533720923486

Cosenza, T. R., Solomon, M. R., & Kwon, W. suk. (2015). Credibility in the blogosphere: A study of measurement and influence of wine blogs as an information source. *Journal of Consumer Behaviour*, *14*(2), 71-91. https://doi.org/10.1002/cb.1496

DeVeirman, M., Cauberghe, V., & Hudders, L. (2017). Marketing through instagram influencers: The impact of number of followers and product divergence on brand attitude. *International Journal of Advertising*, *36*(5), 798-828. https://doi.org/10.1080/02650487.2017.1348035

Dibble, J. L., Hartmann, T., & Rosaen, S. F. (2016). Parasocial Interaction and Parasocial Relationship: Conceptual Clarification and a Critical Assessment of Measures. *Human Communication Research*, *42*(1), 21-44. https://doi.org/10.1111/hcre.12063

Dinev, T., & Hart, P. (2004). Internet privacy concerns and their antecedents -measurement validity and a regression model. *Behaviour and Information Technology*, *23*(6), 413-422. https://doi.org/10.1080/01449290410001715723

Djafarova, E., & Rushworth, C. (2017). Exploring the credibility of online celebrities' Instagram profiles in influencing the purchase decisions of young female users. *Computers in Human Behavior*, *68*, 1-7. https://doi.org/10.1016/j.chb.2016.11.009

Dwivedi, A., & Johnson, L. W. (2013). Trust-commitment as a mediator of the celebrity endorser-brand equity relationship in a service context. *Australasian Marketing Journal*, *21*(1), 36-42. https://doi.org/10.1016/j.ausmj.2012.10.001

Erdogan, B. Z. (1999). Celebrity Endorsement: A Literature Review. *Journal of Marketing Management*, *15*(4), 291-314. https://doi.org/10.1362/026725799784870379

Febriyantoro, M. T. (2020). Exploring YouTube Marketing Communication: Brand awareness, brand image, and purchase intention in the millennial generation. *Cogent Business and Management*, *7*(1), 1787733. https://doi.org/10.1080/23311975.2020.1787733

Funk, T. (2013). *Advanced social media marketing: How to lead, launch and manage a successful social media program.* Berlin: Springer. https://doi.org/10.1007/978-1-4302-4408-0

Geyser, W. (2022, March 2). *The State of Influencer Marketing 2022: Benchmark Report*. Influencer Marketing Hub. Retrived from: https://influencermarketinghub.com/influencer-marketing-benchmark-report/ on January 2021.

Godey, B., Manthiou, A., Pederzoli, D., Rokka, J., Aiello, G., Donvito, R., & Singh, R. (2016). Social media marketing efforts of luxury brands: Influence on brand equity and consumer behavior. *Journal of Business Research*, *69*(12), 5833-5841. https://doi.org/10.1016/j.jbusres.2016.04.181

Gong, W., & Li, X. (2017). Engaging fans on microblog: the synthetic influence of parasocial interaction and source characteristics on celebrity endorsement. *Psychology and Marketing*, *34*(7), 720-732. https://doi.org/10.1002/mar.21018

Gorry, G. A., & Westbrook, R. A. (2009). Winning the internet confidence game. *Corporate Reputation Review*, *12*(3), 195-203. https://doi.org/10.1057/crr.2009.16

Hair, J. F., Ringle, C. M., & Sarstedt, M. (2011). PLS-SEM: Indeed a silver bullet. *Journal of Marketing Theory and Practice*, *19*(2), 139-152. https://doi.org/10.2753/MTP1069-6679190202

Hair, J. F., Risher, J. J., Sarstedt, M., & Ringle, C. M. (2019). When to use and how to report the results of PLS-SEM. *European Business Review*, *31*(1), 2-24. https://doi.org/10.1108/EBR-11-2018-0203

Hair, J. F., Sarstedt, M., Hopkins, L., & Kuppelwieser, V. G. (2014). Partial least squares structural equation modeling (PLS-SEM): An emerging tool in business research. *European Business Review, 26*(2), 106-121. https://doi.org/10.1108/EBR-10-2013-0128

Hair, J. F., Sarstedt, M., Ringle, C. M., & Gudergan, S. P. (2017). *Advanced Issues in Partial Least Squares Structural Equation Modeling*. Thousand Oaks: Sage Publications.

Hayes, A. F. (2009). Beyond Baron and Kenny: Statistical mediation analysis in the new millennium. *Communication Monographs*, *76*(4), 408-420. https://doi.org/10.1080/03637750903310360

Hayes, A. F. (2018). *Introduction to Mediation, Moderation, and Conditional Process Analysis, Second Edition: A Regression-Based Approach*. New York, NY: The Guilford Press.

Hermanda, A., Sumarwan, U., & Tinaprilla, D. N. (2019). The Effect of Social Media Influencer on Brand Image, Self-Concept, and Purchase Intention. *Journal of Consumer Sciences*, *4*(2), 76-89. https://doi.org/10.29244/JCS.4.2.76-89

Hu, L., Min, Q., Han, S., & Liu, Z. (2020). Understanding followers' stickiness to digital influencers: The effect of psychological responses. *International Journal of Information Management*, *54*, 102169. https://doi.org/10.1016/j.ijinfomgt.2020.102169

Kaplan, A. M., & Haenlein, M. (2010). Users of the world, unite! The challenges and opportunities of Social Media. *Business Horizons*, *53*(1), 37-50. https://doi.org/10.1016/j.bushor.2009.09.003

Kemp, S. (2021, February 11). *Digital in Taiwan: Global Digital Insights*. Data Reportal. Retrieved from: https://datareportal.com/reports/digital-2021-taiwan on January 2021.

Khamis, S., Ang, L., & Welling, R. (2017). Self-branding, 'micro-celebrity' and the rise of Social Media Influencers. *Celebrity Studies*, *8*(2), 191-208. https://doi.org/10.1080/19392397.2016.1218292

Kim, H., Ko, E., & Kim, J. (2015). SNS users' para-social relationships with celebrities: social media effects on purchase intentions. *Journal of Global Scholars of Marketing Science*, *25*(3), 279-294. https://doi.org/10.1080/21639159.2015.1043690

Latan, H. (2018). PLS Path Modeling in Hospitality and Tourism Research: The Golden Age and Days of Future Past. In F. Ali, S.M. Rassolimanesh, & C. Cobanoglu (eds.), *Applying Partial Least Squares in Tourism and Hospitality Research* (pp. 53-83). Bingley: Emerald Publishing Limited. https://doi.org/10.1108/978-1-78756-699-620181004

Ledden, L., Kalafatis, S. P., & Samouel, P. (2007). The relationship between personal values and perceived value of education. *Journal of Business Research*, *60*(9), 965-974. https://doi.org/10.1016/j.jbusres.2007.01.021

Lee, J. S. (2017). *The impact of celebrity endorser attachment and endorser-product match-up on credibility, attitude, and purchase intent*. Tuscaloosa: The University of Alabama.

Leite, F. P., Pontes, N., & Baptista, P. de P. (2022). Oops, I've overshared! When social media influencers' self-disclosure damage perceptions of source credibility. *Computers in Human Behavior*, *133*, 107274. https://doi.org/10.1016/J.CHB.2022.107274

Lien, C. H., Wen, M. J., Huang, L. C., & Wu, K. L. (2015). Online hotel booking: The effects of brand image, price, trust and value on purchase intentions. *Asia Pacific Management Review*, *20*(4), 210-218. https://doi.org/10.1016/j.apmrv.2015.03.005

Lin, C. A., Crowe, J., Pierre, L., & Lee, Y. (2021). Effects of Parasocial Interaction with an Instafamous Influencer on Brand Attitudes and Purchase Intentions. *The Journal of Social Media in Society Spring 2021*, *10*(1), 55-78.

Liu M.T., Liu, Y., & Zhang, L. L. (2019). Vlog and brand evaluations: The influence of parasocial interaction. *Asia Pacific Journal of Marketing and Logistics*, *31*(2), 419-436. https://doi.org/10.1108/APJML-01-2018-0021

Liu, S., Jiang, C., Lin, Z., Ding, Y., Duan, R., & Xu, Z. (2015). Identifying effective influencers based on trust for electronic word-of-mouth marketing: A domain-aware approach. *Information Sciences*, *306*, 34-52. https://doi.org/10.1016/j.ins.2015.01.034

Lou, C., & Kim, H. K. (2019). Fancying the New Rich and Famous? Explicating the Roles of Influencer Content, Credibility, and Parental Mediation in Adolescents' Parasocial Relationship, Materialism, and Purchase Intentions. *Frontiers in Psychology*, *10*, 2567. https://doi.org/10.3389/FPSYG.2019.02567/BIBTEX

Lou, C., & Yuan, S. (2019). Influencer Marketing: How Message Value and Credibility Affect Consumer Trust of Branded Content on Social Media. *Journal of Interactive Advertising*, *19*(1), 58-73. https://doi.org/10.1080/15252019.2018.1533501

Lueck, J. A. (2015). Friend-zone with benefits: The parasocial advertising of Kim Kardashian. *Journal of Marketing Communications*, *21*(2), 91-109. https://doi.org/10.1080/13527266.2012.726235

Magno, F. (2017). The influence of cultural blogs on their readers' cultural product choices. *International Journal of Information Management*, *37*(3), 142-149. https://doi.org/10.1016/j.ijinfomgt.2017.01.007

Mao, Y., Lai, Y., Luo, Y., Liu, S., Du, Y., Zhou, J., Ma, J., Bonaiuto, F., & Bonaiuto, M. (2020). Apple or Huawei: Understanding Flow, Brand Image, Brand Identity, Brand Personality and Purchase Intention of Smartphone. *Sustainability, 12*(8), 3391. https://doi.org/10.3390/su12083391

Momtaz, N. J., Aghaie, A., & Alizadeh, S. (2011). Identifying Opinion Leaders for Marketing by Analyzing Online Social Networks. *International Journal of Virtual Communities and Social Networking*, *3*(1), 43-59. https://doi.org/10.4018/jvcsn.2011010105

Munnukka, J., Uusitalo, O., & Toivonen, H. (2016). Credibility of a peer endorser and advertising effectiveness. *Journal of Consumer Marketing*, *33*(3), 182-192. https://doi.org/10.1108/JCM-11-2014-1221

Neuman, W. L. (William L. (2014). *Social research methods : qualitative and quantitative approaches* (seventh). London: Pearson New International Edition.

Pamela Lukito, L., & Yustini, R. (2019). The Mediation Effect of Customer Perceived Value and AttitudeToward Advertisement on Social Media Influencer's Credibility on Purchase Intention. *JMBE Journal Of Management and Business Environment*, *1*(1), 36-60.

Pang, A., Yingzhi Tan, E., Song-Qi Lim, R., Yue-Ming Kwan, T., & Bhardwaj Lakhanpal, P. (2016). Building effective relations with social media influencers in Singapore. *Media Asia*, *43*(1), 56-68. https://doi.org/10.1080/01296612.2016.1177962

Pöyry, E., Pelkonen, M., Naumanen, E., & Laaksonen, S. M. (2019). A Call for Authenticity: Audience Responses to Social Media Influencer Endorsements in Strategic Communication. *International Journal of Strategic Communication*, *13*(4), 103-118. https://doi.org/10.1080/1553118X.2019.1609965

Rubin, A. M., Perse, E. M., & Powell L, R. A. (1985). Loneliness, Parasocial Interaction, and Local Television News Viewing. *Human Communication Research*, *12*(2), 155-180. https://doi.org/10.1111/J.1468-2958.1985.TB00071.X

Saima, & Khan, M. A. (2020). Effect of Social Media Influencer Marketing on Consumers' Purchase Intention and the Mediating Role of Credibility. *Journal of Promotion Management*, *27*(4), 503-523. https://doi.org/10.1080/10496491.2020.1851847

Schiffman, L., & Kanuk, L. (2000). *Consumer behavior*. Hoboken: Prentice Hall, Inc., Englewood Cliff.

Schlecht, C. (2003). *Celebrities' Impact on Branding. Center on Global Brand Leadership.* New York: Colombia Business School.

Schramm, H., & Wirth, W. (2010). Testing a Universal Tool for Measuring Parasocial Interactions Across Different Situations and Media: Findings from Three Studies. *Journal of Media Psychology*, *22*(1), 26-36. https://doi.org/10.1027/1864-1105/a000004

Sekhon, T., Bickart, B., Trudel, R., & Fournier, S. (2015). Being a likable braggart: How consumers use brand mentions for self-presentation on social media. In C.V. Dimofte, C.P. Haugtvedt, & R.F. Yalch (eds.), *Consumer Psychology in a Social Media World* (1st ed., pp. 23-39). London: Routledge. https://doi.org/10.4324/9781315714790

Sharma, S. (2016). *Beauty Under the Influence*. Global Cosmetic Industry. Retrieved from: https://www.gcimagazine.com/brands-products/news/article/21850259/beauty-under-the-influence on January 2021.

Sokolova, K., & Kefi, H. (2020). Instagram and YouTube bloggers promote it, why should I buy? How credibility and parasocial interaction influence purchase intentions. *Journal of Retailing and Consumer Services*, *53*, 101742. https://doi.org/10.1016/j.jretconser.2019.01.011

Song, J. H., & Zinkhan, G. M. (2008). Determinants of perceived Web site interactivity. *Journal of Marketing*, *72*(2), 99-113. https://doi.org/10.1509/jmkg.72.2.99

Statistia (2021). *Social media in Taiwan.* Retrived from: https://www.statista.com/statistics/966613/taiwan-social-media-use-by-platform/ on January 2021.

Sudha, M., & Sheena, K. (2017). Consumer Decision Process: Impact of Influencers in the Fashion Industry. *SCMS Journal of Indian Management*, *93*(3), 14-30.

Taber, K. S. (2018). The Use of Cronbach's Alpha When Developing and Reporting Research Instruments in Science Education. *Research in Science Education*, *48*(6), 1273-1296. https://doi.org/10.1007/s11165-016-9602-2

Ur Rehman, S., Bhatti, A., & Chaudhry, N. I. (2019). Mediating effect of innovative culture and organizational learning between leadership styles at third-order and organizational performance in Malaysian SMEs. *Journal of Global Entrepreneurship Research*, *9*(1), 1-24. https://doi.org/10.1186/S40497-019-0159-1

Uzunoğlu, E., & Misci Kip, S. (2014). Brand communication through digital influencers: Leveraging blogger engagement. *International Journal of Information Management*, *34*(5), 592-602. https://doi.org/10.1016/j.ijinfomgt.2014.04.007

Vendemia, M. A. (2017). When do consumers buy the company? Perceptions of interactivity in company-consumer interactions on social networking sites. *Computers in Human Behavior*, *71*, 99-109. https://doi.org/10.1016/j.chb.2017.01.046

Walsh, G., Shiu, E., & Hassan, L. M. (2014). Replicating, validating, and reducing the length of the consumer perceived value scale. *Journal of Business Research*, *67*(3), 260-267. https://doi.org/10.1016/j.jbusres.2013.05.012

Wang, Y., & Yu, C. (2017). Social interaction-based consumer decision-making model in social commerce: The role of word of mouth and observational learning. *International Journal of Information Management*, *37*(3), 179-189. https://doi.org/10.1016/J.IJINFOMGT.2015.11.005

Wetzels, M., Odekerken-Schröder, G., & VanOppen, C. (2009). Using PLS path modeling for assessing hierarchical construct models: Guidelines and empirical illustration. *MIS Quarterly: Management Information Systems*, *33*(1), 177-195. https://doi.org/10.2307/20650284

Woods, S. (2016). # Sponsored: The Emergence of Influencer Marketing # Sponsored : The Emergence of Influencer Marketing. Retrieved from: https://www.semanticscholar.org/paper/%23Sponsored%3A-The-Emergence-of-Influencer-Marketing-Woods/7083976c5569a48bc074cba5f87f6e3d2ec81606 on January 2021.

Yang, Z., & Peterson, R. T. (2004). Customer perceived value, satisfaction, and loyalty: The role of switching costs. *Psychology and Marketing*, *21*(10), 799-822. https://doi.org/10.1002/mar.20030

Yuan, L., & Dennis, A. R. (2019). Acting Like Humans? Anthropomorphism and Consumer's Willingness to Pay in Electronic Commerce. *Journal of Management Information Systems*, *36*(2), 450-477. https://doi.org/10.1080/07421222.2019.1598691

Yuan, S., & Lou, C. (2020). How Social Media Influencers Foster Relationships with Followers: The Roles of Source Credibility and Fairness in Parasocial Relationship and Product Interest. *Journal of Interactive Advertising*, *20*(2), 133-147. https://doi.org/10.1080/15252019.2020.1769514

Yuksel, M., & Labrecque, L. I. (2016). "Digital buddies": parasocial interactions in social media. *Journal of Research in Interactive Marketing*, *10*(4), 305-320. https://doi.org/10.1108/JRIM-03-2016-0023

Zeithaml, V. A. (1988). Consumer Perceptions of Price, Quality, and Value: A Means-End Model and Synthesis of Evidence. *Journal of Marketing*, *52*(3), 2-22. https://doi.org/10.1177/002224298805200302

Zhang, Y., Moe, W. W., & Schweidel, D. A. (2017). Modeling the role of message content and influencers in social media rebroadcasting. *International Journal of Research in Marketing*, *34*(1), 100-119. https://doi.org/10.1016/j.ijresmar.2016.07.003

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The fintech transformation of banking: Governance dynamics and socio-economic outcomes in spatial contexts

Marta Gancarczyk, Piotr Łasak, Jacek Gancarczyk

ABSTRACT

Objective: The objective of the article is to identify and systemize the governance dynamics and related socio-economic consequences of the fintech transformation in banking, while acknowledging spatial contexts.

Research Design & Methods: The research framework comprised Global Production Networks (GPN), Global Value Chain (GVC), and co-evolutionary approaches to guide a systematic literature review in the Scopus, Web of Science, and Taylor & Francis databases for 2016-2021. The final sample comprised 76 sources that became the basis for selective coding and the synthesis of the results.

Findings: Fintech impacted banking governance by creating a dual and interrelated system of global financial networks and a 'mosaic' of territorial financial ecologies and ecosystems, where incumbent banks held an important but not exclusive position. The fintech-enhanced governance transformations had both positive socio-economic effects (improved efficiency, expanded range of services, and inclusion of unbanked or under-served customers) and negative effects (over-indebtedness, surveillance, and exclusion of some customers). Wider socio-economic consequences refered to sustainable development and changes in economic and social behaviour.

Implications & Recommendations: A research framework and agenda for future studies related to the dynamics of fintech-driven governance in banking have been elaborated. The article derives the immediate and wider economic and social consequences of fintech-driven transformations. The results can also be applied in public policies oriented towards sustainable socio-economic development.

Contribution & Value Added: The study provides theoretical and policy-relevant contributions. Firstly, it broadens the research on the transformation of banking governance in the spatial context. Secondly, it contributes theoretically by proposing a research framework of GVC and GPN governance augmented by a co-evolutionary perspective. Thirdly, the article informs policy that seeks financial inclusion for cohesive and sustainable development.

Article type: research article
Keywords: banking sector; fintech; governance; global production networks; global value chains
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INTRODUCTION

Governance in the banking industry has been undergoing extensive transformations due to technological innovations, interrelated with market, legal, and social factors. Financial technologies (fintech) reconfigure existing activities, create new activities, and allow new entrants to change the industrial structure (Arslanian & Fischer, 2019; Hill, 2018; Livesey, 2018; Nicoletti, 2017; Scardovi, 2017). The industrial transformation is addressed by regulations towards customer-centric financial services, enhanced by the Covid-19 pandemic (Zachariadis & Ozcan, 2017; Fu & Mishra, 2020; Ozili, 2020; Wójcik & Ioannou, 2020; Wójcik, 2020). These processes lead to the changes in bank governance, *i.e*. institutional structures that regulate the functioning of this industry and affect its economic

outcomes (Williamson, 2005; Colombo *et al.*, 2019). Progressive digitization is also driven by the needs of the most demanding markets and disadvantaged or unbanked customer groups and results in socio-economic consequences, such as inclusion or exclusion from banking services (Bhagat & Roderick, 2020; Salampasis & Mention, 2018).

We are in the process of profound digital transformations of banking, when a plethora of governance forms and unequivocal economic and social outcomes coexist, depending on the spatial (geographical) context of countries and regions. There are considerable research gaps in addressing these transformations, which calls for the identification and systemization of the observed changes to inform further research and policy. Firstly, the existing literature on technological transformation in banking focuses on the efficiency and market expansion of fintech businesses and their new business models, rather than on banks (Tanda & Schena, 2019; Vives, 2017; Boot, 2017; Scardovi, 2017). The transformations of banking with a focus on governance and its spatial dimensions are underexplored (Lai & Samers, 2021; Wójcik, 2021; Ozili, 2018; Kleibert, 2020). This corresponds to the general scarcity of finance research in finance literature on global governance, including global value chain (GVC) and global production networks (GPN) literature (Coe, Lai, & Wójcik, 2014; Kleibert, 2020). Secondly, the research frameworks of GPN and GVC focus on how discrete governance forms (such as the firm, market, and network) affect value migration, upgrading, and territorial development. These theories call for enhancement by dynamic-evolutionary and context-sensitive approaches to capture the high pace of industrial transformations, fluid and emergent rather than discrete and ultimate governance, and related outcomes (Ponte & Sturgeon, 2014; Chen & Hassink, 2022; Lai & Samers, 2021; Coe & Yeung, 2019; Gong & Hassink, 2019; Gong & Hassink, 2020). Thirdly, the economic and social outcomes of technological changes in banking are not unequivocal, thus hindering appropriate policy actions (Langley & Leyshon, 2020; Wójcik, 2020).

Consequently, this article aims to identify and systemize the governance dynamics and related socio-economic consequences of the fintech transformation in banking, while acknowledging spatial contexts. We performed a systematic review of the literature in Scopus, Web of Science, and Taylor & Francis, which represents a unique approach since existing reviews in this area are narratives. As a conceptual background for the literature review, we adopted GVC and GPN approaches (Coe, 2021; Gereffi *et al*., 2005; Gereffi & Lee, 2016; Gereffi, 2018; Coe & Yeung, 2019) and a co-evolutionary approach (Gong & Hassink, 2019).

In response to the research gaps stated above, the article provides theoretical and policy-relevant contributions. Firstly, it broadens the research on the transformation of governance in the spatial context (Coe, 2021; Gereffi *et al*., 2005; Gereffi, 2018; Brun *et al*., 2019). It expands knowledge of the governance dynamics and outcomes in the underexplored banking industry, driven by fintech and moderated by spatial contexts. We identify various concurrent governance solutions and their socio-economic outcomes in the banking industry, depending on geographical contexts. Secondly, this study contributes theoretically by proposing a research framework of GVC and GPN governance augmented by a co-evolutionary perspective. This framework is valuable to identify and explain the dynamics and variety of fintech-driven governance, as it acknowledges the interactions and mutual influences of the transforming banking industry with other agents in spatial contexts (Gong & Hassink, 2019). Thirdly, the article informs policy that seeks financial inclusion for cohesive and sustainable development (Chatterjee, 2020; Frost, 2021; Lai & Samers, 2021; Mehrotra, 2019). It identifies not only digital transformations in banking governance, but also wider socio-economic consequences for financial and GVC inclusion, power, and wealth distribution (Wójcik, 2021). Moreover, this research explains these unequivocal and varied consequences using context conditions.

In the next section, we will present the conceptual background and a research framework to guide the literature review. Then, the methods of systematic literature review and synthesis will be presented. Finally, we will report and discuss the results, specify the contribution, and derive a research agenda.

LITERATURE REVIEW AND THEORY DEVELOPMENT

Fintech Transformative Mechanisms and Banking Governance

Governance represents the institutional structure or sets of rules that regulate a system and affect its performance (Williamson, 2000, 2005; Colombo *et al*., 2019). Consequently, it embraces the patterns of activities performed by relevant entities, collaborative arrangements, and power relations among these entities, public regulation, and the coordination of spatial distribution of economic activity, all of which produce differing socio-economic effects in various spatial contexts (Gomber *et al*., 2017; Williamson, 2000). These governance patterns are strongly affected by technological factors that underlie the composition of activities in socio-economic systems and entities executing these activities (Williamson, 2005; Łasak & Gancarczyk, 2021). The digital transformation in financial services is one of the most profound both in terms of structural changes and the value of an investment in fintech (Coe *et al*., 2014; Kleibert, 2020). We refer to fintech as both ICT-based innovations in financial services and their embodiment or agency as fintech businesses or fintech industry (EBA, 2017; Gomber *et al.,* 2017; Wójcik, 2021; Lai & Samers, 2021).

Fintech innovations and businesses affect the execution and performance of major banking activities, including accounts holding, payments, loans, and credits (Appleyard, 2020; Popelo *et al*., 2021; Scardovi, 2017). They do so through six mechanisms that can be systemized according to the ascending effect (Gross, 2009; von Briel *et al*., 2018; Łasak & Gancarczyk, 2022). The first of them is compression which is a mechanism that provides for the reduction of time to exercise activity, such as the use of Big Data (BD) in credit scoring by human agents. The conservation mechanism reduces resources required for banking activity, *e.g*., automated customer identification and authorization when processing transactions (Babajide *et al*., 2020). The mechanism of expansion ensures the increased availability and scope of banking activities, *e.g.*, mobile payments performed by customers, while substitution replaces one activity with another, *e.g.*, digital banking replacing real bank branches (Wonglimpiyarat, 2017). The combination mechanism involves reconfiguring existing activities to integrate them into a new system, *e.g*., mobile wallets (Son & Kim, 2018). Ultimately, the most radical generation mechanism brings about completely new activities, such as crowdfunding platforms (Cicchiello, 2020; Pinkow, 2022; Riyanto *et al*., 2018).

The mechanisms and effects mentioned might explain the changing patterns of activities in banking and the rules of coordination. However, banking governance should also consider the composition of entities and their relationships, legal arrangements, and coordination of the spatial distribution of economic activity, all of which produce different socio-economic effects in various spatial contexts (Gomber *et al*., 2017). These issues can be addressed with the GVC and GPN governance approaches.

Digital Transformation of Governance From the Perspectives of GVC and GPN

The GVC and GPN approaches focus on how differentiated governance structures affect value creation, capture, and appropriation, and the upgrading and sustainable development of the participants involved in these structures (Coe & Yeung, 2019; Ponte & Sturgeon, 2014). Upgrading means improving the relative competitive position through the development of capabilities to advance into higher value-adding activities (Gereffi & Lee, 2016; Gereffi *et al*., 2005). Recently, the range of governance participants expanded from industrial actors to government, labour, regions, clusters, and society at large (Ponte *et al*., 2019; Gereffi, 2018; Gereffi & Lee, 2016). Consequently, industrial upgrading remains a normative target; however, it turns out to be an interim objective to achieve territorial socio-economic development (Coe, 2021; Ponte *et al*., 2019; Coe & Yeung, 2019).

The upgrading and development depend on the type of governance, which implies power relations and actors' positions in GVC or GPN structures, and rules of collaboration (Gereffi *et al*., 2005; De Marchi *et al*., 2018). The perspectives of GPN and GVC propose a useful lens of how technological standardization and initial capabilities affect generic governance and how governance impacts the prospects for upgrading and development of industries and territories. Generic governance structures comprise the firm, market, and networks (captive, relational, modular) (Gereffi *et al*., 2005; Jacobides

et al., 2018). The GVC and GPN emphasize network governance with a dominant role of leading firms that coordinate suppliers and their own subsidiaries. Hierarchical or captive networks are associated with high technological standardization and low initial resources and capabilities of governance participants compared to the leaders. These relationships raise dependence and offer limited opportunities to share value and upgrade (Gereffi *et al*., 2005). Regardless of technological standardization, higher resources and capabilities of network participants produce more balanced, heterarchical governance, which enhances value sharing and development (Gereffi *et al*., 2005).

More recently, the GVC and GPN approaches have also suggested other governance determinants, such as public regulation and societal movements relevant for strategic coupling within global governance (Gereffi & Lee, 2016; Coe & Yeung, 2019). Responsible banking services are fundamental to economic stability and sustainable development; therefore, these services are regulated at the national and international levels (Bömer & Maxin, 2018). Additionally, both the GVC and GPN perspectives seek to recognize new forms of governance driven by technology and social group behaviours (Coe, 2021; Ponte *et al*., 2019). However, in the GVC and GPN literature, financial services and banking are underexplored, despite their fundamental importance, both as entities with distinct governance and as intermediary services included in other industrial value chains (Kleibert, 2020). Only recently did the perspectives of GPN and GVC acknowledge the specificity of financial services as global financial networks (GFN) and the structure of the GVC network (Coe *et al*., 2014; Ponte *et al*., 2019).

Similarly to other development processes of evolutionary and multidimensional nature, the governance dynamics and related outcomes require the investigation of complex and interrelated factors in multiscalar spatial contexts of countries and regions (Fornahl & Hassink, 2017; Knight & Wójcik, 2017; Trippl *et al*., 2015). This also applies to banking governance that reveals differences depending on the context of initial socio-economic development and institutional factors, such as government involvement, legal arrangements, and historical paths (Wójcik, 2020; Lai & Samers, 2020; de Goede, 2020). The perspectives of the GVC and GPN are well equipped to describe how discrete governance structures affect industrial and territorial development. However, they are less able to describe the dynamics of governance structures from process and contextual angles. These issues can be addressed by an evolutionary perspective on industrial dynamics, recently adopted in studies on transformations of financial services (Chen & Hassink, 2022; Coe & Yeung, 2019; Lai & Samers, 2021).

The evolutionary perspective acknowledges the complexity of industrial change by investigating a broad array of relationships among agents and factors in the historical, path-dependent perspective (Martin & Sunley, 2006; Frenken & Boschma, 2007; Gancarczyk & Ujwary-Gil, 2021). Within evolutionary research, the concept of *co-evolution* is distinct in emphasizing the concurrent structural changes of entities due to their interactions and mutual influences, rather than unidirectional influence (Ter Wal & Boschma, 2011). The co-evolutionary perspective encourages investigating how relevant actors, such as banks, fintech companies, regulators, and customers, interact to produce governance changes along with economic and social impacts (Gong & Hassink, 2019; Chen & Hassink, 2022). It is also context-sensitive in explaining variegated development paths and outcomes (Gong & Hassink, 2020).

Research Framework

Figure 1 highlights a research framework for a systematic review of the literature specified in the Research Methodology section. The major inference is reflected in the solid upper boxes linked with bold and solid arrows, which suggest fintech impacting governance change that, in turn, induces socio-economic outcomes (Williamson, 2000, 2005; Colombo *et al*., 2019; Lai & Samers, 2020; de Goede, 2020). In the related dotted boxes, the expected fintech influences, governance changes, and outcomes are specified with the terms to code the review results. Technological impacts must be considered in conjunction with spatial contexts and external shocks that affect fintech developments, governance changes, and socio-economic outcomes (non-bolded solid arrows; the terms to code the literature review in the dotted boxes) (Coe & Yeung, 2019; Ponte & Sturgeon, 2014; Coe, 2021; Ponte *et al*., 2019).

Besides the major relationships among the framework components (both bolded and non-bolded), the framework also acknowledges coevolutionary feedback relationships and interactions among the components that may happen in the longer run, as suggested with the dotted arrows (Chen & Hassink,

2022; Coe & Yeung, 2019; Lai & Samers, 2021). For instance, fintech affects governance changes; however, the new governance (power relations, lead firms) may influence the directions of fintech development, and thus new governance.

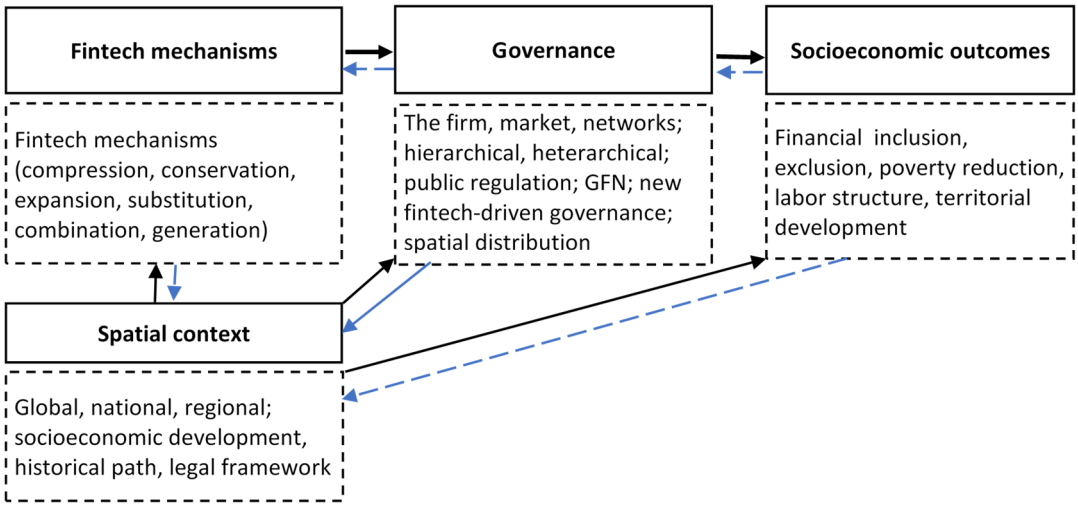

Figure 1. The research framework of fintech-driven banking transformations and their results

Source: own elaboration.

The framework uses the existing constructs of fintech mechanisms and governance in a novel way, by conceptualizing relationships among these constructs to produce socio-economic outcomes. These novel inferences can be specified as the following propositions:

Proposition 1: Fintech transformative mechanisms produce socio-economic effects through changes in governance acting as a mediator of this relationship. That is, fintech mechanisms affect governance changes that, in turn, generate socio-economic outcomes.

Proposition 2: Spatial contexts embracing varied economic and institutional systems and historical paths affect the adoption of fintech mechanisms, governance changes, and ultimate socio-economic outcomes. Given the idiosyncratic initial conditions, spatial contexts can explain ambiguous socio-economic outcomes from fintech.

Proposition 3: In the long run, fintech mechanisms, governance, spatial contexts, and socio-economic outcomes reveal feedback relationships.

The research framework will lead systematic literature to address questions resonating with the aim of this article:

RQ1: How does existing research describe the fintech-driven dynamics of governance in banking, depending on the spatial context?

RQ2: How does the existing research describe the socio-economic effects of the banking governance transformed by fintech in various spatial contexts?

RQ3: What are the causalities between fintech mechanisms, governance, and socio-economic outcomes in various spatial contexts?

RESEARCH METHODOLOGY

The method comprised the development of the research framework (Figure 1), systematic literature review, data coding, and synthesis of results (Xiao and Watson, 2019; Tranfield, Denyer, and Smart, 2003). The *systematic literature review* was performed in the large and recognized databases of Scopus and Web of Science, and the Taylor and Francis database covering the leading journals and book series emphasizing geographical contexts. Keywords 'finan * technolog *' or 'fintech *' and 'bank *' or 'finan * serv *' were used, generating 793 Scopus results, 299 WoS results, and 339 T and F results. The query was

limited to social sciences and related sciences (*e.g.,* excluding medical or physical sciences), and to the most intense publication period in this field, *i.e.*, 2016-2021. The reviewed literature predominantly refers to the period after the crisis of 2007-2009 to the present. Due to the premature stage of this research area, the search comprised peer-reviewed articles, books, book chapters, and conference papers.

Two researchers examined the titles, abstracts, and keywords of the initial samples and selected publications dealing with banks and fintech in spatial contexts (*e.g.,* global, national, regional). The publications that did not cover all three components of banks, fintech, and territorial conditions were excluded. After compiling the results and removing repetitions, we identified an interim sample of 114 items for full text review, which resulted in 62 sources (marked with '*' in the reference list). Considering the premature research stage, a manual search was performed to avoid possible inadequacies and delays in coding and indexing by the databases (Hoon, 2013). This generated 14 additional items (marked with '┼' in the reference list), giving a total final sample of 76 sources. In the final sample, the academic peer-reviewed articles counted 50 items, while the remaining peer-reviewed references included monographs, book chapters, and conference articles. The sample comprised predominantly conceptual and review articles (80%). Original empirical evidence proved to be scarce and often based on qualitative case studies (20%).

According to the framework (Figure 1) that adopts recognized theories with their established concepts, we applied selective (closed) and deductive (theory driven) *coding* (Villiger *et al.*, 2021; Tranfield, Denyer, and Smart, 2003). To code the types of the major constructs, we used the terms included in Figure 1 and explained earlier in the Literature Review and Theory Development (Hoon, 2013). For instance, the types indicated for governance inform whether fintech mechanisms transform it to market or network or hierarchy. These coding terms were used as keywords for the search within the final sample of articles (Villiger *et al.*, 2021). In the absence of particular code terms, we inferred and classified the types of the major constructs based on their descriptions, such as hierarchical governance inferred from power relations being top-down and dominated by particular entities. Two researchers reviewed the articles and independently coded the information. Manual coding was enhanced by tabulations with search codes and quotations, or paraphrases evidencing the classifications. After independent coding, the researchers exchanged information and discussed inconsistencies, eventually arriving at a consensus on the classification of terms and causalities among the main constructs (Hoon, 2013; Breslin & Gatrell, 2020). Inconsistencies appeared predominantly when the coding was based on inference from articles that directly did not quote the search terms. This process resulted in one set of coding tables, which were later jointly discussed and synthesized into results tables included in the manuscript. The *synthesis* was an iterative process of analyzing the results with reference to the conceptual foundations and the research framework (Breslin & Gatrell, 2020).

RESULTS AND DISCUSSION

Fintech-Driven Changes in the Governance of the Banking Sector

The impact of fintech mechanisms depends on the geographical context (*e.g.*, varied government involvement, socio-economic advancement, initial development of banking), with a profound effect in developing countries (Table 1).

In the Global South and China, where digital solutions fill the market gap, fintech represents not only the substitution of standardized banking functions but also the substitution of banks as intermediaries (Langley, 2016; Brown & Piroska, 2021; Kong & Loubere, 2021). Examples include credit scoring and lending in developing countries with weak banking systems (e.g., DigiFarm in Africa) (Brooks, 2021) or public governance that allows the replacement of banking activities with fintech (e.g., lending platforms and an industry-specific JD platform in China) (Kong & Loubere, 2021). In countries with strong banking sectors (e.g., Western European countries) and/or public governance protective of incumbent banks (e.g., India), digital solutions replace predominantly individual functions and complement extant activities with resource conservation and time compression rather than substitute banks (Chiu, 2017; Singh, 2019; Jain & Gabor, 2020). However, this general observation should be nuanced with respect

to customer segments and regions within national markets (Hammerschlag *et al*., 2020). Fintech performs spatial expansion and substitution, and generation of the offerings for the underserved and unbanked market segments in poorer regions, regardless of the country's wealth (Clarke, 2019; DawnBurton, 2020 Campbell-Verduyn, Goguen & Porter, 2019).

Table 1. Fintech transformative mechanisms in banking in the spatial context

Type of fintech mechanisms	*Relevant findings*	*Selected articles*
Substitution	In the UK, the substitution of traditional lending in the poorer regions and disadvantaged market segments in cities	DawnBurton (2020)
	Lending platforms from the UK, the USA, and China heading towards developing economies	Clarke (2019)
	Systemic substitution of banks as intermediaries in the Global South	Langley (2016) Brown and Piroska (2021) Brooks (2021)
	Fintech substituting banks in rural China	Kong and Loubere (2021)
Expansion	Expansion of geographical reach and substitution by AI and algorithms on a global scale	Campbell-Verduyn, Goguen and Porter (2019)
Compression/ Conservation	Fintech complementary to banks in the Western countries with the developed banking system	Chiu (2017) Lao (2020)
	Government-led Indian digital identification project complementary to banks' system	Jain and Gabor (2020)
Generation	Regulation limits the reach of crowdfunding in Europe to national markets.	Cicchiello (2020)
Combination	Mobile wallets and payment ecosystems in China, Europe, and the US with applications in Brazil, Indonesia, and Kenya	Omarini (2018) Iman (2018)

Source: own study.

Based on fintech mechanisms, the reviewed studies reflect a breakthrough transformation of governance, comprising the scope of activities, power relations, and types of actors. Table 2 profiles the dynamics and variety of co-existing governance solutions.

The transforming governance is described using both generic and recognized governance modes and new governance specific to digitalization. Regarding the fintech impact on *generic governance modes* (the firm, network, market), many banks adopt fintech substitution within their internal governance (Lai, 2020). The depth of transformation ranges from the traditional governance scope with material infrastructures to own digital subsidiaries to purely virtual status (Lai, 2020; Kleibert, 2020). Fintech enables the reduction of some resources (*e.g.*, physical branches) and aggregating functions (*e.g.*, mid-office splitting to the front and back offices). Consequently, the governance scope becomes functionally shortened, but expanded geographically with new channels of communication to serve customers (*e.g.,* the Internet and mobile banking in rural areas) (Kong & Loubere, 2021; DawnBurton, 2020).

However, cost pressures reinforced by the 2007-2009 crisis, scale economies, the expansion of fintech businesses, and regulations enhancing this expansion, and the recent Covid-19 pandemic accelerated a more profound governance change (Wójcik & Ioannou, 2020). This included a transition from the bank's internal governance to network and market governance in collaboration and competition with new entities offering bank services (Langley, 2016; Brown & Piroska, 2021; Bömer & Maxin, 2018). The new actors comprise fintech companies, BigTechs (GAFA in the United States and BAT in China), and other manufacturing and service companies that extract value and upgrade to higher value-adding functions, such as credit scoring, lending, and advisory (Brown & Piroska, 2021). The result is an even more functionally shortened governance of banks, which, according to the most radical scenario, could be reduced to clearing houses (Langley, 2016). However, the geographical and market scope is often expanded by collaboration with global fintech specialized in selected functions, such as creditworthiness assessment of creditworthiness (*e.g*., the EFL platform), payments, and P2P lending (Bernards, 2019; Clarke, 2019).

Table 2. Fintech-driven dynamics of banking governance in spatial contexts

Governance type and dynamics	***Relevant findings***	***Selected articles***
Generic governance modes (market, network, the firm) *(from the bank governance to networks and markets)*	Fintech stimulates a transition from bank internal governance to networks and markets on a global scale.	Langley (2016) Brown and Piroska (2021)
Public vs private governance *(from public governance of private banks to the increased importance of private governance in operations and regulations /sandboxing/)*	Development finance integrated with commercial microfinance by private fintech corporations in poorer countries	Langevin (2019) Brooks (2021)
	EFL established commercial networks with banks, microfinance institutions, credit scoring firms, and retailers in Latin America, Africa, Indonesia, and Russia.	Bernards (2019)
	Strengthened public post-crisis regulations; fintech sandboxing in the UK driven by corporate interests	Brown and Piroska (2021)
Fintech-specific governance *(emerging modes of governance based on standardization and algorithms)*	Emergent governance *through, with,* and *by* algorithms on a global scale	Campbell-Verduyn, Goguen, and Porter (2017)
	Governance as an information infrastructure augmented by technologies on a global scale	Campbell-Verduyn, Goguen, and Porter (2019)
	Platform economy as governance that represents reintermediation of banking services	Langley and Leyshon (2021)
Hierarchical vs heterarchical governance *(from hierarchical dominance of banks to heterarchical networks of banks, fintech, and BigTechs to hierarchical dominance of banks and BigTechs)*	Governance from banks as intermediaries towards ecosystems, then hierarchization with monopolistic power of BigTechs	Langley (2016)
	Disruption of traditional intermediaries; banks creating own platforms; the new platforms often linked with incumbent institutions	Clarke (2019)
	Maintenance of postcolonial asymmetric power relations and dependence among countries, and firming these relations with digitized financial infrastructures (SWIFT, BD)	Langevin (2019) de Goede (2021)
Financial ecosystems *(emerging forms of network governance for retail markets and place-based projects; public and private entities, including banks)*	Power relations become polycentric; governance from banks as intermediaries towards multi-actor and place-based financial ecologies with the retained position of banks in Western countries; banks sticky to home countries but with expanded spatial reach	Langley (2016) Lai and Samers (2021)
	The financial system comprising a mosaic of smaller, territorial financial ecologies	Lai (2020) Appleyard (2020)
	Alternative governance in parallel with traditional systems	DawnBurton (2020)
	Fintech concentrated around the established centers with related financial and Internet industries	Chen and Hassink (2022)
Global financial networks *(global networks of city financial centers maintaining its position; new financial centers in Asia; new fintech-driven centers in high tech clusters and mid cities; preserved spatial distribution of labour; possible labour reductions by fintech)*	New financial centers in Asia but the retained position of older hubs in London, New York, and Europe; offshore mid- and back-office functions in India and the Philippines	Lai *et al*. (2020)
	Fintech transformation to be led by banks and BigTechs; outsourcing by banks to mid-size financial centers in non-core cities; IT substitution will retain extant governance and the power of large financial centers; fintech businesses grow in technology centers rather than financial centers in the USA	Wójcik and Ioannou (2020) Wójcik (2020) Wójcik (2021)
	Integration of bank functions and relocation; offshoring to Asia and Eastern Europe based on bank subsidiaries and outsourcing	Kleibert (2020)

Source: own study.

The reviewed literature often addresses *private governance* (governance by private entities) *vs public governance* (regulations and policies by public entities). Post-crisis regulations tightened the control over risks in incumbent banks but also opened banking to the entry of commercial nonbank entities (Basel III arrangements, Payment Services Directive 2) (Campbell-Verduyn *et al*., 2017). In the UK and the USA, the sandboxing and RegTech initiatives aim to protect customer interests, promote financial inclusion, and ensure legal compliance of fintech innovation and businesses. In general, the regulation of fintech expansion is more comprehensive and restrictive in the North with strong bank sectors than in the developing and growing countries of the Global South (Chiu, 2017). On the other hand, public involvement in sandboxing in the UK is criticized for being too permissive and promoting the corporate interests of fintech, rather than protecting customers and alleviating risks (Brown & Piroska, 2021). Corporate activity in public regulation represents a shift from public governance of private banks to private governance (Campbell-Verduyn *et al*., 2017). The role of corporate private governance is also observed in the World Bank's development initiatives towards financial inclusion (Arner *et al*., 2020). In Africa, these initiatives were entered by private fintech platforms owned by Western corporations (Langevin, 2019; Brooks, 2021). The platforms dominated microfinance, bundling it with other business services, such as product development and economic advisory (Kong & Loubere, 2021). In China, similar corporate initiatives of large platforms with diversified financial and product development services (Alibaba, Tencent, JD) have recently been embraced by the state control, while earlier they featured a liberal policy (Chiu, 2017; Kong & Loubere, 2021).

The transition from the bank to network governance, the increased role of private vs public governance in banking, and the advancement of financial technologies towards complex functions, stimulated the conceptualizations of *fintech-specific governance*, such as algorithmic governance or platform governance (Campbell-Verduyn *et al*., 2017; Langley & Leyshon, 2021). Complex functions performed by artificial intelligence and complex service architectures enabled by application program interfaces form a technology-based regulatory mechanism deemed as an additional discrete governance type (Campbell-Verduyn *et al*., 2019). This mechanism is designed and controlled by humans; nevertheless, it is also enabled to perform some activities independently, learn, and determine lending decisions (Bernards, 2019; Waliszewski & Warchlewska, 2020). Fintech governance attempts to combine high standardization with customization and personalization to enhance an expansion of services from the Global North to the South (Brooks, 2021; Coetzee, 2018). This means the geographical expansion and the insertion of territories and enterprises from the developing countries into GVCs of financial and nonfinancial corporations. However, the personalization of user accounts by platforms atomizes users, *i.e*. reduces their interactions to platform algorithms, while breaking the embedded territorial, industrial, and personal networks (Brooks, 2021).

The transition towards networks, private governance, fintech-specific governance, and expanded representation of actors have been associated with the evolution of coordination and power relations. Regarding the coordination, banks became disintermediated due to the shortening governance scope and co-opetition with other service providers. This marked the transition from *hierarchical governance* with bank dominance towards *heterarchical* governance, with more balanced and democratic power relations (Okoli & Tewari, 2020; Kraus *et al*., 2021). However, further evolution has been perceived as reintermediation with new hierarchical dominance shared by BigTechs and banks rather than fintech businesses (Langley, 2016; Clarke, 2019). Besides technology and public regulation (sandboxing, RegTech, open banking), the driving force was Covid-19, which raised risk avoidance and shortages to funding fintech, thus reaffirming the position of strong incumbents with financial power and access to customer markets on a global scale (Wójcik & Ioannou, 2020; Lai, 2020). Increasingly diversified BigTechs form proprietary markets for a range of financial and nonfinancial products and hold diversified assets, including large datasets of customers (Bernards, 2019). The associated network effects and the growing role of private governance strengthen corporate dominance and could lock in customers and territories (Campbell-Verduyn, Goguen & Porter, 2017; Singh, 2019).

The above governance transformations (generic, public vs private, fintech-specific, hierarchical vs heterarchical) reveal important territorial specifics; nevertheless, they are not fundamentally oriented at geographical aspects. They mark general processes informing the functioning and emergence of spatial

bank governance*, i.e. global financial networks* and *financial ecologies or financial ecosystems*. Financial ecologies are systems targeted at geographical environments that comprise networks of private and public actors, *e.g.*, banks, fintech, public entities, enterprises and customers (Langley, 2016; DawnBurton, 2020). They can be considered place-based and directed at projects relevant to their target territories (Lai, 2020; Chen & Hassink, 2022; Appleyard, 2020). Financial ecosystems form flexible, project-tailored structures without predetermined lead roles in particular projects (Langley, 2016; Lai & Samers, 2021). The actors gather to implement the project, but they can be both local and global entities with an international reach (*e.g*., crowdfunding platforms). Since the functioning of the system is often platform-based, the leaders in specific projects act as multisided platforms that link other actors.

Global financial networks (GFN) capture banking governance within a broader array of financial and advanced business services (Coe *et al*., 2014; Wójcik, 2021). This view resonates with banks as lead firms within modular networks of coordinating platforms (fintech) and specialized service providers (Knight & Wójcik, 2017). The GFN concept considers banks anchored in global financial centers (cities) and offshore jurisdictions offering favorable taxation. Enhanced by digitalization, GFNs retained scope and established financial centers maintained their position after the 2007-2009 crisis, with prospects to continue this scope and leadership despite Covid-19 (Cassis & Wójcik, 2018; Wójcik & Ioannou, 2020). Recent changes in GFN include the increased role of new financial centers in Asia (Lai, 2020; Lai *et al*., 2020). Ultimately, we do not observe globalization in reverse in the functioning of GFNs as global hubs related to world cities and favorable tax jurisdictions; although, governments might take actions to prevent tax avoidance by offshore jurisdictions (Lai *et al*., 2020).

Another perspective of GFN considers the dispersion of labour in banking governance. Higher value-adding activities of front offices are retained in financial hubs. Fintech-driven standardization of lower value activities in mid and back offices enables their integration for scale economies, and then relocation to mid-income and/or developing countries of Eastern Europe (e.g., Poland) and Asia (e.g., India and Philippines) (Lai, 2020; Wójcik, 2021 Kleibert, 2020). More profound changes might occur in the labour structure of offshore activities due to the substitution of human activities by increasingly advanced AI. Jobs can be retained in locations where skilled human resources perform more complex functions at lower labour costs (Wójcik & Ioannou, 2020; Kleibert, 2020). Besides the predominance of large-city financial hubs, the development of fintech businesses enhanced midsize and nonfinancial centers. High-tech start-ups prefer technology hubs and related industrial clusters for access to knowledge and capital (Chen & Hassink, 2022).

Socio-economic Outcomes in Geographical Contexts

The fintech-driven dynamics of governance is responsible for socio-economic effects that differ, depending on geographical contexts (Table 3).

Table 3. The spatial socio-economic consequences of fintech-driven governance dynamics in banking

Type of governance dynamics	***Relevant findings***	***Selected articles***
From the bank governance to networks and markets	In the Global North, networks of banks and new entrants address customers' expectations of tailored and personalized services.	Omarini (2018)
	Loans from non-bank entities enhance inclusion but also social divisions in the Global South by excluding entrepreneurially unskilled borrowers.	Bhagat and Roderick (2020)
	The role of fintech in financial inclusion is heterogeneous in the Global South countries.	Iman (2018)
	Covid-19 pandemic accelerates digital services and e-commerce in developing countries.	Trisnowati *et al*. (2020)
	Network and market-based P2P lending and crypto-currencies fuel speculation and abuses on a global scale.	Janin and Gabor (2020) de Goede (2020) Wójcik (2020)

Type of governance dynamics	*Relevant findings*	*Selected articles*
	Financial marketization as a type of financialization remains uneven according to racial, occupational, or social classes in the South and according to different categories of investors in the Global North (HFT).	Langley (2016) Lai and Samers (2021)
The increased role of private vs public governance	Deregulation towards open banking improves the availability and quality of services in the EU.	Döderlein (2018)
	Fintech supports the policy for financial inclusion and poverty alleviation in the Global South.	Demir *et al*. (2018, 2020)
	Despite the fintech expansion, socio-economic inequalities in accessing bank services are preserved in poorer countries.	Demirgüç-Kunt *et al*. (2020)
	Change in the African countries' policy towards refugees – from aid to self-sufficiency based on financial inclusion.	Bhagat and Roderick (2020)
	Accelerated economic development in the Global South, fintech-based microfinance for agriculture impacts product development, labour, and sectoral structure; development of e-commerce.	Kong and Loubere (2021)
	Excessive inclusion (failed loans) in poor countries leads to over-indebtedness and resource extraction.	Langevin (2019)
	The exploitation of poorer countries by large fintech platforms from the Global North	Boamah and Murshid (2019)
The emergence of fintech-specific governance	BD credit scoring enable financial inclusion of the consumers lacking credit history in the Global South	Langevin (2019)
	Algorithms personalize investment portfolios for sophisticated investors, mostly in developed economies.	Gupta and Xia (2018)
	Psychometric credit scoring and BD assess the creditworthiness of the unbanked, but the criteria are inadequate for the Global South.	Bernards (2019)
	Inclusion is problematic and obscured by surveillance and social stratification through BD that reaffirm the established inequalities on a global scale.	Campbell-Verduyn *et al*. (2017)
	Mobile money and payments enhance inclusion and self-sufficiency behaviours among the poor and unbanked.	Glavee-Geo *et al*. (2019)
	Rapid digitalization (e.g., cashless transactions) excludes some consumers, predominantly in the South.	Wójcik (2020)
Dynamics from hierarchical to heterarchical to hierarchical power relations	Alternative service providers (e.g., crowdfunding platforms) broaden the opportunities and improve borrowers' bargaining position against banks on a global scale.	Nicoletti (2017)
	Diversified providers of payment and lending enhance or allow for a democratization of relationships among customers and service providers on a global scale.	Chiu (2017)
	BigTechs and fintech address wider consumer needs and lower capital costs compared to banks in a global context.	Tanda and Schena (2019)
	BigTechs assume the power to impact socio-economic structures in the South.	Boot (2021)
	By merging finance with other products, diversified platforms affect purchasing behaviours, labour, and industrial structures.	Lai and Samers (2021)
Emergence of financial ecosystems	Ecosystems enhance social networking (like WeChat or Weibo in China, Oi Paggo in Brazil, M-PESA in Kenya) and private-public networking (X-Road platform in Estonia).	Zhang-Zhang *et al*. (2020)
	Opportunity for farmers and SMEs from developing countries to grow on international markets and access technologies.	Brooks (2021)
	Changes in socio-spatial relations: institutional relationships within entrepreneurial ecosystems, digital inclusion via social platforms, exclusion of digitally unskilled participants, inequalities in access due to technical limitations.	DawnBurton (2020) Lai *et al*. (2020)

Type of governance dynamics	*Relevant findings*	*Selected articles*
Dynamics of GFN – established centers versus new financial hubs	Stagnation or decrease of employment in the major financial centers; the new financial centers in developing countries are weaker compared to developed economies	Wójcik and Ioannou (2020)
	Reduction of standardized jobs in developed countries; in mid and low-income countries, the creation of new jobs vulnerable to technological substitutions	Lai *et al.* (2020)
	In developing countries, the growing role of cities and their networks in establishing links with international markets	Scardovi (2017)
	The development of new financial centers and networks due to locational choices of fintech and related absorption of labour from other sectors in China	Chen and Hassink (2022)

Source: own study.

The *governance dynamics from the bank to networks and markets* enhance the diversifications of services and customization to individual needs in Western countries (Omarini, 2018; Boot *et al*., 2021). In Global South, fintech businesses enable financial inclusion, however, with varying degrees in different countries (Bhagat & Roderick, 2020; Coffie *et al*., 2020; Kim, 2020). At the same time, customers lacking ICT-Internet skills and resources suffer exclusion (Trisnowati *et al*., 2020). These processes vary depending on the context, *e.g.*, they focus on the change from cash-based to a cashless society in the Chinese market, transfer of remittances in African refugee camps, or organization of payment for the unbanked in Brazil (Iman, 2018; Jagtiani & Lemieux, 2018; Kim, 2020). External shocks, such as the 2007-2009 financial crisis and Covid-19, have strengthened the role of the fintech industry, thus accelerating inclusion and reinforcing financialization (Langley, 2016; Lai *et al*., 2020; Lai & Samers, 2021). However, compared to bank governance, markets and networks weaken safeguards against speculation and legal abuses (e.g., financing terrorism, washing money laundering) (Jain & Gabor, 2020; de Goede, 2020).

Related to the effects of networks and markets are the outcomes from the increased impact of *private versus public governance.* In the North, the deregulation of open banking and the entry of nonbank commercial entities improved the quality of financial services (Döderlein, 2018; Hodson, 2021; Passi, 2018; Zetzsche *et al*., 2020), and stimulated e-Commerce and consumption (Chen *et al*., 2017). Select disadvantaged market segments turned to alternative finance, e.g., P2P lending (Maskara *et al*., 2021; Jagtiani and Lemieux, 2018; Suryono *et al*. 2021). However, regulatory sandboxes with fintech participation are perceived as amplifying fintech risk behaviours at the cost of customer protection (Boot *et al*., 2021; Brown & Piroska, 2021).

In the South, private governance of fintech platforms is engaged in development policy (Demir *et al*., 2020; Jalil *et al*. 2022) transforming it from aid-based to oriented on self-sufficiency (Bhagat & Roderick, 2020). The enabling role of private platforms comprises the provision of microfinance to the unbanked in the the peripheries, money transfers from migrant workers (Gupta & Xia, 2018), economic development through job creation and the development of e-Commerce and agriculture (Coffie *et al*., 2020; Kong & Loubere, 2021). The research also reports some negative effects, such as over-indebtedness (Langevin, 2019), and exclusion of failed lenders, illiterate in banking (Boot *et al*., 2021). The far-reaching impacts are the preservation of inequalities in accessing finance (Demirgüç-Kunt *et al*., 2020) and the extraction of scarce resources from poorer societies (Boamah & Murshid, 2019).

Emergent *fintech-specific governance* enables better adjustment to sophisticated investors with ICT-Internet skills in Western economies (Gupta & Xia, 2018; Langevin, 2019). In the South, mobile services, algorithms, and AI allow for the assessment of the unbanked and SMEs lacking credit history and thus enhance their access to basic loans (Agarval & Zhang, 2020; Chen and Yoon, 2021; Campbell-Verduyn *et al*., 2019; Kong & Loubere, 2021). Technological standardization inevitably leads to over-simplification of the formatted psychometric criteria and abstraction of other abilities in credit scoring, such as productive capacity (Bernards, 2019). The creditworthiness criteria adopted from the North are often inadequate, and rapid digitalization excludes customers unwilling or unable to transact cashless (e.g., in Brazil, China, Ghana, Indonesia) (Bernards, 2019; Glavee-Geo *et al*., 2019; Iman, 2018;

Kapron, 2018; Langley & Leyshon, 2021). Threats from algorithm-based surveillance, control, social stratification, inadequate assessment criteria, and improper use of customer data are universal, still more pronounced in developing countries (Clarke, 2019; Lai & Samers, 2021). In addition, automation and robotization cause job losses in standardized bank activities.

The change in power relations and dynamics *from hierarchical bank dominance (disintermediation) towards more democratic, heterarchical governance* improved the bargaining position of lenders to achieve more favorable financing conditions and capital cost on a global scale (Nicoletti, 2017; Chiu, 2017). This effect is especially significant in developing countries of Africa, South America, and South-East Asia (Fenwick and Vermeulen, 2020; Glavee-Geo et al., 2019; Kim, 2020). Services distributed by non-bank providers contribute to poverty reduction, higher consumption, and lower consumer discrimination (Boamah & Murshid, 2019; Demir *et al*., 2020; Glavee-Geo *et al*., 2019; Tanda & Schena, 2019). More far-reaching consequences are changing consumer behaviours (self-control over investments, more sophisticated demand), labour markets (enhanced employment in rural areas), and the development of the sharing economy in the global context (Lai & Samers, 2021). On the other hand, BigTechs reintermediate banking towards a new hierarchization with the power to reshape the socio-economic structures (*e.g*., Chinese company Taobao enhancing employment in rural areas and reversing massive migrations to cities) (Boot, 2021; Tanda & Schena, 2019; Lai & Samers, 2021).

Financial ecosystems represent platforms for social networks and foster cooperation through private or private-public groups both in the North and South (Zhand-Zhang, 2020). Ecosystems address the problems of poor infrastructure, bank account shortages, and noncash payments as exemplified by mobile payment ecosystems absent from traditional banks in Kenya, Nigeria, and Uganda (Babajide *et al*., 2020; Iman, 2018; Wójcik, 2021). Furthermore, financial ecosystems ensure a broadened choice of diversified financing (Łasak, 2022; Zetzsche *et al*., 2020). The resulting changes in sociospatial structures include reduction of inequalities and exclusion, as well as responsiveness to territorial specifics and overcoming local resource constraints (DawnBurton, 2020; Jiao *et al*., 2021; Lai *et al*., 2020).

Global financial networks are oriented towards investment projects that could link the rich North with the poorer South (Chen & Hassink, 2022; Passi, 2018). Due to the fintech innovations, the established banking centers experience stagnation and decrease in employment, *e.g.,* in some standardized functions of financial analytics (Wójcik & Ioannou, 2020). Concurrent labour increases in outsourcing centers or subsidiaries in developing countries could be temporary and vulnerable to technological substitutions (Lai *et al*., 2020; Kong & Loubere, 2021). Emerging financial centers in Asia and new agglomerations of fintech companies lead to a greater spatial polarization and development opportunities for new territories stimulated by the demands of high-tech experts for life quality (Mainelli, 2006).

Discussion

We have identified and systemized the impact of fintech on governance dynamics in banking and related socio-economic consequences in spatial contexts. In response to *RQ1 regarding fintech-driven governance dynamics*, this research identified the emerging, dual, and interrelated system of global financial networks and a mosaic of territorial financial ecologies or ecosystems, where incumbent banks hold an important but not exclusive position (Lai, 2020; Coe *et al*., 2014). The GFNs are networks with banks as lead firms seeking large investment projects on a global scale (Wójcik & Ioannou, 2020; Wójcik, 2021; Kleibert, 2020). Financial ecosystems address retail customers, firms, and place-based projects by connecting territorial private and public actors, global, national, and regional entities, as well as various categories of financial service providers, such as banks, fintech, and BigTechs (Langley, 2016; Lai, 2020; DawnBurton, 2020). The dual system embraces global (GFN) and local (ecosystems) focus (Chiu, 2017; DawnBurton, 2020). The latter is increasingly important against the advancing virtualization of bank branches in medium-sized and small locations with limited access to both retail and investment finance (Wójcik & Ioannou, 2020).

The GFN and ecosystems are interrelated and can be combined in funding projects (DawnBurton, 2020). Financial ecosystems target local projects, nevertheless, they can source from global finance providers, *e.g.,* a firm from a particular region or country ecosystem can access crowdfunds in global financial or technological centers (Scardovi, 2017; Brooks, 2021; Chen & Hassink, 2022; Wójcik, 2021).

Fintech mechanisms profoundly affected the functions, configurations, geographical reach and dispersion, and the type of actors in banking (Chen & Hassink, 2022). The synthesis observation is that the governance scope has been functionally shortened, integrated, and opened to network collaboration with nonbank entities. At the same time, this scope has been expanding geographically, both in terms of markets, collaborators, and labour offshoring. Digitalization and external shocks (crises, pandemic) improved rather than reversed globalization in banking (Boamah & Murshid, 2019; Lai *et al*., 2020).

In response to RQ2 regarding the socio-economic outcomes of fintech-enhanced governance in spatial contexts, our research has identified not only industry-market effects but also wider consequences for poverty alleviation and sustainable development (Arner *et al*., 2020; Iman, 2018; Babajide *et al*., 2020). In the Global North and countries with developed banking sectors, direct effects complement the existing banking system and include improved efficiency, an expanded range of services and their upgrade (customization and personalization), as well as the inclusion of unbanked or underserved market segments (Omarini, 2018). However, there are also downside effects of overindebtedness, surveillance, and exclusion due to the lack of literacy and resources in ICT-Internet (DawnBurton, 2020; Friedline *et al*. 2020). In the South and countries with less developed or absent bank systems, direct effects are more profound, involving the substitution of traditional banking, the provision of basic financial services and inclusion into GVCs. The above-referred downside effects also turn out to be fiercer than in the North (Bhagat & Roderick, 2020; Trisnowati *et al*., 2020).

In terms of the larger consequences for poverty alleviation and sustainable development, in the North, the literature supports the direct effects of inclusion rather than poverty reduction. Bank policies are more restrictive than in the South, but rather reactive than proactive in the attempt to integrate technological changes and fintech businesses into the legal framework and banking governance (Knaack & Gruin, 2020). This raises strong calls for more public participation and proactivity in ensuring sustainable development, by protecting customers and public interests against power asymmetries and excessive dependence from private nonbank entities. In the South and less developed countries, fintech-driven governance more fundamentally changes economic and social behaviours. Fintech businesses, predominantly from the North, are integrated into government policies against poverty, and in the development policies of international organizations (Arner *et al*., 2020). It is still inconclusive and supported by limited research whether financial inclusion through fintech alleviates poverty and ensures sustainable development. Furthermore, in less developed countries, the dark side of fintech-driven governance could be more pronounced in power asymmetries, dependence, resource extraction, capitalization on personal data, and reaffirming inequalities (Campbell-Verduyn *et al*.; 2017; Langevin, 2019). A unique case is China, which developed one of the two largest fintech sectors in the world, avoiding dependence on the North in this area (Kong & Loubere, 2021). Following technological and market breakthrough, policies for wealth and sustainable development in less developed countries need to recognize a more place-based and evolutionary approach regarding consumer behaviours and services upgrade to mitigate the negative consequences referred to. *These observations are in compliance with Proposition 2*, which assumes the explanatory power of the spatial context with respect to the type and depth of fintech-driven transformative processes and ambiguous socio-economic outcomes.

Our findings can also be discussed in theoretical terms. Most of the literature is limited to the impact of fintech on operational efficiency and market expansion in banking (Arslanian & Fischer, 2019; Nicoletti, 2017). Unlike this predominant stream, our research focused on early and scarce literature that introduces governance in spatial contexts as an interim outcome and mediator of the relationships between fintech and socio-economic outcomes (Coe, 2021; Gereffi, 2018). When spatial governance is introduced as a mediator, reasoning expands from technology and efficiency to power relations, competition and dominance, access to resources, and development possibilities for individuals, societies, and territories. The governance approach improves a broader understanding of the effects of fintech transformation in banking. Consequently, the reviewed literature proves the relevance of GPN and GVC logics that assume technological changes that impact governance and raise socio-economic consequences. *These findings support Proposition 1 that assumes the mediating role of governance*

when studying socio-economic consequences of fintech. We emphasize the logics, since these approaches represent a way of reasoning rather than are directly quoted. This calls for more studies that explain bank transformation from the angle of GPN and GVC governance.

Moreover, in compliance with Proposition 3, our research revealed a coevolutionary perspective on digital changes in banking. These transformations are path-dependent, dynamic, and interactive, i.e., mutual influences take place among banks, fintech in the long run, and in spatial contexts (Gong & Hassink, 2019; Gong & Hassink, 2020). The territorial context and history explain the coexistence of varied governance solutions and outcomes (Martin & Sunley, 2015). Besides the substantial dynamics of governance discussed above, the reviewed literature also reflects the intellectual efforts and theoretical evolution from explaining transformations through established modes (market, network, firm, public or private governance) to conceptualizations of new modes (fintech-specific governance, GFNs, and ecosystems). *In response to RQ3 regarding the relationship among fintech mechanisms, governance, and socio-economic effects*, our research supported the role of governance as a mediator between fintech and the referred effects. It also evidenced the feedback relationships among the studied constructs and their dependence on spatial contexts.

CONCLUSIONS

Contribution

This research advances the knowledge of the transformation of industrial governance (Coe, 2021; Gereffi *et al*. 2005; Gereffi, 2018; Brun *et al*., 2019). In particular, it systemizes the fintech-driven dynamics and outcomes of the governance in the under-researched banking industry. The value of the findings is based on profiling the variegated structures and socio-economic outcomes and explaining this variety by contextual differences. To the best of our knowledge, the systematic review is unique in this research area, thus enhancing knowledge accumulation.

Theoretical and methodological contributions comprise the elaboration and corroboration of a research framework of GVC and GPN governance augmented by a co-evolutionary perspective. This research model proved valuable in the identification and explanation of change and variety in fintech-driven governance (Coe & Yeung, 2019; Ponte & Sturgeon, 2014). The framework recognized the causal relationships between fintech, governance, and socio-economic outcomes in geographical context (Gong & Hassink, 2020; Chen & Hassink, 2020). Furthermore, the framework treated governance as a mediator of fintech impact on banking (Coe, 2021; Gereffi *et al*., 2005; Gereffi, 2018; Brun *et al.*, 2019). Instead of seeing the transformation in banking as a unidirectional influence of fintech, it acknowledged the interactions and mutuality between incumbent banks and new entrants (Gong & Hassink, 2019). Furthermore, the framework recognized the geographic context as an explanation of the varied governance and its outcomes for societies and territories (Gong & Hassink, 2020; Chen & Hassink, 2020). The research framework and the findings reported above should be relevant for further empirical studies of context-sensitive industrial transformations.

This study also informs policies seeking financial inclusion for cohesive and sustainable development (Chatterjee, 2020; Frost, 2021; Lai & Samers, 2021; Mehrotra, 2019). The findings identify causal relations between governance types and socio-economic outcomes, *e.g.,* balancing private and public governance and hierarchization vs heterarchization to ensure both efficiency and protection of social interests. Moreover, the findings acknowledge wider consequences of technological transformation than just efficiency gains. They point to power and wealth distribution, changes in social and economic structures, and the rights of individuals. Plausible reasons for differing outcomes from fintech transformations are heterogeneous territorial conditions, which calls for a place-based policy approach (Trippl *et al*., 2015; Ter Wal & Boschma, 2011; Fornahl & Hassink, 2017).

Limitations and Research Agenda

We focused on peer-reviewed academic literature rather than on empirical reports and evaluations to address research questions and propositions and to understand the scientific knowledge in the field (Xiao & Watson, 2019; Tranfield *et al*., 2003). The academic literature in this area is scarce and emerging in

terms of original empirical studies. Conceptual and review articles based on empirical reports and evaluations dominate and their conclusions and propositions require further empirical corroborations. This research reflects the limitations of the accumulated academic knowledge, but it brings the value of systemizing and aggregating this knowledge according to the rules of scientific validity and reliability.

We also need to acknowledge the limitations of the findings that come from the early stage of the literature and the available evidence. The existing literature on fintech-driven transformation in banking is mainly focused on legislative changes and on operational efficiency and market expansion of banks (Arslanian & Fischer, 2019; Nicoletti, 2017). Wider consequences for economic and social inclusion or exclusion and territorial development are underexplored, particularly with regard to empirical research. Moreover, both empirical research and conceptual articles in this area focus on developing countries and the Global South, while the Global North and developed countries are less discussed (Lai & Samers, 2021; Kong & Loubere, 2021).

In the area of banking governance, there is a need for comprehensive empirical verifications of the relationships between particular structures and socio-economic effects in spatial contexts, such as ecosystems and financial inclusion of the unbanked under differing external conditions (Appleyard, 2020; DawnBurton, 2020). Furthermore, it is important to reveal the mechanisms of these causal relationships, such as power relations and dominance that affect the quality of services and sustainable development, depending on the territories considered (Fornahl & Hassink, 2017). Different configurations of governance modes could also be investigated, such as the combination of dominant public or private governance with fintech-specific governance in particular locations. Finally, we need more studies investigating the future development of fintech-driven governance in banking and its consequences, such as divergence or convergence of governance in homogenous or contrasting environments (Frenken & Boschma, 2007).

In the area of socio-economic outcomes, one of the critical issues is whether financial inclusion through fintech enables poverty alleviation and territorial sustainable development. These consequences can be explained by spatial context differences and therefore need to be addressed in comparative studies (Lai & Samers, 2021; Chen & Hassink, 2020). The importance of territorial conditions in explaining the variety of governance transformations and related outcomes calls for treating the context as a study object and not only as a moderator or control variable (Gong & Hassink, 2020).

Consequently, we need comparative studies that apply clearly defined spatial units of analysis. The reviewed literature uses comparative units of the Global South and North, unspecified categories of developed and developing economies, or focuses on individual countries. The former approach might be too general and simplistic, while the latter is overly detailed to make appropriate generalizations; our research necessarily follows these biases. Future studies might direct the focus on comparisons between clearly defined contexts. These can be either contrasting contexts, *e.g.,* specified developed and less developed countries, or large samples of homogenous contexts, or they can match global networks of individual banks in different spatial conditions. It is also important to consider the digitalization of banking governance in the context of other parts of financial markets, *e.g.,* capital markets and cryptocurrencies (Arslanian & Fischer, 2019). Comparative research that is context-sensitive can better address the issue of wealth and sustainability of fintech transformation in banking.

Ultimately, the reviewed literature suffers from the ambiguities of findings on the impact of fintech on governance and socio-economic spheres (Wójcik, 2021; Wójcik & Ioannou, 2020; Wójcik, 2020). To address this ambiguity, we classified the main constructs according to spatial environments and time perspectives. In the countries of the Global North, governance dynamics and socio-economic outcomes of fintech were found to be different from those of the Global South. Moreover, the conclusions and findings were also different in earlier articles from those of more recent articles. These resolutions and interpretations proved to be consistent with the theoretical framework that emphasizes the importance of context and the evolutionary perspective (Chen & Hassink, 2022; Gong & Hassink, 2020). Consequently, the findings and interpretations supported the corroboration of the framework and its usefulness for further research.

REFERENCES

Appleyard, L. (2020). Banks and Credit. In J. Knox-Hayes & D. Wójcik (eds.), *The Routledge Handbook of Financial Geography* (pp. 379-399). New York: Routledge.

Arner, D.W., Buckley, R.P., Zetzsche, D.A. & Robin, V. (2020). Sustainability, FinTech and financial inclusion. *European Business Organization Law Review,* 21, 7-35. https://doi.org/10.1007/s40804-020-00183-y

┼Arslanian, H., & Fischer, F. (2019). *The Future of Finance: The Impact of FinTech, AI, and Crypto on Financial Services*. Cham: Springer.

*Babajide, A.A., Oluwaseye, E.O., Lawal, A.I., & Isibor, A.A. (2020). Financial technology, financial inclusion and MSMEs financing in the South: West of Nigeria. *Academy of Entrepreneurship Journal, 26*(3), 1-17.

*Bernards, N. (2019). The poverty of fintech? Psychometrics, credit infrastructures, and the limits of financialization. *Review of International Political Economy, 26*(5), 815-838. https://doi.org/10.1080/09692290.2019.1597753

*Bhagat, A., & Roderick, L. (2020). Banking on refugees: Racialized expropriation in the fintech era. *Environment and Planning A: Economy and Space, 52*(8), 1498-1515. https://doi.org/10.1177/0308518X20904070

*Boamah, E.F., & Murshid, N.S. (2019). "Techno-market fix"? Decoding wealth through mobile money in the global South. *Geoforum,* 106, 253-262. https://doi.org/10.1016/j.geoforum.2019.08.012

*Bömer, M., & Maxin, H. (2018). Why fintechs cooperate with banks—evidence from Germany. *Zeitschrift für die gesamte Versicherungswissenschaft, 107*(4), 359-386. https://doi.org/10.1007/s12297-018-0421-6

*Boot, A., Hoffmann, P., Laeven, L., & Ratnovski, L. (2021). Fintech: what's old, what's new? *Journal of Financial Stability, 53*(100836), 1-13. https://doi.org/10.1016/j.jfs.2020.100836

*Boot, A.W. (2017). The Future of Banking: From Scale & Scope Economies to Fintech 29. *European Economy,* 2, 77-95. Retrieved from http://usfl-new.wp.hum.uu.nl/wp-content/uploads/sites/232/2015/09/Boot-The-Future-of-Banking-European-Economy-2017.pdf, October 9, 2021.

Breslin, D., & Gatrell, C. (2020). Theorizing through literature reviews: The miner-prospector continuum. *Organizational Research Methods*, 1-29. https://doi.10.1177/1094428120943288.

*Brooks, S. (2021). Configuring the digital farmer: A nudge world in the making? *Economy and Society, 50*(3), 374-396. https://doi.org/10.1080/03085147.2021.1876984

*Brown, E., & Piroska, D. (2021). Governing Fintech and Fintech as Governance: The Regulatory Sandbox, Riskwashing, and Disruptive Social Classification. *New Political Economy*, *27*(1), 19-32. https://doi.org/10.1080/13563467.2021.1910645

Brun, L., Gereffi, G., & Zhan, J. (2019). The "lightness" of Industry 4.0 lead firms: implications for global value chains. In P. Bianchi, C. R. Durán, & S. Labory (Eds.), *Transforming Industrial Policy for the Digital Age* (pp. 37-67). Cheltenham: Edward Elgar Publishing.

*Campbell-Verduyn, M., Goguen, M., & Porter, T. (2019). Finding fault lines in long chains of financial information. *Review of international political economy*, *26*(5), 911-937. https://doi.org/10.1080/09692290.2019.1616595

*Campbell-Verduyn, M., Goguen, M., & Porter, T. (2017). Big Data and algorithmic governance: the case of financial practices. *New Political Economy, 22*(2), 219-236. https://doi.org/10.1080/13563467.2016.1216533

┼Cassis, Y., & Wójcik, D. (Eds.). (2018). *International financial centres after the Global Financial Crisis and Brexit*. Oxford: Oxford University Press.

Chatterjee, A. (2020). Financial inclusion, information and communication technology diffusion, and economic growth: a panel data analysis. *Information Technology for Development, 26*(3), 607-635. https://doi.org/10.1080/02681102.2020.1734770

*Chen, Y., & Hassink, R. (2022). The geography of the emergence of online peer-to-peer lending platforms in China: an evolutionary economic geography perspective. *International Journal of Urban Sciences*, 26(2), 351-371. https://doi.org/10.1080/12265934.2021.1879664

Chen, Y., & Hassink, R. (2020). Multi-scalar knowledge bases for new regional industrial path development: toward a typology. *European Planning Studies, 28*(12), 2489-2507.

*Chen, Z., Li, Y., Wu, Y., & Luo, J. (2017). The transition from traditional banking to mobile internet finance: an organizational innovation perspective - a comparative study of Citibank and ICBC. *Financial Innovation, 3*(1), 1-16. https://doi.org/10.1186/s40854-017-0062-0

*Chiu, I. H.Y. (2017). A new era in fintech payment innovations? A perspective from the institutions and regulation of payment systems. *Law, Innovation and Technology, 9*(2), 190-234. https://doi.org/10.1080/17579961.2017.1377912

*Cicchiello, A. F. (2020). Harmonizing the crowdfunding regulation in Europe: need, challenges, and risks. *Journal of Small Business & Entrepreneurship, 32*(6), 585-606. https://doi.org/10.1080/08276331.2019.1603945

*Clarke, C. (2019). Platform lending and the politics of financial infrastructures. *Review of International Political Economy, 26*(5), 863-885. https://doi.org/10.1080/09692290.2019.1616598

Coe, N.M. (2021). *Advanced Introduction to Global Production Networks*. Cheltenham: Edward Elgar Publishing.

Coe, N.M., Lai, K.P.Y., & Wójcik, D. (2014). Integrating Finance into Global Production Networks. *Regional Studies, 48*(5), 761-777. https://doi.org/10.1080/00343404.2014.886772

Coe, N.M., & Yeung, H.W. (2019). Global production networks: mapping recent conceptual developments. *Journal of Economic Geography, 19*(4), 775-801. https://doi.org/10.1093/jeg/lbz018

*Coetzee, J. (2018). Strategic implications of Fintech on South African retail banks. *South African Journal of Economic and Management Sciences, 21*(1), 1-11. Retrieved from https://hdl.handle.net/10520/EJC-1212b529f0 on November 14, 2021.

*Coffie, C.P.K., Zhao, H., & Adjei Mensah, I. (2020). Panel Econometric Analysis on Mobile Payment Transactions and Traditional Banks Effort toward Financial Accessibility in Sub-Sahara Africa. *Sustainability, 12*(3), 895. https://doi.org/10.3390/su12030895

Colombo, M.G., Dagnino, G.B., Lehmann, E.E., & Salmador, M. (2019). The governance of entrepreneurial ecosystems. *Small Business Economics, 52*(2), 419-428. https://doi.org/10.1007/s11187-017-9952-9

*DawnBurton (2020). Digital Debt Collection and Ecologies of Consumer Overindebtedness. *Economic Geography, 96*(3), 244-265. https://doi.org/10.1080/00130095.2020.1762486

*de Goede, M. (2020). Finance/security infrastructures. *Review of International Political Economy,* 28(2), 351-368. https://doi.org/10.1080/09692290.2020.1830832

De Marchi, V., Giuliani, E., & Rabellotti, R. (2018). Do global value chains offer developing countries learning and innovation opportunities? *The European Journal of Development Research, 30*(3), 389-407.

https://doi.org/10.1057/s41287-017-0126-z

*Demir, A., Pesqué-Cela, V., Altunbaş, Y., & Murinde, V. (2020). Fintech, financial inclusion and income inequality: a quantile regression approach. *The European Journal of Finance, 28*(1), 86-107. https://doi.org/10.1080/1351847X.2020.1772335

*Demirgüç-Kunt, A., Klapper, L., Singer, D., Ansar, S., & Hess, J. (2020). The Global Findex Database 2017: Measuring financial inclusion and opportunities to expand access to and use of financial services. *The World Bank Economic Review, 34*(Supplement_1), S2-S8. https://doi.org/10.1093/wber/lhz013

*Döderlein, D. (2018). What is the optimal mix between banks and FinTechs in the payments architecture? *Journal of Payments Strategy & Systems, 12*(2), 122-129.

*Fenwick, M., & Vermeulen, E.P.M. (2020). Banking and Regulatory Responses to FinTech Revisited: Building the Sustainable Financial Service "Ecosystems" of Tomorrow. *Singapore Journal of Legal Studies,* (March), 165-189. Retrieved from https://search.informit.org/doi/10.3316/informit.239359167409289, September 21, 2021.

Fornahl, D., & Hassink, R. (Eds.). (2017). *The life cycle of clusters: A policy perspective*. Cheltenham: Edward Elgar Publishing.

Frenken, K., & Boschma, R.A. (2007). A theoretical framework for evolutionary economic geography: industrial dynamics and urban growth as a branching process. *Journal of Economic Geography, 7*(5), 635-649. https://doi.org/10.1093/jeg/lbm018

*Friedline, T., Naraharisetti, S., & Weaver, A. (2020). Digital redlining: Poor rural communities' access to fintech and implications for financial inclusion. *Journal of Poverty, 24*(5-6), 517-541. https://doi.org/10.1080/10875549.2019.1695162

┼Frost, J. (2021). The Economic Forces Driving FinTech Adoption across Countries. *De Nederlandsche Bank Working Paper,* 663, 1-20. http://dx.doi.org/10.2139/ssrn.3515326

Fu, J., & Mishra, M. (2020). The Global Impact of COVID-19 on Fintech Adoption. *Swiss Finance Institute Research Paper*, 20-38. https://doi.org/10.5167/uzh-187776

Gancarczyk, M., & Ujwary-Gil, A. (eds.) (2021). Exploring the Link Between Entrepreneurial Capabilities, Cognition, and Behaviors. *Journal of Entrepreneurship, Management and Innovation, 17*(1). Nowy Targ: Cognitione Foundation for Dissemination of Knowledge and Science. https://doi.org/10.7341/2021710

Gereffi, G. (2018). *Global value chains and development: Redefining the contours of 21st century capitalism*. Cambridge: Cambridge University Press.

Gereffi, G., Humphrey, J., & Sturgeon, T. (2005). The governance of global value chains. *Review of International Political Economy, 12*(1), 78-104. https://doi.org/10.1080/09692290500049805

Gereffi, G., & Lee, J. (2016). Economic and social upgrading in global value chains and industrial clusters: Why governance matters. *Journal of Business Ethics, 133*(1), 25-38. https://doi.org/10.1007/s10551-014-2373-7

*Glavee-Geo, R., Shaikh, A.A., Karjaluoto, H., & Hinson, R.E. (2019). Drivers and outcomes of consumer engagement: Insights from mobile money usage in Ghana. *International Journal of Bank Marketing, 38*(1), 1-20. https://doi.org/10.1108/IJBM-01-2019-0007

*Gomber, P., Koch, J. A., & Siering, M. (2017). Digital Finance and FinTech: current research and future research directions. *Journal of Business Economics, 87*(5), 537-580. https://doi.org/10.1007/s11573-017-0852-x

Gong, H., & Hassink, R. (2020). Context sensitivity and economic-geographic (re) theorising. *Cambridge Journal of Regions, Economy and Society, 13*(3), 475-490. https://doi.org/10.1093/cjres/rsaa021

Gong, H., & Hassink, R. (2019). Co-evolution in contemporary economic geography: Towards a theoretical framework. *Regional Studies,* 53(9), 1344-1355. https://doi.org/10.1080/00343404.2018.1494824

Gross, N. (2009). A pragmatist theory of social mechanisms. *American Sociological Review, 74*(3): 358-379. https://doi.org/10.1177/000312240907400302

*Gupta, A., & Xia, C. (2018). A paradigm shift in banking: Unfolding Asia's Fintech Adventures. In W. A. Barnett & B. S. Sergi (Eds.), *Banking and Finance Issues in Emerging Markets* (pp. 215-254). Bingley: Emerald Publishing Limited.

*Hammerschlag, Z., Bick, G., & Luiz, J.M. (2020). The internationalization of African fintech firms: marketing strategies for successful intra-Africa expansion. *International Marketing Review, 37*(2), 299-317. https://doi.org/10.1108/IMR-05-2019-0130

Hill, J. (2018). *Fintech and the remaking of financial institutions*. London: Academic Press.

*Hodson, D. (2021). The politics of FinTech: Technology, regulation, and disruption in UK and German retail banking. *Public Administration*, *99*(4), 859-872.

*Iman, N. (2018). Is mobile payment still relevant in the fintech era? *Electronic Commerce Research and Applications* 30, 72-82. https://doi.org/10.1016/j.elerap.2018.05.009

Jacobides, M.G., Cennamo, C., & Gawer, A. (2018). Towards a theory of ecosystems. *Strategic Management Journal, 39* (8), 2255-2276. https://doi.org/10.1002/smj.2904

*Jagtiani, J., & Lemieux, C. (2018). Do fintech lenders penetrate areas that are underserved by traditional banks? *Journal of Economics and Business,* 100, 43-54. https://doi.org/10.1016/j.jeconbus.2018.03.001

*Jain, S., & Gabor, D. (2020). The Rise of Digital Financialisation: The Case of India. *New Political Economy, 25*(5), 813-828. https://doi.org/10.1080/13563467.2019.1708879

Jalil, M. F., Ali, A., & Ahmed, Z. (2022), Microfinance services and SME growth in Pakistan: The mediating prespective of social and psychological capital. *Journal of Entrepreneurship, Management, and Innovation, 18*(1), 93-129. https://doi.org/10.7341/20221814

┼Jarvis, D.S.L. (2011). Race for the money: international financial centres in Asia. *Journal of International Relations and Development*, *14*(1), 60-95. https://doi.org/10.1057/jird.2010.19

*Jiao, Z., Shahid, M.S., Mirza, N., & Tan, Z. (2021). Should the fourth industrial revolution be widespread or confined geographically? A country-level analysis of fintech economies. *Technological Forecasting and Social Change* 163, 120442. https://doi.org/10.1016/j.techfore.2020.120442

*Kapron, Z. (2018). From digital payments to digital finance: How China's tech companies are redefining banking in Asia and soon Europe. *Journal of Payments Strategy & Systems, 12*(1), 68-73. Retrieved from https://www.ingentaconnect.com/content/hsp/jpss, June 15, 2021

*Kim, K. (2020). The role of mobile money in improving the financial inclusion of Nairobi's urban poor. *African Journal of Science, Technology, Innovation and Development, 12*(7), 855-865. https://doi.org/10.1080/20421338.2020.1733281

┼Kleibert, J. M. (2020). Unbundling Value Chains in Finance: Offshore Labor and the Geographies of Finance. In J. Knox-Hayes & D. Wójcik (Eds.), in: *The Routledge Handbook of Financial Geography* (pp. 421-439). New York: Routledge.

*Knaack, P., & Gruin, J. (2020). From shadow banking to digital financial inclusion: China's rise and the politics of epistemic contestation within the financial stability board. *Review of International Political Economy, 28*(6), 1582-1606. https://doi.org/10.1080/09692290.2020.1772849

*Knight, E., & Wójcik, D. (2017). Geographical linkages in the financial services industry: a dialogue with organizational studies. *Regional Studies, 51*(1), 116-127. https://doi.org/10.1080/00343404.2016.1254768

*Kong, S.T., & Loubere, N. (2021). Digitally Down to the Countryside: Fintech and Rural Development in China. *The Journal of Development Studies, 57*(10), 1739-1754. https://doi.org/10.1080/00220388.2021.1919631

Kraus, K., Kraus, N., & Shtepa, O. (2021). Synergetic effects of network interconnections in the conditions of virtual reality. *Journal of Entrepreneurship, Management, and Innovation, 17*(3), 149-188. https://doi.org/10.7341/20211735

┼Lai, K.P. (2020). FinTech: The dis/re-intermediation of finance? In J. Knox-Hayes & D. Wójcik (Eds.), The Routledge *Handbook of Financial Geography* (pp. 440-457). New York: Routledge.

┼Lai, K.P., Pan, F., Sokol, M., & Wójcik, D. (2020). New financial geographies of Asia. *Regional Studies, 54*(2), 143-148. https://doi.org/10.1080/00343404.2019.1689549

*Lai, K.P.Y., & Samers, M. (2021). Towards an economic geography of FinTech. *Progress in Human Geography, 45*(4), 720-739. https://doi.org/10.1177/0309132520938461

*Langevin, M. (2019). Big data for (not so) small loans: technological infrastructures and the massification of fringe finance. *Review of International Political Economy*, *26*(5), 790-814. https://doi.org/10.1080/09692290.2019.1616597

*Langley, P. (2016). Crowdfunding in the United Kingdom: A Cultural Economy. *Economic Geography* 92(3), 301-321. https://doi.org/10.1080/00130095.2015.1133233

*Langley, P., & Leyshon, A. (2021). The Platform Political Economy of FinTech: Reintermediation, Consolidation and Capitalisation. *New Political Economy*, 26(3), 376-388. https://doi.org/10.1080/13563467.2020.1766432

Livesey, F. (2018). Unpacking the possibilities of deglobalisation. *Cambridge Journal of Regions, Economy and Society, 11*(1), 177-187. https://doi.org/10.1093/cjres/rsx030

Łasak, P., & Gancarczyk, M. (2021). Systemizing the impact of fintechs on the efficiency and inclusive growth of banks' services. In A. Marszk & E. Lechman (eds.), *The Digitalization of Financial Markets: The Socioeconomic Impact of Financial Technologies* (pp. 123-144). London: Routledge.

Łasak, P., & Gancarczyk, M. (2022). Transforming the scope of the bank through fintechs: toward a modularized network governance. *Journal of Organizational Change Management, 35*(1), 186-208. https://doi.org/10.1108/JOCM-05-2021-0147

Łasak, P. (2022). The role of financial technoogy and entrepreneurial finance practices in funding small and medium-sized enterprises. *Journal of Entrepreneurship, Management, and Innovation, 18*(1), 7-34. https://doi.org/10.7341/20221811

Mainelli, M. (2006). Global financial centers: one, two, three... infinity? *The Journal of Risk Finance, 7*(2), 219-227. https://doi.org/10.1108/jrf.2006.29407baf.002

Martin, R., & Sunley, P. (2015). Towards a developmental turn in evolutionary economic geography? *Regional Studies, 49*(5), 712-732. https://doi.org/10.1080/00343404.2014.899431

Martin, R., & Sunley, P. (2006). Path dependence and regional economic evolution. *Journal of Economic Geography, 6*(4), 395-437. https://doi.org/10.1093/jeg/lbl012

*Maskara, P.K., Kuvvet, E., & Chen, G. (2021). The role of P2P platforms in enhancing financial inclusion in the United States: An analysis of peer-to-peer lending across the rural–urban divide. *Financial Management, 50*(3), 747-774. https://doi.org/10.1111/fima.12341

*Mehrotra, A. (2019). Artificial Intelligence in Financial Services – Need to Blend Automation with Human Touch. *2019 International Conference on Automation, Computational and Technology Management (ICACTM)* (pp. 342-347). IEEE.

┼Nicoletti, B. (2017). *Future of FinTech. Integrating Finance and Technology in Financial Services*. Cham: Palgrave Macmillan.

*Okoli, T.T., & Tewari, D.D. (2020). An empirical assessment of fintechs heterogeneous transmission channels to financial development among African economies. *Cogent Economics & Finance, 8*(1), 1829273. https://doi.org/10.1080/23322039.2020.1829273

*Omarini, A.E. (2018). Fintech and the Future of the Payment Landscape: The Mobile Wallet Ecosystem - A Challenge for Retail Banks? *International Journal of Financial Research, 9*(4), 97-116. http://dx.doi.org/10.5430/ijfr.v9n4p97

┼Ozili, P.K. (2020). Financial inclusion and Fintech during COVID-19 crisis: Policy solutions. *The Company Lawyer Journal* 8., Available at: SSRN: https://ssrn.com/abstract=3585662

┼Ozili, P.K. (2018). Impact of digital finance on financial inclusion and stability. *Borsa Istanbul Review, 18*(4), 329-340. https://doi.org/10.1016/j.bir.2017.12.003

*Passi, L.F. (2018). An open banking ecosystem to survive the revised Payment Services Directive: Connecting international banks and FinTechs with the CBI Globe platform. *Journal of Payments Strategy & Systems,* 12(4), 335-345.

Pinkow, F. (2022). The impact of common success factors on overfunding in reward-based crowdfunding: An explorative study and avenues for future research. *Journal of Entrepreneurship, Management, and Innovation, 18*(1), 131-167. https://doi.org/10.7341/20221815

Ponte, S., Gereffi, G., & Raj-Reichert, G. (Eds.). (2019). Introduction to the handbook on global value chains. In S. Ponte, G. Gereffi, & G. Raj-Reichert, *Handbook on Global Value Chains* (pp. 1-27). Cheltenham: Edward Elgar Publishing.

Ponte, S., Sturgeon, T. (2014). Explaining governance in global value chains: A modular theory-building effort. *Review of International Political Economy, 21*(1), 195-223. https://doi.org/10.1080/09692290.2013.809596

*Popelo, O., Dubyna, M., & Kholiavko, N. (2021). World experience in the introduction of modern innovation and information technologies in the functioning of financial institutions. *Baltic Journal of Economic Studies, 7*(2), 188-199. https://doi.org/10.30525/2256-0742/2021-7-2-188-199

*Riyanto, A., Primiana, I., Yunizar, & Azis, Y. (2018). Disruptive Technology: The Phenomenon of FinTech towards Conventional Banking in Indonesia. In IOP Conference Series: Materials Science and Engineering, 407(1), 012104. https://doi.org/10.1088/1757-899X/407/1/012104

┼Salampasis, D., & Mention, A.-L. (2018). FinTech: Harnessing innovation for financial inclusion. In D. L. K. Chuen, & R. Deng (Eds.), *Handbook of Blockchain, Digital Finance, and Inclusion*, Volume 2 (pp. 451-461). London: Academic Press.

*Scardovi, C. (2017). *Digital Transformation in Financial Services*. Cham: Springer International Publishing.

*Singh, J.P. (2019). Development finance 2.0: do participation and information technologies matter? *Review of International Political Economy, 26*(5), 886-910. https://doi.org/10.1080/09692290.2019.1616600

*Son, I., & Kim, S. (2018). Mobile Payment Service and the Firm Value: Focusing on both Up- and Down-Stream Alliance. *Sustainability, 10*(7), 2583. https://doi.org/10.3390/su10072583

*Suryono, R.R., Budi, I., & Purwandari, B. (2021). Detection of fintech P2P lending issues in Indonesia. Heliyon *7*(4), e06782. https://doi.org/10.1016/j.heliyon.2021.e06782

*Tanda, A., & Schena, C.-M. (2019). *FinTech, BigTech and Banks. Digitalisation and Its Impact on Banking Business Models*. Cham: Palgrave Macmillan.

Ter Wal, A.L., & Boschma, R. (2011). Co-evolution of firms, industries and networks in space. *Regional Studies* 45(7), 919-933. https://doi.org/10.1080/00343400802662658

Tranfield, D., Denyer, D., & Smart, P. (2003). Towards a methodology for developing evidence-informed management knowledge by means of systematic review. *British Journal of Management*, *14*(3), 207-222. https://doi.org/10.1111/1467-8551.00375

Trippl, M., Grillitsch, M., Isaksen, A., & Sinozic, T. (2015). Perspectives on cluster evolution: critical review and future research issues. *European Planning Studies, 23*(10), 2028-2044. https://doi.org/10.1080/09654313.2014.999450

*Trisnowati, Y., Muditomo, A., Manalu, E.P.S., Kesuma P., Z., Adriana, D., & Dwiyani H., R. (2020). The COVID-19 Pandemic's Impact on Indonesia's Electronic Retail Payment Transactions. In 2020 International Conference on Information Management and Technology (ICIMTech) (pp. 504-509). IEEE https://doi.org/10.1109/ICIMTech50083.2020.9211232

Villiger, J., Schweiger, S. A., & Baldauf, A. (2021). Making the Invisible Visible: Guidelines for the Coding Process in Meta-Analyses. *Organizational Research Methods*, 1-25. https://doi.org/10.1177/10944281211046312.

┼Vives, X. (2017). The impact of FinTech on banking. *European Economy,* 2, 97-105. Retrieved from https://blog.iese.edu/xvives/files/2018/02/EE_2.2017.pdf#page=99, August 12, 2021

von Briel, F., Davidsson, P., & Recker, J. (2018). Digital technologies as external enablers of new venture creation in the IT hardware sector. *Entrepreneurship Theory and Practice, 42*(1), 47-69. https://doi.org/10.1177/1042258717732779

Waliszewski, K., & Warchlewska, A. (2020). Attitudes towards artificial intelligence in the area of personal financial planning: a case study of selected countries. *Entrepreneurship and Sustainability Issues 8*(2), 399. https://doi.org/10.9770/jesi.2020.8.2(24)

*Wójcik, D. (2021). Financial Geography I: Exploring FinTech–Maps and concepts. *Progress in Human Geography, 45*(3), 566-576. https://doi.org/10.1177/0309132520952865

*Wójcik, D. (2020). Financial geography II: The impacts of FinTech–Financial sector and centres, regulation and stability, inclusion and governance. *Progress in Human Geography, 45*(4), 878-889. https://doi.org/10.1177/0309132520959825

*Wójcik, D, & Ioannou, S. (2020). COVID-19 and finance: market developments so far and potential impacts on the financial sector and centres. *Tijdschrift voor economische en sociale geografie,* 111(3), 387-400. https://doi.org/10.1111/tesg.12434

*Wonglimpiyarat, J. (2017). FinTech banking industry: a systemic approach. *Foresight, 19*(6), 590-603. https://doi.org/10.1108/FS-07-2017-0026

Xiao, Y., & Watson, M. (2019). Guidance on conducting a systematic literature review. *Journal of Planning Education and Research, 39*(1), 93-112. https://doi.org/10.1177/0739456X17723971

┼Zachariadis, M., & Ozcan, P. (2017). The API Economy and Digital Transformation in Financial Services: The Case of Open Banking. *SWIFT Institute Working Paper No. 2016-001.* http://dx.doi.org/10.2139/ssrn.2975199

*Zetzsche, Dirk A., Arner, D.W., & Buckley, R.P. (2020). Decentralized Finance. *Journal of Financial Regulation*, *6*(2), 172-203. https://doi.org/10.1093/jfr/fjaa010

*Zhang-Zhang, Y., Rohlfer, S., & Rajasekera, J. (2020). An Eco-Systematic View of Cross-Sector Fintech: The Case of Alibaba and Tencent. *Sustainability, 12*(21), 8907. https://doi.org/10.3390/su12218907

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Perception of patriotic entrepreneurship in Poland and Ukraine

Łukasz Sułkowski, Grzegorz Ignatowski, Bartłomiej Stopczyński, Joanna Sułkowska

ABSTRACT

Objective: The article aims to investigate how patriotic entrepreneurship is understood by Polish and Ukrainian entrepreneurs.

Research Design & Methods: Qualitative research was carried out as part of the research conducted on the opportunities presented by the development of patriotic entrepreneurship. As part of the qualitative research, in-depth individual inter-views were conducted with ten entrepreneurs doing business in Poland and Ukraine.

Findings: The results showed that the concept of patriotic entrepreneurship was positively evaluated by the entrepreneurs and should be expressed in greater entrepreneurial independence. In their answers, the entrepreneurs paid attention to the need to 'humanise' entrepreneurship. They also showed understanding and strong support for consumer ethnocentrism, which is one of the dimensions of patriotic entrepreneurship. Patriotic entrepreneurship is also determined by preferences as to where a business is conducted. Respondents also indicated that the best place to do business was their own country of origin, empowering their own business, which increases independence from international consortia.

Implications & Recommendations: Patriotic entrepreneurship can be one of the important motivations for consumer, managerial, and employee actions.

Contribution & Value Added: The study was exploratory in nature. Due to the very scarce literature in the field of patriotic entrepreneur-ship, it will serve as a basis for future research in the mentioned area. By systematising the knowledge in this area, it will be possible to better prepare future research projects in this area.

Article type:	research article
Keywords:	patriotism; nationalism; patriotic entrepreneurship; economic entrepreneurship; consumer ethnocentrism
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INTRODUCTION

Reading publications devoted to the issue of patriotism shows that although it is important in political science, there are few texts on the significance of patriotism in broadly understood entrepreneurship and economic activity. Patriotism is sensitive in a particular way to the community, it shows exceptional concern for cultural goods and values, and manifests respect for the homeland. Its priorities include being sensitive to the communal and social aspects of doing business. The commitment to cultural goods brings about the concern for the ethical aspect of economic activity, on the side of both the entrepreneur and the employee (Sułkowski *et al*., 2017). At the same time, in publications devoted to the issue of patriotism related to economic activity, patriotism is most often understood as the love and special attachment of an individual to their homeland. The publications emphasize a sense of personal identification with one's own country and concern for its welfare, promotion, and readiness to sacrifice (Morse & Shive, 2011). Meanwhile, we must note that the criticism of patriotism understood in this way

began in the nineteenth century and the concept itself, taking into account the attachment to universal norms, the understanding of entrepreneurship, and the current principles of economic life, was verified. Bearing in mind the original concept of patriotism, it is difficult to connect the ontological and epistemological orders. The concept understood in a modified way allows to reconcile these orders. In fact, given the signalled concept of patriotism, which focuses on love and loyalty to one's own country, it is difficult to reconcile it with such phenomena as striving to reduce economic barriers and borders and a universal understanding of social justice (Macedo, 2011). It should be assumed, however, that they can be included in the discourse on entrepreneurship despite emerging nationalisms, also in the spheres of economy and progressing globalization (Greenfeld, 2011; Kregel, 2019; Melegh, 2006; Smits & Bowden, 2015; Suryadinata, 2000). On the one hand, international trade agreements concluded by countries, signed contracts, and constantly emerging new economic communities must significantly limit local economic initiatives aimed at promoting a given community and group. On the other hand, voices are being heard that in economic activity greater emphasis should be placed on state independence, especially when it concerns sectors of the economy ensuring the sovereignty of a given country. As a consequence, all this allows us to look at the discussion on the importance of patriotism, also in the economic sphere, with optimism. At the same time, the understanding of patriotic entrepreneurship depends largely on how we understand and define the concepts of patriotism and entrepreneurship.

The term 'patriotism' is used more frequently when we express ourselves in a positive way, and nationalism when we use the word in a negative sense. There is also a suggestion that patriots are much more reasonable, accountable for their actions, and respect the commitments made by patriots in other countries. Nationalists, on the other hand, seem to be extreme, ruthless, and uncritical in their commitments, ready to demand the superiority of their country over others and to be belligerent in their behaviour (Poole, 2008). Patriotism is associated not only with nationalism but also with ethnocentrism (Hammond & Axelrod 2006). In this case, patriotism may manifest itself in glorifying one's own ethnic group, with stereotypical devaluation of other ethnic groups (Hewstone *et al*., 2002). In such a case, patriotism is threatened by the influence of nationalism and even racism (Ray & Furnham, 1984). However, many researchers point out that patriotism is a kind of 'maintaining a balance' between caring for the good of the community one is a part of, and cooperation with representatives of other cultural, ethnic, and national groups (Mummendey *et al.*, 2001). It should also be mentioned in the discourse on entrepreneurship. It is, after all, one of the key social ideas, rooted in the birth of nation states. Today, the strength of the impact of patriotic values on the development of entrepreneurship significantly differs depending on the country, ethnic group, social group and their status (Dowley & Silver, 2000). For example, in the nineteenth century, Poland was one of the examples of a nation without a state in which the ideas of patriotism and its values were the foundation of national identity. The sense of patriotism influenced the development of local entrepreneurship.

Considering the emerging nationalistic tendencies, the article will draw attention to the need to place and develop the concept of patriotic entrepreneurship in entrepreneurial science. In doing so, the issue of patriotic entrepreneurship will be considered from the perspective of the entrepreneur and the consumer. Therefore, the aim of the article is to investigate how patriotic entrepreneurship is understood by Polish and Ukrainian entrepreneurs. To this end, five research questions were formulated in the research, which were verified in qualitative research. It seemed fully justified to include both Polish and Ukrainian entrepreneurs in the research. Both have only recently begun to participate in the process of building an economy based on market rules. Polish entrepreneurs have a full opportunity to participate in the international structures of the European Union, while the Ukrainians are inspired by it. Before starting the research, both Polish and Ukrainian entrepreneurs were previously acquainted with the issues addressed in the present text.

Paper is composed in five parts. First one is introduction with the aim of article, than literature review focused on problems economic patriotism but also consumer ethnocentrism and patriotic entrepreneurship. Then there are descriptions of research methodology, results and discussion. The results of qualitative research showed the perception of patriotic entrepreneurship by the entrepreneurs. The last part are conclusion emphasizing the meaning of patriotic entrepreneurship. The research limitation and article contribution were also presented in the last section of the article.

LITERATURE REVIEW

The origins of economic patriotism should be sought in mercantilism (Reznikova *et al.,* 2018; Helleiner, 2002), which was a system of economic nationalism. It was associated with the growth of national self-consciousness and patriotism. It stood for national power as a necessity for defence and offence, as something to which the economic interests of the people must be subordinated and which they must be made to subserve, and which in turn must be used to safeguard and advance those interests as distinct from, and even opposed to, those of other peoples (Horrocks, 1925). The mercantilist system was found to have basic elements of economic nationalism (Aggarwal, 2016), although mercantilism and economic nationalism should not be equated. While mercantilism directs economic development in a direction that benefits the state elite, economic nationalism uses the state to promote national interests (Levi-Faur, 1997).

Actual patriotism and patriotic entrepreneurship are not diametrically opposing concepts in a global perspective (Rawwas & Rajendran, 1996). The term 'patriotism' does not appear in European languages until the second half of the eighteenth century (Barnhart, 1995). According to the widespread understanding of patriotism, a patriot is a person who loyally loves their country, demonstrates their loyalty, and is ready to defend it (Crowther, 1998). Patriots identify themselves with their own country and its fellow citizens and may also prefer its prosperity to other countries. Patriotism understood in this way has a certain emotional character, so it is open to changes and has potential. This emotional character is emphasized if we take into account that patriots and communities that make up states are tied to specific geographic places, and the individual and community are intergenerational and deeply believe in survival and their own well-being. A patriot may but does not have to perceive only the positive features of their own country and nation and express hostile sentiments towards others (Callan, 2006; Hand, 2011).

The concept of patriotism quoted above was criticized already in the nineteenth century. Critics of patriotism in its traditional sense even say that it is a form of racism or that it has a Janus face (Keller, 2005; White, 2003). Literature says that the first to criticize patriotism was the Russian thinker and writer Leo Tolstoy, who writes that patriotism can be both stupid and immoral (Primoratz, 2000).

The negative potential of patriotism can also be directed inward, which can lead to the differentiation of patriotic people in a given country, good people and bad people. Indeed, as Nussbaum (2008) notes, the idea of patriotism will always give priority to specific communities over others. Therefore, one should strive to ensure that patriotism draws its inspiration from universal ideas, emphasizes universal aspects, such as justice and the necessity to preserve the ethnic diversity. In this case, however, the important question remains whether we can still call it patriotism.

In an attempt to mitigate the potential and negative overtones of patriotism, good patriotism is sometimes distinguished from bad nationalism. The latter is most often understood as an attitude taken by members of a nation when they care about national identity or when they undertake actions aimed at achieving or maintaining self-determination in times of threat. While nationalism uncritically accepts national, state, and political authorities along with a belief in the superiority and dominant status of one's own nation, patriotism is defensive in this context. It is perceived as being attached to a specific place and way of life that someone considers to be the best. However, patriots do not want to impose their values and dominate others. In this approach, patriotism places more emphasis on the place, and nationalism on the nation (Miscevic, 2020; Skitka, 2005).

In fact, patriotism and nationalism are not of the same nature. They differ in the formation of political ideas, the ways of expressing arguments, and ways of referring to a political party, homeland, country, and nation. In other words, both terms have slightly different connotations, as do the languages used by people referring to patriotism and nationalism. One should not ignore the fact that both nationalism and patriotism had their dark moments in human history (Audi, 2009; Markell, 2000). According to some authors, patriotism rejects actions aimed at idealizing the nation and expresses readiness to constructively and critically look at its history. It supports a given political system as long as it remains in line with human values and accepts that the state may be criticized for its actions (Davidov, 2010).

When confronted with emerging nationalisms, it is worth to deepen the meaning and understanding of patriotism. Regardless of how much we emphasize the mildness of patriotism in the context of nationalism, we will always stick to the idea of sacrifice for one's own country. From the perspective of the community, a patriot will always have love for one's own country in mind, which causes other groups to be relegated to the background. Thus, it should never be forgotten that patriotism can serve a bad purpose. However, if we decide that it is justified to speak of patriotism, the question arises of how to implement control tools and safeguards that can counter patriotic bias towards other people (Macedo, 2011).

The well-thought-out idea of patriotism allows to avoid a conflict between citizen's emotional attachment to their country and their rationally grounded moral and political obligations (Markell, 2000). Patriots support a given political system as far as it is consistent with human values. They accept the fact that the state can be criticized and accept that there are negative feelings about the nation (Davidov, 2010). Criticism of narrowly understood patriotism and searching for a place for it in the context of universal values, and emerging nationalisms lead to the distinction of several types of patriotism. In the literature, we encounter constructive and authoritarian patriotism also known as uncritical (Huddy & Khatib, 2007). Patriotism can also be symbolic and blind, right-wing or liberal (Parker, 2010). Bearing in mind the memory of Nazism and the need to protect against potential atrocities, German political scientists coined the concept of 'constitutional patriotism' (Lacroix, 2002).

There are several connotations related to patriotism and economy in the literature on the subject. The first is 'economic patriotism.' The dominant understanding of 'economic patriotism' is steering national economy towards: statism, rejection of neo-liberalism, stronger country orientation, and local entrepreneurship. Although the concept of economic patriotism appeared in the nineteenth century (Clift & Woll, 2012b), its sources of renewed popularity should be sought in the 2008 crisis, which resulted in a very high increase in public expenditure caused by activities related to state intervention, aimed at mitigating the effects of this crisis. This crisis also showed that economic neoliberalism is not a recipe for the efficient functioning of the market (Clift & Woll, 2012a; Szanyi, 2016). This crisis was a catalyst for the rise of economic patriotism in popularity, which became an alternative to neoliberalism. However, the devaluation of neoliberalism and its gradual departure from it had already taken place before the crisis (Härtel, 2006).

When defining economic patriotism, we should start with the fact that economic patriotism suggests a hierarchy of values, in which homeland ranks higher than individual economic interests (Clift & Woll, 2012a). Thus, economic patriotism means making conscious economic decisions taking into account the positive impact of these choices on the national (state) community with which a given entity identifies itself. This is tantamount to economic bias towards certain territorial groups, resulting in a privileged position for these groups (Callaghan & Lagneau-Ymonet, 2010; Szanyi, 2016, Pawlak *et al*., 2021, Mizik *et al*., 2020). These decisions are made both by buyers (*e.g.* purchases of domestic goods) and producers (*e.g.* selection of domestic suppliers, co-operators, selection of a local location as a place of business and paying taxes), (Krzemień, 2019) and public authorities. As a result, there is a triad that contributes to the patriotic economy. The first two elements of this triad are the actions of public authorities relying on economic interventionism and customers driven by consumer ethnocentrism. In the case of entrepreneurs, the literature suggests that these are activities related to corporate social responsibility. It seems, however, that reducing the activities of entrepreneurs to activities related to functioning in accordance with the principles of corporate social responsibility is an oversimplification. Firstly, such activities may be global, cosmopolitan (*e.g.* fighting global warming, supporting global foundations). Secondly, a series of business decisions that take into account the principles of patriotic economy do not match the principles of corporate social responsibility (*e.g.* preference for local suppliers). Therefore, here, corporate social responsibility should be replaced with patriotic entrepreneurship.

It should be remembered that patriotic action can appeal to one's nation or some other territorial unit (Clift & Woll, 2012a). In the latter case, it may refer to both an in-country region and a community of nations (*e.g.* the EU).

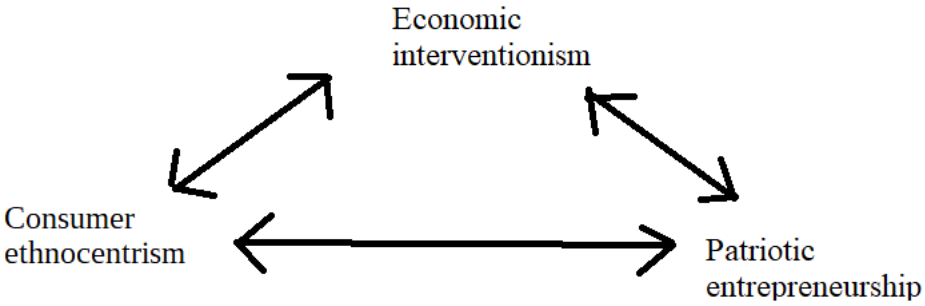

Figure 1. The triad that makes up the patriotic economy
Source: own elaboration.

The concept close to 'economic patriotism' is 'economic nationalism' based on the autarchic, protectionist perception of national economy (Reznikova *et al*., 2018). Representatives of political economy use the term 'economic nationalism' in the sense of anti-liberal orientation, *i.e.* focused on the closed idea of the national economy (Stahel, 2013). In turn, researchers identifying themselves with the economic nationalism trend tend to treat economic processes separately from the political, social, and cultural aspects of nationalism (Fetzer, 2017). In addition to the traditional pejorative and combined treatment of economic patriotism and economic nationalism, one can find many authors defending the concept of economic patriotism (Clift 2013; Clift & Woll, 2012a; Clift & Woll, 2012b). Especially after the 2008 crisis, the idea of economic patriotism has been re-invented (Clift & Woll, 2012a). The concept of regaining control over national economy by democratic power seems to be growing together with opposition against 'excesses of neoliberalism' (Clift & Woll, 2012b; Rosamond, 2012). After all, economic patriotism pays attention to the choices of consumers, producers, workers, or politicians. The economic policy may be hidden or open. Economic patriotism in its original meaning referred to the momentous French political initiatives aimed at influencing public opinion.

The first element of the triad that creates a patriotic economy is the behaviour of buyers of manufactured products in a given country. Generally speaking, a patriotic attitude makes people more sympathetic to their country's products and thus they support local entrepreneurship. In this context, we are talking about consumer ethnocentrism, which means attachment to products and brands originating in a given country. Despite a kind of cosmopolitanism dominant in the consumer sphere, the issue of consumer ethnocentrism occupies an important place not only in international entrepreneurship, but also in marketing, allowing for a better understanding of consumer attitudes. At the same time, the very concept of ethnocentrism means the belief that one group of society is superior to the other. Ethnocentrism can also be treated as an expression of a person's need to seek their own identity, belong to a group, and contribute to its well-being (Huddleston *et al*., 2001; Bryła, 2017).

From the market perspective, consumer ethnocentrism manifests itself in the belief of buyers of a given product that buying foreign-made products is inappropriate and immoral and may violate domestic business and employment structures (Auruskeviciene *et al*., 2012). We can say that 'from the perspective of ethnocentric consumers, purchasing imported products is wrong because, in their minds, it hurts the domestic economy, causes loss of jobs, and is plainly unpatriotic; products from other countries (*i.e.,* outgroups) are objects of contempt to highly ethnocentric consumers' (Shimp & Sharma, 1987). We can therefore see that attitudes characterized by ethnocentrism influence the attitudes of consumers towards domestic and foreign products, the perception of given products and, finally, the buyers' decisions.

Consumer ethnocentrism is a multidimensional phenomenon influenced by cognitive and perceptual dimensions, the level of collectivism (individualism and conservatism), product and country image, and also patriotism and nationalism (Siamagka & Balabanis, 2015).

The conducted empirical research proves that the level of consumer ethnocentrism depends on the demography, socio-psychological characteristics of consumers, and economic and political conditions (Shankarmahesh, 2006). Most empirical studies show a strong coherence of ethnocentrism

with demographic conditions, consumer education and age, and the household budget. Younger and more educated consumers are less prone to ethnocentrism compared to older and less educated buyers of goods (Erdogan & Uzkurt, 2010; Siemnieniako *et al*. 2011; Šmaižiene & Vaikienė 2014; Watson & Wright 2000). Less educated consumers with a smaller family budget are more ethnocentric, show a more negative attitude towards purchasing imported products, and are less sympathetic towards products of foreign origin. The influence of consumer ethnocentrism on purchasing domestic products is reduced when consumers consider the products to be of inferior quality or when consumers attach greater importance to the values associated with consumption (when consumption is of more value to them) (Lu Wang & Xiong Chen, 2004).

Where the concept of consumer ethnocentrism is related to 'the country of origin' concept, it positively correlates with patriotic attitudes. Thus, the assessment of products or services is related to specific countries (Andėhn *et al*., 2016). The product's origin strongly impacts consumers' judgment and thus countries may make use of this fact (Pucci *et al*., 2017; Serrano-Arcos *et al*., 2021). Therefore, there is a belief that products from foreign countries have less value. People who are patriotic towards their country prefer products of domestic production and reduce the value of goods from abroad (Rawwas & Rajendran, 1996; Spillan & Harcar, 2013).

Among the many studies linking consumer ethnocentrism to patriotism, international studies, in which patriotism is one of the many variables conditioning ethnocentrism, dominate. Comparative studies showed that consumer ethnocentrism in Turkey was correlated with patriotism, and in the Czech Republic with nationalism (Balabanis *et al*., 2001). Research conducted in South Korea showed a significant correlation between patriotism and consumer ethnocentrism (Shimp & Sharma, 1987). Research carried out in the mid-1990s indicated a high level of consumer ethnocentrism in Poles associated with the level of patriotism, which increased with the age of product buyers (Awdziej *et al*., 2016). However, research conducted in Lithuania on the Lithuanians' approach to domestic and foreign food products showed that consumer ethnocentrism was lower than average. The attitude of consumers towards imported products and purchasing imported products was not negative. It did not change the fact that the attitude towards Lithuanian products was also positive. The research also confirmed that the smaller the household budget, the greater the consumer ethnocentrism (Šmaižiene & Vaikienė, 2014). Research conducted in Poland showed that consumers in various regions considered Polish food products to be cheaper and healthier, more eco-friendly, and fresher compared to those produced abroad (Bryła, 2017).

It is also worth noting that the issue of consumer ethnocentrism is related to such issues as product-specific and regional-specific attitudes (Matušínská & Zapletalová, 2021). The first one, the product-specific approach, means that the influence of consumer ethnocentrism on the perception of the product, consumer decisions, and their actions differs depending on the different categories of goods. Consumers are more sensitive to the country of origin of the products that are consumed directly, and consumption of which is more closely related to physical health. For example, let us mention food and drinks (Drozdenko & Jensen 2009; Šmaižiene & Vaikienė, 2014). As for the second of the above-mentioned elements, *i.e.* the regional-specific approach, it should be noted that it leads to the study of common trends that exist in given countries with economic, historical, and cultural similarities.

We can therefore conclude that consumer ethnocentrism correlates with patriotism. In shaping consumer attitudes in this area, the attitude of individual governments that place great emphasis on the development of patriotic ideas may be of great importance. Thus, it also seems justified to include consumer ethnocentrism in the model of 'patriotic entrepreneurship.' The link between consumer ethnocentrism and patriotism may weaken or be strengthened and thus the importance of consumer ethnocentrism on the attitudes of customers may weaken.

The actions of the public side are another element of the triad. These activities within the patriotic economy are primarily state interventionism, which means various forms of discrimination against the government in favour of local organizations (Callaghan & Lagneau-Ymonet, 2010; Szanyi, 2016). These forms very often take the form of hidden tools that positively discriminate against domestic players, the aim of which is to restore control over open markets (Szanyi, 2016). Such activity can take many forms. According to Clift and Woll (2012a), it is divided into two basic types from

which the types of patriotic economy result: liberal economic patriotism and conservative economic patriotism. Liberal economic patriotism entails selective or strategic liberalization in a way that privileges a particular set of economic actors. It can aim to support the competitiveness of national firms or citizens operating abroad. It is characterized by liberal policies that facilitate the creation of subnational champions. Conservative economic patriotism refers to the traditional protectionism. Looking to preserve the status quo, it is characterized by activities to protect the local market and local companies from global competitors (Clift & Woll, 2012a). The syndrome of 'conservative economic patriotism' is growing in countries ruled by populistic parties such as: Hungary, Poland, Italy, Greece, or Indonesia (Lekakis, 2017; Papp & Varju, 2019; Pham, 2019).

While a conservative approach to interventionism that protects local firms from competition is harmful, liberal interventionism can help improve the competitiveness of local firms. M. E. Porter's model, in which the sources of competitive advantage can be found in the company's environment, is worth mentioning here. In this model, organizations compete on a global scale, and location is an important element influencing their position. In the conditions of global competition, the importance of nations has increased, and the ability to create and absorb knowledge has been becoming the basis of competition. The countries and regions where the organization is located play an important role in this process (Porter, 2001). The most important means of creating a competitive advantage is innovation. Enterprises gain a secure competitive position thanks to the implementation of innovations and continuous improvement. The source of innovation is not only the inside of the organization, but also its environment. The close competitive environment and the cluster are of particular importance. Enterprises compete based on the latest innovations, the number and importance of which depends on the close environment of the organization. The determinant of national competitive advantage is the rhombus of national advantage. It is made up of four components: competing firms in a given area, buyers, factor conditions, and related and supporting sectors. The competition between companies forces their constant development by improving their innovativeness. Moreover, customers expect better and better products, which also motivates companies to improve the offer. Appropriate conditions of production factors should be ensured by the public side and an increase in the attractiveness of the sector. At the same time, the strong development of companies stimulates the development of related and supporting sectors (Furman *et al*., 2002). In such a case, the public party, through appropriate activities related to liberal interventionism, is able to improve the conditions of production factors and support related and supporting sectors, which will contribute to the increase in the competitiveness of local companies.

The last element of the triad that makes up the patriotic economy is patriotic entrepreneurship. The concept of 'patriotic entrepreneurship' is not popular in the literature. There is one English-language item in the Scopus database containing the phrase 'patriotic entrepreneurship' in the title, abstract, or keywords. Google Scholar lists 14 search results for the phrase 'patriotic entrepreneurship,' of which 12 are in English and two in Polish. Among these 14 titles, the phrase 'patriotic entrepreneurship' appears in the text in 10 of them. Out of them, three discuss patriotic entrepreneurship (May 4, 2022). The term 'entrepreneurial patriotism' (10 items on Google Scholar, May 4, 2022) was mainly used to explain historical type of active and inventive patriotism (England, 1985; Moreno-Luzón, 2007). The term 'patriotic leadership' is much more popular in the literature. However, the term is mainly applied to political and historical leadership.

Moreover, the concept of 'patriotic entrepreneurship' does not seem to be applied to understand the activities of enterprises. In literature, there exists the historical case of Tata Company using the concept of 'patriotic entrepreneurship;' Tatas have applied patriotic entrepreneurship from the outset. When Tata Steel raised money from domestic investors in 1906, Jamshetji's son Sir Dorabji Tata wrote, 'It was the first time that the raw material of India did not go out and return as finished articles to be sold in the country. Above all, it was purely swadeshi enterprise financed by swadeshi money and managed by swadeshi brains' (Aswathappa, 2021). The phrase 'patriotic entrepreneurship' is just used without any explanation. It seems, however, looking at last strong orientation towards upgrading the patriotic orientation in many economies that 'patriotic entrepreneurship' perspective could be attractive to describe.

The meaning of 'patriotic entrepreneurship' is shaped by both positive and pejorative connotations. Sources and links to patriotic entrepreneurship can be found in the concepts of corporate social responsibility, citizenship activity, and 'economic patriotism' (Krzywosz-Rynkiewicz *et al*., 2017). In the literature, one can also find concepts related to patriotic entrepreneurship among such concepts as 'entrepreneurship engagement' (Thorgren & Wincent, 2013), 'social, societal entrepreneurship' (Estrin *et al*., 2016; Gawell, 2013; Thompson *et al*., 2000) and 'civic entrepreneurship' (Leadbeaster & Goss, 1998; Rowe & Christie, 2008), and 'inclusive entrepreneurship' (Gurría, 2013). Associations of patriotic entrepreneurship with 'economic nationalism' and with ethnocentrism are negative (Cheah & Phau, 2015; Szanyi, 2017).

The emphasis on the development of entrepreneurship and taking into account patriotism, which guides given countries, may result from strong pressure from public opinion. In turn, this is not dependent on international agreements. Undertaken decisions must take into account the patriotic commitment of individuals. They can influence governments' decisions to distribute available financial resources to given sectors of economic life. It is about awakening the feeling of solidarity with those employees who feel threatened with losing their job or have a need to improve and achieve a higher social level (Brubaker, 2004).

Therefore, we can propose several possible dimensions of patriotic entrepreneurship, which will be derived from the concept of economic patriotism, entrepreneurship, and consumer ethnocentrism. Patriotism in the sphere of human entrepreneurship, after taking into account the connotations of the concept of 'patriotism,' can be considered from at least several perspectives. It is about the quite widely discussed government perspective, which is also a political one, but also about the perspective of an entrepreneur and a customer, a potential buyer of manufactured goods.

Drawing on economic patriotism, taking into account the political perspective, we can say that patriotic entrepreneurship is expressed in the support of specific governments for national economic activity and thus leads to a certain discrimination against other economic entities. It therefore also means economic choices aimed at supporting specific companies or economic sectors due to their territorial status. Political decisions can be covert or overt. Economic patriotism must therefore lead to a certain clash between the political sphere and economic rules (Cliff, 2013).

Bearing in mind the political and governmental perspective, it should be stated that the notion of 'patriotic entrepreneurship' can be used as a general euphemism in the application of the wide range of protectionist and industrial policy measures possessed by individual states. In this sense, patriotic entrepreneurship would not be far from economic patriotism. Namely, individual countries have the means to protect their own market against international competition. They put forward various arguments in support of them. At the top of the list is concern for the protection of the local and unique environment, alleged or real concern for jobs in the national economy. However, in some areas of business activity, like tourism, there is a dilemma which direction of development is more suitable – internationalisation or remaining national identity (Devkota *et al*., 2020). In utilities such as gas, water, and electricity, securing public supplies plays an important role. This is often linked to national security and strategic concerns. In addition, sometimes there is no understandable sense of loss of sovereignty. The above-mentioned factors pose a problem not only for governments whose scope of control over the economy is limited by globalization processes. Governments, however, motivated by protection of local enterprises, strive to create national leaders in a given industry. They can also exert pressure to cooperate with local firms, by limiting access of foreign companies to state public procurement (Wruuck, 2006).

From the same perspective, patriotic entrepreneurship is reflected in granting state aid by individual states. The most frequently used types of such assistance within the European Union include small subsidies, tax breaks, or other fee exemptions. In the case of the payment of receivables to the state, payment deadlines can be postponed or it is possible to apply for splitting the payment into a number of instalments (Commission Regulation (EU) No 1407/2013 of 18 December 2013).

Patriotic entrepreneurship can also be seen as a combination of entrepreneurial activity, *i.e.* focused on looking for opportunities wherever local market imbalance may bring extraordinary profit while being guided by patriotism, that is the love for the motherland manifested in treating the territory as a value that needs to be protected. This is done through activities related to the ideas of

responsible business and ecology (Kaca, 2020; Myšková & Hájek, 2019), eradicating tolerance to corruption and informal activity which are still distributed, especially in emerging economies, and contradict patriotic entrepreneurship and economic development (Mishchuk *et al.,* 2018). This results from taking into account aspects related to community, ethical values of a given community derived from its cultural heritage, and an increased way of showing respect for the territory, *i.e*. for the natural environment (Sułkowski *et al*., 2017).

Therefore, the issue of patriotic entrepreneurship, as mentioned above, can also be considered from the point of view of environmental protection. For if patriotism is expressed in love for one's own country, and thus also for the land, then from the perspective of an entrepreneur, this patriotism would be expressed in promoting activities that support the production of goods manufactured with full respect for environmental protection. It is particularly about paying attention to those legal regulations and solutions that take into account sustainable economic development postulated in international agreements (Gibbs, 2009; Hall *et al*., 2010; Pacheco *et al*., 2010). A patriotic entrepreneur would concentrate their activities on supporting projects focused on renewable energy sources.

Another form of patriotism seen from the entrepreneur's point of view, and also, in a sense, from the perspective of nationalism, would be related to the issue of employment of workers. Namely, it concerns situations, in which the entrepreneur would not be guided in their choices by candidates' competences but the sense of belonging to a given community or by linking it with minorities and a specific country of origin. These groups are always there when the importance and role of patriotism is emphasized. We would then be dealing with a unique form of favouring people in the workplace rarely discussed in the literature. Publications on this topic generally talk about favouritism, nepotism, and cronyism (Arasli & Tumer, 2008; Fetahu & Driton, 2017; Ignatowski *et al*., 2021; Jones & Stout, 2015; Keles *et al*., 2011; Sroka & Vveinhardt, 2020).

At the same time, in the case of applying the preferences of local employees, the so-called 'patriotic professionalism' may develop on their side. Its sources should be sought in contemporary China where it is assumed that the choice of a profession by a young person should be related to their skills and competences and suitability for the country. In other words, the overriding factor in making career choices is the suitability of the individual for the national economy (Hoffman, 2006).

A fair approach to patriotic entrepreneurship should also be discussed in the context of political refugees, who should be provided with the necessary livelihoods. Let us remind that being a patriot finds expression in supporting political systems and legal solutions that are consistent with human values. It is therefore about respect for human rights as well as international agreements and obligations. There are also studies on the impact of ethnicity and national origin on employment or, more broadly, economic activity (Alesina & La Ferrara 2005; Staerklé *et al*., 2010; Rukuni *et al*., 2022). True patriotism must be promoted in conjunction with the assurance of constitutional rights for minorities and a judiciary that is decisively independent of public prejudice and free to interpret these rights.

This is especially accurate when considering the fact that patriotism is always exposed to the risk of falling into xenophobia, which can concentrate on immigrants or groups of immigrants (Nussbaum, 2008). It is also impossible to ignore the patriotism of emigrants in matters relating to employment. Literature speaks of the patriotism of memories (Boccagni, 2011), cultural patriotism (Fröhlich, 2018), or the patriotism of immigrants in general (Waldinger & Duquette-Rury, 2016). The issue becomes important in the context of mass migrations, including economic migrations.

RESEARCH METHODOLOGY

The issue of patriotic entrepreneurship is not widely discussed in scientific works. Nevertheless, we propose some important elements that can set up constitutive factors for such an activity. These include such issues as nationalist patriotism, and economic patriotism. Sources and links with patriotic entrepreneurship can be found in the concepts of corporate social responsibility, citizenship activity, and economic patriotism (Krzywosz-Rynkiewicz *et al.*, 2017). In the literature, one can also find concepts related to patriotic entrepreneurship among such concepts as 'entrepreneurship engagement' (Thorgren & Wincent, 2013), 'social, societal entrepreneurship' (Estrin *et al.*, 2016;

Gawell, 2013; Thompson *et al.*, 2000) 'civic entrepreneurship' (Leadbeaster & Goss, 1998; Rowe & Christie, 2008), and 'inclusive entrepreneurship' (Gurria, 2013). Associations of patriotic entrepreneurship with 'economic nationalism' and with ethnocentrism are negative (Cheah & Phau, 2015; Szanyi, 2017). At the same time, research shows that there is no shortage of works devoted to issues such as patriotism or nationalism. The literature dealing with the issue of entrepreneurship as such in the context of organizational nepotism, corruption, or the importance of modern technologies for promoting entrepreneurship is extensive.

Therefore, the aim of the study was to analyse how patriotic entrepreneurship was understood. As entrepreneurship and patriotism carry positive connotations, further efforts were made to investigate whether and why patriotic entrepreneurship was positively assessed by the respondents. Research showed that patriotism was associated with attachment to products in a given country, so the next step was to determine whether customers prefer products manufactured in a given country. Despite the open market and the possibility of running a business, the place of business is still partly determining consumer choices and managerial decisions. The issue of the extent to which the place of business activity influences the decisions of the company owner. To understand the complex nature of patriotic entrepreneurship, four research questions were formulated in the research:

RQ1: How do the respondents understand the concept of patriotic entrepreneurship?

RQ2: Are there any differences between Polish and Ukrainian respondents' understanding of patriotic entrepreneurship?

RQ3: How is patriotic entrepreneurship assessed by the respondents?

RQ4: What practices are identified as patriotic entrepreneurship by Polish and Ukrainian respondents?

RQ5: What are the differences between patriotic entrepreneurship and nationalistic entrepreneurship identified by the Polish and Ukrainian respondents?

In order to answer the above research questions, this study took into account qualitative methods (in-depth interviews). It means that the results from study cannot be generalised for the whole population. Answers to the research question could emphasize the meaning and importance of a newly identified phenomenon, *i.e.* 'patriotic entrepreneurship.' The choice of qualitative research method was justified by non-explored and complex nature of object of investigation. Proper methodological awareness and rigours was ensured by research procedure. For future research it could provide the information for building the research tool giving opportunity to make representative studies. Treating the results of study as initial is especially important for the future implications for survey methods to measure the levels of patriotic entrepreneurship that would ensure methodological pluralism and triangulation.

It should be noted that the respondents were familiarized with the complex research issues. They were also shown important components within the scope of patriotic entrepreneurship. As part of the qualitative method, an individual in-depth interview was used. Its main goal was to investigate how patriotic entrepreneurship influenced the behaviour of buyers and entrepreneurs in different countries. Interviews were conducted between January and May 2021 with ten owners managing small and medium-sized enterprises from Poland and Ukraine. The choice of qualitative research at this stage allowed us to get to the specifics of the cases and provided an opportunity to understand the specifics of the enterprises under study (Fendt & Sachs, 2007; Sułkowski, 2009; Toften & Hammervoll, 2013). The individual in-depth interviews were based on a reproducible research scenario, which provided the opportunity to ask respondents additional questions, which made it possible to detail the research problem. Before conducting the research, the scenario was consulted with external experts dealing with the issue of entrepreneurship and sociological and ethical research on patriotism. Three experts came from academia and two from entrepreneurial organizations. They considered the selection of the research sample to be purposive. The interviews were recorded, transcribed, and then qualitatively analysed.

The research involved entrepreneurs of small, medium, and large enterprises who ran their own businesses in different types of sectors, and in localizations with different population sizes. Care was taken to ensure that the selection of Polish and Ukrainian companies was similar in terms of their

activities and the size of the towns in which they were based. The selection of respondents in the qualitative research is presented in the Table 1 (Polish respondents) and Table 2 (Ukrainian respondents). In accordance with the methodology of qualitative research, the sample was purposive; the criterion for selection was being a Polish or Ukrainian entrepreneur and openness to participate in an in-depth individual interview. For text analysis Nvivo14 was used.

Table 1. Polish respondents participating in the interviews

Respondent	Sex	Citizenship / Place of birth	Size of the company (number of employ-ees)	Industry sector
P1	Male	Poland	10	Accounting services
P2	Male	Poland	9	Magazine publisher
P3	Female	Poland	14	Legal counselling
P4	Female	Poland	8	Legal counselling
P5	Male	Poland	125	Logistics
P6	Female	Poland	300	Construction industry
P7	Male	Poland	14	Tourism sector
P8	Male	Poland	150	Production of polymers for hospitals
P9	Male	Poland	24	Construction industry
P10	Male	Poland	8	Driving school

Source: own study.

Table 2. Ukrainian respondents participating in the interviews

Respondent	Sex	Citizenship / Place of birth	Size of the company (number of employ-ees)	Industry sector
U1	Female	Ukraine	8	Accounting services
U2	Female	Ukraine	11	Book publisher
U3	Male	Ukraine	19	Legal counselling
U4	Female	Ukraine	11	Legal counselling
U5	Male	Ukraine	99	Logistics
U6	Female	Ukraine / Russia	270	Construction industry
U7	Female	Ukraine	17	Tourism sector
U8	Male	Ukraine / Russia	120	Manufacture of packaging for gastronomy
U9	Male	Ukraine / Belarus	19	Construction industry
U10	Male	Ukraine	17	Educational services

Source: own study.

RESULTS AND DISCUSSION

The qualitative research showed that phenomenon of patriotic entrepreneurship was intuitively recognised by the respondents as connection of 'patriotism' and 'entrepreneurship,' and defined as quite obvious (RQ1). A good example of it were the statements: 'patriotism is expressed in entrepreneurial and creative engagement in different areas of economic activity' (P2), 'patriotism not only can but should be entrepreneurial' (P3), 'I cannot imagine patriotism without an entrepreneurial perspective' (P9), 'my patriotism and my family's patriotism must take into account the enterprises involved in development' (U4), 'patriotism goes hand in hand with the development of local businesses' (U7).

We could identify differences in the understanding of 'patriotic entrepreneurship' by Polish and Ukrainian respondents. For Polish respondents, the understanding was more differentiated than for Ukrainian respondents (RQ2). To a large extent, such a concept depends on the understanding of patriotism as such. Thus, for the owner of an accounting firm, such an attitude was 'obvious, also in economic life.' It was based on activities that 'respect the land and its resources and respond to local market needs, which allows it to be independent from producers from other countries' (P1). Entrepreneurship based on patriotism was not excluded by the second respondent, who stated that it could be patriotic and depended on supporting domestic entrepreneurship and economy. At the same time,

the second respondent noticed that foreigners should also have equal chances to exist on the local market (P2). According to the next two respondents, patriotic entrepreneurship should manifest itself both in the economic sphere and in shaping civic attitudes. Their shape allows to emphasize 'the importance of domestic enterprises for the economy of a given country, thanks to which it is possible to promote the brand of a given country outside its borders' (P3). 'Entrepreneurship can be patriotic, and it will be manifested by supporting the economy by economic means' (P4). The fifth respondent saw entrepreneurship as a tool to counter global competition. He believed that entrepreneurship should always be patriotic. It is expressed when a given economic entity is a contractor and not a subcontractor. Patriotic entrepreneurship finds its expression 'in independence from foreign capital' (P5). According to another respondent, 'it is based on supporting local producers who offer high-quality products who do not have the capital to allow very expensive advertising campaigns.' Regardless of this, patriotic entrepreneurship consists in taking care of the quality of manufactured products or services, so that the inscription that a given product was produced in Poland is always positively associated (P5). Patriotic entrepreneurship was not ruled out by the owner of a tourist company. However, he recognized that 'it is very difficult in the era of global economies and determining the country of origin of a given product becomes more and more difficult. However, it should be patriotic, and this consists in the possibility of a certain control of the business, so that the added value remains in Poland and can be distributed locally (P7). Another respondent indicated that entrepreneurship was patriotic when 'national solutions are used, and science is supported in order to involve native technical thought (P8). The last respondent commented on this topic extensively. Entrepreneurship can be patriotic and should be based on supporting enterprises, national brands with an overwhelming amount of national capital, that is, one that has been produced by the [indigenous] community of a given country. An expression of patriotic entrepreneurship means also placing orders in domestic enterprises, *i.e.* those that are not dependent on foreign capital. After all, patriotic entrepreneurship also means avoiding criticism of local enterprises (P10).

The research showed that Ukrainian respondents understood the concept of patriotic entrepreneurship in a similar way. However, they put more emphasis on state intervention in domestic enterprises and not on individual initiatives. The necessity to invest in local products and their purchase was emphasized. It was easier to talk about the practical side of the phenomenon. According to the entrepreneur operating in accounting services, an expression of patriotic entrepreneurship was the registration and development of your own business in your own country. 'It allows you to support your own industry and cultivate your own local tradition.' According to the next respondent, entrepreneurship patriotism was also expressed by 'employing staff on fair terms' (U1). According to the publisher of the books, patriotism consists in investing the state in native capital. He stated directly that patriotic entrepreneurship should be based on state intervention in order to distribute only Ukrainian products in a given country. It is better to 'sell our apples, potatoes and onions than import the same products from China' (U2). The legal advisor emphasized that since 'patriotism is about love for one's homeland, patriotic entrepreneurship is based on supporting our goods, our customs and even culinary delights, thus supporting native entrepreneurship' (U3). It was no different in the case of another legal advisor who emphasized that patriotism was based on cultivating tradition, despite changes and globalization, patriotic entrepreneurship consisted in 'supporting the local market, the labour market, promoting domestic products outside its borders' (U4). According to the representative of the logistics company, patriotic entrepreneurship 'manifests itself in paying more attention to products, parts, domestic services, and even by building a good brand' (U5). According to the entrepreneur from the construction industry, 'entrepreneurship can be patriotic.' Since many products are imported from abroad, ' patriotic entrepreneurship consists in investing in domestic goods/services.' Such activity 'drives the economy' (U6). For another respondent from the construction industry, patriotic entrepreneurship consists in 'seeking cooperation with native partners, conducting production and services in one's own country, using materials produced in the country' (U7). The respondent from the tourism industry believed that 'patriotic entrepreneurship means choosing offers from local suppliers' (U8). According to the representative of the construction company, patriotic entrepreneurship was nothing more than 'using prod-

ucts manufactured domestically' (U9). According to the respondent from the company providing educational services, 'patriotic entrepreneurship was 'honesty towards the law, that is, not hiring 'illegally,' paying taxes, not hiding income, and not paying 'under the table' and in state institutions (Draskovic *et al*., 2020; Nguen, & Nguen, 2021), patriotic entrepreneurship consists in constructing a law that does not 'force entrepreneurs to seek unfair forms of employment.' For the respondent, another manifestation of patriotic entrepreneurship was 'the cooperation of national or even local contractors, the use of national materials.' After all, patriotic entrepreneurship also means 'promoting local products' and 'appropriate approach to the environment, waste disposal.' It is also hard to believe that according to the respondent 'patriotic entrepreneurship would be based on pouring sewage into a nearby river or dumping waste in a forest nearby ' (U10).

Referring to the third research question (RQ3), which was: How patriotic entrepreneurship is assessed by the respondents, surveyed respondents were generally positive about patriotic entrepreneurship. An example were the following statements: 'It is essential that it is patriotic. Only then is there a chance to build a civil society' (P3). 'Patriotic entrepreneurship is important for building national identity and solidarity' (P10). 'Patriotic entrepreneurship is important, because it gives freedom and drives the domestic economy (U6). 'It is important, because it will make the domestic economy work well, people will have jobs, and money will be spent domestically' (U8).

Nevertheless, some respondents noted the dangers of patriotic entrepreneurship. For example, the owner of a small construction company pointed to a certain danger in this respect. He emphasized that referring to patriotism, 'one can control the economy or even impose certain restrictions on it' (P9). The second Polish respondent (P2) expected 'equal treatment of entrepreneurs in the local market regardless of their country of origin,' 'the criterion for supporting patriotic entrepreneurship should be that we support local economic activities, but on the condition that customers are free to make their own decisions' (P2).

An important research question posed by the study was the identification of patriotic entrepreneurial practices (RQ4): What practices are identified as patriotic entrepreneurship by Polish and Ukrainian respondents? As previously written, patriotic entrepreneurship was understood in many ways. This resulted in the identification of many practices associated with it. The most commonly identified practice associated with patriotic entrepreneurship by Polish respondents was supporting the local market to protect it from foreign businesses. An example were the following statements: 'through patriotic entrepreneurship, it is possible to support local producers who offer good quality products but do not have the capital to enable very expensive promotional campaigns' (P5), 'patriotic entrepreneurship would provide an excellent counterbalance to global entrepreneurship, which has no identity but great capital' (P10). Another practice identified with patriotic entrepreneurship was the selection of local solutions, companies, brands, and products: 'it is based on supporting local producers who offer high-quality products who do not have the capital to allow very expensive advertising campaigns' (P5), 'national solutions are used and should be supported by science in order to involve native technical thought' (P8), 'to sell our apples, potatoes and onions rather than import the same products from China' (U2), 'supporting the local market, the labour market, promoting domestic products outside its borders' (U4), 'therefore patriotic entrepreneurship consists in investing in domestic goods/services' (U6), 'seeking cooperation with native partners, conducting production and services in one's own country, using materials produced in the country' (U7). The owner of an accounting firm identified patriotic activities as activities that 'respect the land and its resources' (P1). Patriotic entrepreneurship was also linked to product quality. According to one respondent (P5), patriotic entrepreneurship consisted in taking care of the quality of manufactured products or services: 'entrepreneurship will be patriotic when we take care of the quality of the products or services produced, so that the inscription that a product was made in Poland is always associated positively.' The product quality was also used as a criterion to distinguish between patriotic and nationalistic entrepreneurship: 'Nationalism is encountered when there is a preference for goods and services because of the country of origin, regardless of other product characteristics such as quality' (P1), 'A person who unconditionally supports only local products regardless of their quality is a nationalist (P2), Nationalists will 'depreciate foreign products and support their own, even when they know they are of lower quality' (P3).

Ukrainian respondents most often identified supporting local businesses as an activity associated with patriotic entrepreneurship. A derivative of such action is buying local products and services: 'The patriotic entrepreneur supports the local market by minimising the purchase of components for his products from foreign companies' (U1), Supporting local products demonstrates 'an attachment to one's own land.' Consequently, 'by supporting locally produced products, the local company, which cannot compete with foreign capital, will be able to employ local workers' (U4), moreover 'everyone can be a patriotic entrepreneur when purchasing local products*, e.g.* food or construction machinery' (U6). Another identified activity was compliance with the law when conducting business. 'It is not insignificant to create or demand laws that allow local entrepreneurs to develop' (U4). Care for the environment was also indicated as a practice identified as patriotic entrepreneurship. 'It is hard to imagine being a patriotic entrepreneur without having a business that is mindful of the environment' (U9).The manifestation of patriotic activity from the part of the state could be the creation of good laws convenient to business: 'A patriotic entrepreneur can expect from the state a law that is friendly to local business. Which does not change the fact that it is necessary, especially in our country, to respect the international agreements concluded' (U3).

An important topic undertaken in the research was the distinction between patriotism and nationalism. It was manifested in the fifth research question (RQ5), which was: what are the differences between patriotic entrepreneurship and nationalistic entrepreneurship identified by Polish and Ukrainian respondents? In their responses, Polish respondents mentioned nationalism, as a rule, when the choice of a given product was independent of the quality of the product. The patriotic approach assumed that quality mattered. Thus, the owner of the accounting firm believed that nationalism was 'when products and services are preferred based on the country of origin, regardless of other product characteristics, such as quality' (P1). The press publisher was of a similar opinion. He considered a patriot a person who supports his own products but pays attention to the quality of the offered product. A person who 'unconditionally supports only local products, regardless of their quality, is a nationalist' (P2). This issue was presented from a different perspective by the other legal advisor. Namely, he stated that an entrepreneur driven by nationalism would promote such views and attitudes that lead to avoiding the purchase of goods that were not produced or produced in their country' (P4). The second legal advisor directly emphasized that nationalists would 'depreciate foreign products and support their own, even when they know that they are of lower quality' (P3). According to another respondent, we do not have a nationalistic attitude in the context of choosing our own products when the manufactured and offered products are of high quality. It is 'commonly known that products from certain countries are more willingly chosen, even despite the higher price, if they are of high quality.' The respondent noted that supporting own products was even adopted within official actions, a good example of this is 'buy British,' *i.e.* a campaign, in which 'people were encouraged to buy from their own producers to support local producers' (P5). Another respondent thought similarly. You can only purchase local components 'as long as we have quality products.' If low-quality products were selected, 'we would be dealing with a nationalistic attitude' (P6). Another respondent said the same. Thinking thoughtlessly without taking into account the quality of the product and promoting 'poor-quality products would be an expression of nationalism.' Patriotic decisions 'consists in promoting high-quality products and pointing to the 'country of origin.' This only makes sense 'when dealing with high-quality products' (P7). Moreover, promoting low-quality products due to the fact of origin 'consequently leads to the collapse of the economy' (P8) and 'producer bankruptcy' (P9). Decisions made without rethinking and only on the basis of misunderstood patriotism and thus 'choosing low-quality products and not supporting high-quality products lead to an economic collapse' (P10).

In the case of representatives of Ukrainian companies, the situation was as follows. 'The patriotic entrepreneur supports the local market by minimizing the purchase of foreign components for his products' (U1). The other entrepreneur (U2) drew attention to local services and cooperation, when 'there is assistance in trade in own products and with each other.' In the case of tourist services, it could be seen that tourists 'are offered accommodation or transport on a different basis than friendly neighbors' (U2). For the next respondent, the choice may mean reaching out to 'Ukrainian advisers for assistance on legislation in a foreign country, not for French or German advisers.' The matter is

also expressed by 'supporting own products regardless of their quality and price and giving up goods of foreign origin' (U3). Choosing local products shows that you are 'attached to your own land.' It enables a local company, 'which cannot compete with foreign capital, to employ more workers' (U4). For the logistics company representative, it is important to give preference to own products when making decisions. Not only 'in production, but also in everyday shopping. This makes us help the local culture survive and preserve the long-established traditions.' It does not mean, however, that this rule always applies. In the case of poor quality, 'choosing third-party products increases the need for improvement and higher-quality production.' Giving your own products exceptional features – even if they are not exceptional – 'may be indicative of nationalism' (U5). Anyone can be a patriotic entrepreneur when 'local products such as food or construction machinery are purchased.' Such a situation 'fuels the national economy and allows for greater investments.' It does not mean that 'we have to limit ourselves to our own products when they are of low quality' (U6). Purchasing domestic products can 'bring some pride, as we are not guided by the quality but by the origin of the product, thus contributing to the existence of domestic companies' (U7). Of course, choosing local products 'can be an expression of nationalism, as the choice should be determined by quality, not the country of origin' (U8). Some producers find it difficult to cope with international capital, 'therefore, buying local produce can do little to change much in this regard.' 'Country level subsidies' (U9) are essential. Choosing national products and, 'more precisely, local ones, makes it possible to cultivate one's own tradition.' It is also important that 'when we think about food products, we like our own traditional dishes and tastes. By buying local products, we help our customs to survive'(U10).

Summing up, the qualitative research showed that entrepreneurs, when running their own business, prefer to buy products from companies originating in their country. It was believed that this was the way to support local producers unreservedly. There was also an answer that the decision ultimately depended on the quality of manufactured products. It should also be stated that the research showed that most of the respondents assessed patriotic entrepreneurship in a generally positive way, considered it important, and the majority even postulated it.

Interviews with entrepreneurs confirmed that the concept of patriotic entrepreneurship was understandable to the respondents. Although it was defined in various ways, it was presented as a positive action promoting local entrepreneurship through various activities of entrepreneurs and the government. There were also arguments that this entrepreneurship was to be a counterweight to foreign capital, giving independence to local entities. Thus, we obtained the answer to the first research question (RQ1): How do the respondents understand the concept of patriotic entrepreneurship? Therefore, it seems that the introduction of the concept of patriotic entrepreneurship on a larger scale should result in its understanding and good reception.

The study also answered the second research question (RQ2): Are there any differences between Polish and Ukrainian respondents' understanding of patriotic entrepreneurship? Polish entrepreneurs used pragmatic arguments that the behaviour of buyers related to buying domestic products depends on trust in their own brands, attachment to them, and experience gained in contact with family and other fellow citizens. There were also arguments about a common culture, values, and respect for working together. This was consistent with the research of Lippmann and Aldrich, who argue that individuals are predisposed to perceive the world through the prism of historical conditions (Lippmann & Aldrich, 2016). The Ukrainians were more inclined to more abstract arguments, the most frequent one was attachment to the motherland, although here too, more rational arguments, such as the credibility of local suppliers, were mentioned.

This situation shows that the more pragmatic arguments of Polish entrepreneurs (buyers) according to which buying domestic products depends on the strength of their brands and experiences related to them are stronger arguments than the attractive attachment to the homeland. The customer remains the customer and evaluates the value of the products offered on the market. If the product is of good quality, has a strong brand, its national origin improves the perceived value of the product and increases the chances of purchase. This is confirmed by other studies, in which the level of customer ethnocentrism also increased with the increase in product quality (Bryla, 2017; Maison *et al.*, 2018; Šmaižienė & Vaitkienė, 2014). An example of such perception of products are German products, in the

case of which 'made in Germany' became a sign of their quality and higher value (Haucap *et al.*, 1997). The attachment to the homeland is less pragmatic, which in the process of purchase decisions of Ukrainian customers means that domestic products are chosen less often than in Poland when better foreign goods are indicated as alternatives.

Therefore, supporting domestic entrepreneurship consisting only of interventionism, which is mainly aimed at creating barriers to external competition in order to protect the national one, does not make sense in the long run, because companies protected in such a way lose their competitiveness on global and local markets (local ones are less eagerly attached to brands, if these are inferior). At the same time, supporting companies by creating better conditions for their functioning so that they can be more competitive shows that this may translate into local customer loyalty and strengthening the patriotic economy triad.

The assessment of patriotic entrepreneurship was less clear-cut (RQ3). Although it was positive for most interviewees, for some respondents it would be a counterweight to global companies and an additional advantage in building a competitive advantage. However, there were also voices that the freedom to run a business is a more important value than patriotism. Therefore, for most people, patriotism was not necessarily the most important value.

The study also provided the answer to the fourth research question (RQ4): What practices are identified as patriotic entrepreneurship by Polish and Ukrainian respondents?

Among the activities related to patriotic entrepreneurship identified in the research, there appeared the promotion of local firms and institutions upon their selection owing to decisions made by both end-users and companies. However, it was also entrepreneurial activity in the home country and in keeping with that country's legislature. Part of the respondents raised environmental aspects, pointing out patriotic entrepreneurship as an activity that was not detrimental to the environment. Furthermore, patriotic entrepreneurship was also identified as meeting the standards of product quality. Finally, it was highlighted that patriotic entrepreneurship was not only the domain of the entrepreneurs but also of the public sector. In pursuing a patriotic entrepreneurship policy, the state should create good legislature, enhancing the competitiveness of local firms, and supporting local entrepreneurship through various aid programmes.

The fifth research question (RQ5): What are the differences between patriotic entrepreneurship and nationalistic entrepreneurship identified by the Polish and Ukrainian respondents? addressed the differences in the perception of patriotic vs. nationalistic entrepreneurship. The results indicated that the main differentiating criterion were motivations in the decision-making process. A decision-maker led by patriotic entrepreneurship – an entrepreneur and customer alike – is driven by rational arguments, *e.g.* product or service quality. Whereas in the case of the nationalistic approach, selection is unconditional, so that what matters is only the domestic origin of the product. Nationalistic entrepreneurship is more emotionally marked than patriotic entrepreneurship and it can also lead to the avoidance of foreign-made products or services.

In conclusion, the relationship between the elements of the patriotic economy triad was noticeable and according to the respondents, the activities related to patriotic entrepreneurship would make sense, cooperation between entrepreneurs would be greater, and the economy would develop if the state supported local entrepreneurship. Naczyk (2014) reached similar conclusions, noting that the initial opening of Poland to foreign investments resulting from the weakness of the economy and companies operating in it was replaced with the development by increasing pressure on politicians to support local entrepreneurship to a greater extent. The dependence of the degree of patriotism on the entrepreneurs themselves was also confirmed in studies conducted by De Clercq *et al*. (2015).

CONCLUSIONS

Patriotic entrepreneurship is important from the point of view of economic activity. At the same time, it should not be forgotten that in the sphere of entrepreneurship, the concept of patriotism depends on how we understand patriotism. Meanwhile, it should not be forgotten that the concept of patriotism can mean not only sincerity and openness to the welfare of other nations' love for their country.

Patriotism may also give rise to the conviction that loyalty to one's country and concern for its welfare may come at the expense of other nations and communities. Because of this ambivalent concept of patriotism in mind, there are numerous divisions in literature. Therefore, there is the discussion of authoritarian and democratic patriotism (Westheimer, 2006). Huddy and Khatib (2007) set constructive and uncritical (or blind) patriotism against one another. Modern research has also allowed for the development of concepts open to universal values, without the need to depreciate others. Patriotism understood in this way is widely supported (Livi *et al*., 2014).

As long as state structures exist, there will be the temptation of nationalism and the resulting numerous dangers, also in the area of entrepreneurship. So long, regardless of its potential negative connotations, the idea of patriotism, which can control nationalism, including economic one, will be needed. Therefore, it is worth to conduct further research on this topic. Meanwhile, research showed that the majority of respondents understand and are willing to follow the rules that take patrotism into account. At the same time, the differences in the behaviour of entrepreneurs and buyers in Poland and Ukraine show that the very concept of this entrepreneurship, not supported by a strong economy and an attractive offer of domestic enterprises, will remain only a theoretical concept not implemented in practice.

A necessary condition for the success of patriotic entrepreneurship is the competitive offer of domestic companies. Only good products with a strong brand are able to compete with foreign products. Moreover, only then can the local origin be an argument for the customer to buy a local product, because it will be an added value that could determine the choice of a local product. However, for products to be competitive, a competitive economy is necessary. This is because the stronger the economy, the richer the society, and the more patriotic entrepreneurship. This should drive the local economy and contribute to the development of the local economy, local businesses, and local attitudes related to it.

When analysing patriotic entrepreneurship, it is worth referring to the model proposed by M.E. Porter, in which the sources of competitive advantage should be sought in the company's environment. In this model, organizations compete on a global scale and location is an important element influencing their position. In the conditions of global competition, the importance of nations has increased and the ability to create and absorb knowledge has become the basis of competition. The countries and regions where the organization is located play an important role in this process (Porter, 2001). The most important means of creating a competitive advantage is innovation. Enterprises gain a secure competitive position thanks to the implementation of innovations and continuous improvement. The source of innovation is not only the inside of the organization, but also its surroundings. The close competitive environment and the cluster are of particular importance. Enterprises compete based on the latest innovations, the number and importance of which depends on the close environment of the organization. The determinant of national competitive advantage is the rhombus of national advantage. It is made up of four components: competing firms in a given area, buyers, factor conditions, and related and supporting sectors. As a result of competition between companies, they are forced to constantly develop through improving their innovativeness, customers expect better and better products, which also motivates companies to improve the offer, there is a need for the public side to ensure appropriate conditions of production factors, and thus the attractiveness of the sector increases. At the same time, the strong development of companies stimulates the development of related and supporting sectors (Furman *et al*., 2002).

In this model, patriotic entrepreneurship may be an additional glue that co-creates the rhombus of national advantage. Organizations which adhere to patriotic entrepreneurship will be related to the country of origin at least to some extent. By conducting at least some of the activities there, they will contribute to the development of a given sector. At the same time, by paying taxes locally, they will be able to finance public sector activities aimed at improving the conditions of the factors of production. Local sourcing and preference for local suppliers should result in the development of related and supporting sectors. Local customers, preferring local products and at the same time demanding better and better offer, will on the one hand finance the sector and, on the other hand, motivate to development.

However, it should be remembered in such a situation that consumer ethnocentrism reduces the involvement of foreign capital in greenfield direct investments (Andrews *et al*., 2018).

The aim of article was partially met as the research questions were answered. Research should be continued in the future. First of all, it should be verified on the example of other countries if there is a correlation between the increase in the economic level and growth of the intensity of patriotic entrepreneurship. It should also be examined whether the attachment to local brands grows along with the improvement of the competitiveness of their offer. An important research question is the impact of the war in Ukraine on the perception of patriotic entrepreneurship. It is especially legitimate to examine this in Ukraine, which has directly experienced the effects of the war.

A research limitation was the lack of representativeness of the sample due to the chosen qualitative research. Quantitative research on a representative sample should also be conducted to confirm the results of the above qualitative study. The sample consisting of only two nationalities was also a limitation. In the future, it would be worthwhile to conduct research with broader international samples.

The article contributes to the literature by describing a new concept, *i.e.* patriotic entrepreneurship. The study has an important practical implication, because it describes what variables affect the level of entrepreneurship in a country. The most recent example has been the question of the rise of patriotic entrepreneurship and economic nationalism caused by the war in Ukraine

REFERENCES

Aggarwal, S. (2016). Economic Nationalism and Its Future Prospects: An Opinion. *International Journal of Humanities and Social Sciences,* 1, 91-98.

Alesina, A. & La Ferrara, E. (2005), Ethnic diversity and economic performance. *Journal of Economic Literature*, 43(3), 762-800.

Andėhn, M., Nordin, F., & Nillson, M.E. (2016). Facets of country image and brand equity: Revisiting the role of product categories in country-of-origin effect research. *Journal Consumer Behaviour 15*(3), 225-238. https://doi.org/10.1002/cb.1550

Andrews, S., Leblang, D. & Pandya, S. (2018). Ethnocentrism Reduces Foreign Direct Investment. *The Journal of Politics*. Retrieved from: https://www.journals.uchicago.edu/doi/abs/10.1086/694916 on August 20, 2021. https://doi.org/10.1086/694916

Arasli, H. & Tumer, M. (2008), Nepotism, favoritism and cronyism: A study of their effects on job stress and job satisfaction in the banking industry of north Cyprus. *Social Behavior and Personality: An International Journal, 36*(9), 1237-1250. https://doi.org/10.2224/sbp.2008.36.9.1237

Aswathappa, K. (2021). *Essentials of Business Environment.* Mumbai: Himalaya Publishing House Pvt. Ltd.

Audi, R. (2009). Nationalism, Patriotism, and Cosmopolitanism in an Age of Globalization. *The Journal of Ethics, 13*(4), 365-381. https://doi.org/10.1007/s10892-009-9068-9

Auruskeviciene, V., Vianelli, D., & Reardon, J. (2012). Comparison of consumer ethnocentrism. *Transformations in Business & Economics, 11*(2), 20-35.

Awdziej M., Wlodarek D. & Tkaczyk J. (2016). Are elderly consumer more ethnocentric? Attitudes towards Polish and 'foreign' food products. *Journal of Economics and Management. 23*(1), 91-107.

Balabanis, G., Diamantopoulos, A., Mueller, R. D. & Melewar, T. C. (2001). The Impact of Nationalism, Patriotism and Internationalism on Consumer Ethnocentric Tendencies. *Journal of International Business Studies, 32*(1), 157-175.

Barnhart R. K. (ed.). (1995). *Dictionary of Etymology. The Orgins and Development of over 25.000 English Words*. London: Hodder and Stoughton.

Boccagni, P. (2011). Approaching External Voting in Ecuadorian Immigration to Italy. *International Migration, 49*(3), 76-98. https://doi.org/10.1111/j.1468-2435.2011.00691.x

Brubaker R. (2004). In the Name of the Nation: Reflections on Nationalism and Patriotism. *Citizenship Studies, 8*(2), 115-127. https://doi.org/10.1080/1362102042000214705

Bryla, P. (2017). Consumer ethnocentrism on the organic food market in Poland. *Marketing i Zarządzanie, 48*, 11-20. https://doi.org/10.18276/miz.2017.48-01

Callaghan, H., & Lagneau-Ymonet, P. (2010). *The phantom of Palais Brongniart economic patriotism and the Paris stock exchange* (MPIfG Discussion Paper, No. 10/14*).* Cologne: Max Planck Institute for the Study of Societies.

Callan, E. (2006). Love, Idolatry and Patriotism. *Social Theory and Practice, 32*(4), 525-546. https://doi.org/10.5840/soctheorpract200632430

Cheah, I. & Phau, I. (2015). Conceptualising consumer economic nationalistic tendencies: scale development and validation. *The International Review of Retail, Distribution and Consumer Research, 25*(3), 313-331. https://doi.org/10.1080/13501763.2011.640788

Clift, B., & Woll, C. (2012a). Economic patriotism: reinventing control over open markets. *Journal of European Public Policy, 19*(3), 307-323. https://doi.org/10.1080/13501763.2011.638117

Clift, B., & Woll, C. (2012b). The Revival of Economic Patriotism. In G. Morgan R. & Whitley (Eds), *Capitalisms and Capitalism in the Twenty-First Century* (pp. 70-90). Oxford: Oxford University Press, https://doi.org/10.1093/acprof:oso/9780199694761.001.0001

Clift, B. (2013). Economic Patriotism, the Clash of Capitalisms, and State Aid in the European Union. *Journal of Industry, Competition and Trade, 13*(1), 101-117. https://doi.org/10.1007/s10842-012-0138-5

Commission Regulation (EU) No 1407/2013 of 18 December 2013 on the application of Articles 107 and 108 of the Treaty on the Functioning of the European Union to de minimis aid Text with EEA relevance, Retrieved from https://eur-lex.europa.eu/legal-content/PL/TXT/?uri=uriserv%3AOJ.L_.2013.352.01.0001.01.ENG, 7 December 2019. on August 20, 2021.

Crowther, J. (1998). *Oxford Advanced Learner's Dictionary of Current English.* Fifth Edition. Oxford: Oxford University Press.

Devkota, N., Paudel, U. R., & Bhandari, U. (2020). Does westernization influence the business culture of a touristic city?. *Economics and Sociology, 13*(4), 154-172. https://doi.org/10.14254/2071-789X.2020/13-4/10

Davidov, E. (2010). Nationalism and Constructive Patriotism: A Longitudinal Test of Comparability in 22 Countries with ISSP. *International Journal of Public Opinion Research. 23*(1), 88-103. https://doi.org/10.1093/ijpor/edq031

De Clercq, D., Narongsak, T., & Voronov, M. (2015). Explaining SME Engagement in Local Sourcing: The Roles of Location-Specific Resources and Patriotism. *International Small Business Journal. 33*(8), 929-50. https://doi.org/10.1177/0266242614540316

Draskovic, V., Jovovic, R., Streimikiene, D., & Bilan, S. (2020). Formal and Informal vs. Alternative Institutions. *Montenegrin Journal of Economics*, 16(2), 193-201. https://doi.org/10.14254/1800-5845/2020.16-2.15

Dowley, K. M., & Silver, B. D. (2000). Subnational and National Loyalty: Cross-national Comparisons. *International Journal of Public Opinion Research, 12*(4), 357-371. https://doi.org/10.1093/ijpor/12.4.357

Drozdenko, R, & Jensen, M. (2009). Pricing strategy & practice: Translating country-of-origin effects into prices. *Journal of Product & Brand Management, 18*(5), 371-378. https://doi.org/10.1108/10610420910981855

England, E. (1985). A Small and Piercing Voice: The Sermons of Spencer W. Kimball. *Brigham Young University Studies, 25*(4), 77-108.

Erdogan, B. & Uzkurt, C. (2011). Effects of ethnocentrism tendency on consumers' perception of product attutiudes for foreign and domestic products. *Cross Cultural Management: An International Journal, 17*(4), 393-406. https://doi.org/10.1108/13527601011086595

Estrin, S., Mickiewicz, T., & Ute, S. (2016). Human capital in social and commercial entrepreneurship. *Journal of Business Venturing, 31*(4), 449-467. https://doi.org/10.1016/j.jbusvent.2016.05.003

Fendt, J. & Sachs, W. (2007). Grounded Theory Method in Management Research: Users' Perspectives. *Organizational Research Methods, 11*(3), 430-455. https://doi.org/10.1177/1094428106297812

Fetahu, D. (2017). The Importance of Nepotym and Corruption Management in Institutions and the Economy of the Country. *European Journal of Multidisciplinary Studies, 2*, 33-43. https://doi.org/10.26417/ejms.v6i2.p133-143

Fetzer, T. (2017). Patriotism and the Economy. In M. Sardoc (Ed), *Handbook of Patriotism* (pp. 141-157). Berlin: Springer, Cham.

Fröhlich, T. (2018). Exile, Modernity, and Cultural Patriotism. In G. Qiyong (Ed.), *Confucian Philosophy and the Challenge of Modernity* (pp. 61-100). Lejda: Brill. https://doi.org/10.1080/02549948.2019.1603480

Furman, J.L. Porter, M.E. & Stern, S. (2002), The Determinant of National Innovative Capacity. Research Good, L. K., & Huddleston, P. (1995). Ethnocentrism of Polish and Russian consumers: Are Feelings and Intentions Related. *International Marketing Review, 12*(5), 35-48.

Gawell, M. (2013), Social Entrepreneurship: Action Grounded in Needs, Opportunities and/or Perceived Necessities?. *VOLUNTAS: International Journal of Voluntary and Nonprofit Organizations*, 24(4), 1071-1090.

Gibbs, D. (2009), Sustainability Entrepreneurs, Ecopreneurs and the Development of a Sustainable Economy. *Greener Management International*, 55, 62-78.

Greenfeld, L. (2011). The Globalization of Nationalism and the Future of the Nation-State. *International Journal of Politics, Culture and Society, 24*(1-2), 5-9. https://doi.org/10.1007/s10767-010-9110-8

Gurría, A. (2013), *The missing entrepreneurs: Policies for Inclusive Entrepreneurship in Europe*. OECD. OECD/The European Commission: OECD Publishing.

Hall, J. K., Daneke, G.A., & Lenox, M. J. (2010). Sustainable development and entrepreneurship: Past contributions and future directions. *Journal of Business Venturing, 25*(5), 439-448. https://doi.org/10.1016/j.jbusvent.2010.01.002

Hammond, R.A., & Axelrod, R. (2006). The Evolution of Ethnocentrism. *Journal of Conflict Resolution, 50*(6), 926-936. https://doi.org/10.1177/0022002706293470

Hand, M. (2011). Should We Promote Patriotism in Schools? *Political Studies, 59*(2), 328-347. https://doi.org/10.1111/j.1467-9248.2010.00855.x

Härtel, H.H. (2006). The threat of economic patriotism, *Intereconomics, 41*(2), 58-59.

Haucap, J., Wey, Ch., & Barmbold, J. F. (1997). Location Choice as a Signal for Product Quality: The Economics of "Made in Germany", *Journal of Institutional and Theoretical Economics (JITE) / Zeitschrift Für Die Gesamte Staatswissenschaft, 153*(3), 510-31.

Helleiner, E. (2002). Economic Nationalism as a Challenge to Economic Liberalism? Lessons from the 19th Century, *International Studies Quarterly*, 46(3), 307-329. https://doi.org/10.1111/1468-2478.00235

Hewstone M., Rubin, M., & Hazel, W. (2002). Intergroup Bias. *Annual Review of Psychology, 53*, 575-604.

Hoffman, L. (2006). Autonomous choices and patriotic professionalism: on governmentality in late-socialist China. *Economy and Society, 35*(4), 550-570. https://doi.org/10.1080/03085140600960815

Horrocks, J.W. (1925). *A Short History of Mercantilism* (1st ed.). London: Routledge. https://doi.org/10.4324/9781315386065.

Huddleston, P., Good, L.K., & Stoel, L. (2001). Consumer ethnocentrism, product necessity and Polish consumers' perceptions of quality. *International Journal of Retail & Distribution Management, 29*(5), 236-246.

Huddy, L. & Khatib, N. (2007). American Patriotism, National Identity, and Political Involvement. *Journal of Political Science, 51*(1), 63-77. https://doi.org/10.1111/j.1540-5907.2007.00237.x

Ignatowski, G., Sułkowski, Ł., & Stopczyński, B. (2021). Risk of Increased Acceptance for Organizational Nepotism and Cronyism during the COVID-19 Pandemic. *Risks, 9*(4). https://doi.org/10.3390/risks9040059

Jones, R. G., & Stout, T. (2015). Policing Nepotism and Cronyism Without Losing the Value of Social Connection. *Industrial and Organizational Psychology, 8*, 2-12. https://doi.org/10.1017/iop.2014.3

Kaca P. (2020). Przedsiębiorczość a nowoczesny patriotyzm, In J. Zimny, (Ed.) *Patriotyzm, wczoraj – dziś – jutro (pp. 212-223)*, Stalowa Wola: Akademia Wojsk Lądowych imienia generała Tadeusza Kościuszki we Wrocławiu,.

Keles, H.N., Ozkan, T.K., & Bezirci, M. (2011). A Study On The Effects Of Nepotism, Favoritism And Cronyism On Organizational Trust In The Auditing Process In Family Businesses In Turkey. *International Business and Economics Research Journal, 10*(9), 9-16. https://doi.org/10.19030/iber.v10i9.5622

Keller, S. (2005). Patriotism as Bad Faith. *Ethics, 115*(3), 563-592. https://doi.org/10.1086/428458

Kregel, J. (2019). Globalization, Nationalism, and Clearing Systems. *Review of Keynesian Studies, 1*, 1-21. https://doi.org/10.34490/revkeystud.1.0_1

Krzemień, R. (2019). Patriotyzm ekonomiczny – droga do wzmocnienia gospodarki czy droga donikąd? *Civitas Hominibus, 14*. 63-75. https://doi.org/10.25312/2391-5145.14/2019_04rk

Krzywosz-Rynkiewicz, B., Zalewska, A. M. & Karakakatsani D. (2017), Does economic condition matter?: Citizenship activity of young people in countries with different economic status. *Citizenship Teaching and Learning*, 12(2), 151-169.

Lacroix, J. (2002). For a European Constitutional Patriotism. *Political Studies, 50*(5), 187-193.

Leadbeaster, Ch. & Goss, S. (1998), *Civic entrepreneurship*. London. Demos

Lekakis, E. J., (2017). Economic nationalism and the cultural politics of consumption under austerity: The rise of ethnocentric consumption in Greece. *Journal of Consumer Culture, 17*(2), 286-302. https://doi.org/10.1177/1469540515586872

Levi-Faur, D. (1997). Economic Nationalism: From Friedrich List to Robert Reich. *Review of International Studies,* 23. 359-370. https://doi.org/10.1017/S0260210597003598.

Lippmann, S., & Aldrich, H.E. (2016). A rolling stone gathers momentum: Generational units, collective memory, and entrepreneurship. *The Academy of Management Review, 41*(4), 658-675. https://doi.org/10.5465/amr.2014.0139

Livi, S., Leone, L., Falgares G., & Lombardo, F. (2014). Values, ideological attitudes and patriotism. *Personality and Individual Differences, 64*(8), 141-146. https://doi.org/10.1016/j.paid.2014.02.040

Lu Wang, C., & Xiong Chen, Z. (2004). Consumer ethnocentrism and willingness to buy domestic products in a developing country setting: testing moderating effects. *Journal of Consumer Marketing, 21*(6), 391-400. https://doi.org/10.1108/07363760410558663

Macedo, S. (2011). Just patriotism? *Philosophy and Social Criticism, 37*(4), 413-423. https://doi.org/10.1177/0191453711399842

Maison, D., Ardi, R., Yulianto, J.E., & Rembulan, C.L. (2018). How consumer ethnocentrism can predict consumer preferences – construction and validation of SCONET scale. *Polish Psychological Bulletin, 49*(3), 365-374. https://doi.org/10.24425/119504

Markell, P. (2000). Macing Affect for Democracy? On "Constitutional Patriotism". *Political Theory, 28*(1), 38-63.

Matušínská, K., & Zapletalová, Š. (2021). Rational and emotional aspects of consumer behaviour. *Forum Scientiae Oeconomia, 9*(2), 95-110. https://doi.org/10.23762/FSO_VOL9_NO2_5

Melegh A. (2006). *On the east–west slope. Globalization, nationalism, racism and discourses on Eastern Europe. Budapest*, New York: Central European University Press.

Miscevic, N. (2020). Nationalism. In E. N. Zalta. (Ed.), *Stanford Encyclopedia of 183 Philosophy*, Metaphysics Research Lab.. Stanford:Stanford University. Retrieved from: https://plato.stanford.edu/on August 20, 2021.

Mishchuk, H., Yurchyk, H., & Bilan, Y. (2018). Shadow incomes and real inequality within the framework of leadership and social change. In *Leadership for the Future Sustainable Development of Business and Education* (pp. 89-101). Springer, Cham. https://doi.org/10.1007/978-3-319-74216-8_10

Mizik, T., Gál, P., & Török, A. (2020). Does agricultural trade competitiveness matter? the case of the CIS countries. *Agris on-Line Papers in Economics and Informatics, 12*(1), 61-72. https://doi.org/10.7160/aol.2020.120106

Moreno-Luzón, J. (2007). Fighting for the National Memory. The Commemoration of the Spanish 'War of Independence' in 1908-1912". *History and Memory, 19*(1), 68-94. https://doi.org/10.2979/his.2007.19.1.68

Morse, A., & Svive, S. (2011). Patriotism in Your Portfolio. *Journal of Financial Markets, 14*(2), 411-440.

Mummendey, A., Klink, A., & Brown, R. (2001). Nationalism and patriotism: National identification and out-group rejection. *British Journal of Social Psychology, 40*(2), 159-172. https://doi.org/10.1348/014466601164740

Myšková, R., & Hájek, P. (2019). Relationship between corporate social responsibility in corporate annual reports and financial performance of the US companies. *Journal of International Studies, 12*(1), 269-282. https://doi.org/10.14254/2071-8330.2019/12-1/18

Naczyk, M. (2014). Budapest in Warsaw: Central European Business Elites and the Rise of Economic Patriotism Since the Crisis. *SSRN Electronic Journal*. Retrieved from: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2550496 on August 20, 2021. https://doi.org/10.2139/ssrn.2550496

Nguen, T.A.N., Nguen, K.M. (2021). The Shadow Economy, Institutional Quality And Public Debt: Evidence From Emerging And Developing Asian Economies. *Montenegrin Journal Of Economics, 18*(1), 205-214. *https://doi.org/*10.14254/1800-5845/2022.18-1.17

Nussbaum M.C. (2008). Towards a globally sensitive patriotism. *Deadalus, 137*(3), 78-93. https://doi.org/10.1162/daed.2008.137.3.78

Pacheco, D,F., Dean, T.J., & Payne, D.S. (2010). Escaping the green prison: Entrepreneurship and the creation of opportunities for sustainable development. *Journal of Business Venturing, 25*(5), 464-480. https://doi.org/10.1016/j.jbusvent.2009.07.006

Papp, M., & Varju, M. (2019). The Crisis, Economic Patriotism in Central Europe and EU Law. In L. Antoniolli, L. Bonatti, & C. Ruzza (Eds.) *Highs and Lows of European Integration* (pp. 143-163). New York: Springer International Publishing.

Parker. Ch.S. (2010). Symbolic versus Blind Patriotism: Distinction without Difference?. *Political Research Quarterly, 63*(1), 97-114. https://doi.org/10.1177/1065912908327228

Pawlak, K., Smutka, L., & Kotyza, P. (2021). Agricultural potential of the eu countries: How far are they from the USA? *Agriculture (Switzerland), 11*(4). https://doi.org/10.3390/agriculture11040282

Pham, T.V. (2019). Indonesia Guided Economy: 1957-1965. In T.V. Pham, (Ed.), *Beyond Political Skin* (pp. 159-207). Singapore: Springer Nature Singapore Pte Ltd.

Poole R. (2008), Patriotism and nationalism. In Primoratz I., Pavcovic A. (Ed*.) Patriotism. Philosophical and Political Perspectives*. (pp. 129-146). Alderton: Ashgate.

Porter, M.E., (2008). *On Competition.* Boston: Harvard Business School Publishing.

Primoratz, I. (2000). Patriotism. In E.N. Zalta. (Ed.), *Stanford Encyclopedia of 188Philosophy*. Metaphysics Research Lab.. Stanford: Stanford University. Retrieved from: https://plato.stanford.edu/on August 20, 2021.

Pucci, T., Casprini, E., Rabino, S., & Zanni, L. (2017). Place branding-exploring knowledge and positioning choises across national boundaries*. British Food Journal, 119*(8), 1915-1932. https://doi.org/10.1108/BFJ-11-2016-0582

Rawwas, M., Rajendran, K.N., & Wuehrer, G.A. (1996). The influence of worldmindedness and nationalism on consumer evaluation of domestic and foreign products. *International Marketing Review, 13*(2), 20-41. https://doi.org/10.1108/02651339610115746

Ray, J.J., & Furnham, A. (1984). Authoritarianism, conservatism and racism. *Ethnic and Racial Studies, 7*(3), 406-412.

Reznikova, N., Panchenko, V., & Bulatova, O. (2018). The Policy Of Economic Nationalism: From Origins To New Variations Of Economic Patriotism. Baltic Journal of Economic Studies, 4(4), 274-281. https://doi.org/10.30525/2256-0742/2018-4-4-274-281

Rosamond, B. (2012). Supranational governance as economic patriotism? The European Union, legitimacy and the reconstruction of state space. *Journal of European Public Policy, 19*(3), 324-341. https://doi.org/10.1080/13501763.2011.638119

Rowe, P. A. & Christie, M. J. (2008). Civic entrepreneurship in Australia: Opening the "black box" of tacit knowledge in local government top management teams. *International Journal of Public Sector Management, 21*(5), 509-524. https://doi.org/10.1108/09513550810885804

Rukuni, T.F., Maziriri, E.T., Dhlamlenze, M., & Benedict, E.E. (2022). Entrepreneurship as a strategy for refugees in South Africa. *International Entrepreneurship Review*, *8*(2), 37-50. https://doi.org/10.15678/IER.2022.0802.03

Serrano-Arcos, M.d.M., Sánches-Fernández, R., & Pérez-Mesa J.C. (2021). Analysis of Product-Country Image from Consumer's Perspective: The Impact of Subjective Knowledge, Perceived Risk and Media Influence. *Sustainability, 13*(2194). https://doi.org/10.3390/su13042194

Shankarmahesh, M.N. (2006). Consumer ethnocentrism: an integrative of its antecedents. *International Marketing Review, 23*(2), 146-172. https://doi.org/10.1108/02651330610660065

Shimp, T., & Sharma, S. (1987). Consumer Ethnocentrism: Construction and Validation of the CETSCALE. *Journal of Marketing Research, 24*(3), 280-289. https://doi.org/10.2307/3151638

Siamagka, N.T., & Balabanis, G. (2015). Revisiting Consumer Ethnocentrism: Review, Reconceptualization, and Empirical Testing, *Journal of International Marketing, 23*(3), 66-86. https://doi.org/10.1509/jim.14.0085

Siemnieniako, D., Kubacki, K., Glinka, E, & Krot, K. (2011). National and regional ethnocentrism: a case study of beer consumers in Poland. *British Food Journal. 113*(3), 404-411. https://doi.org/10.1108/00070701111116464

Skitka, Linda S. (2005). Patriotism or Nationalism? Post-September 11, 2001, Flag-Display Behavior. *Journal of Applied Psychology, 35*(10), 1995-2011. https://doi.org/10.1111/j.1559-1816.2005.tb02206.x

Smits, S. J, & Bowden, B. E. (2015). A perspective on leading and managing organizational change. *Economics and Business Review* EBR 15(2), 3-21. https://doi.org/10.18559/ebr.2015.2.1

Šmaižienė, I., & Vaitkienė, R. (2014). Consumer Ethnocentrism and Attitudes towards the Domestic and Foreign-Made Dietary Supplements (the Case of Lithuanian Market). *Economics and Business. 26*, 88-96. https://doi.org/10.7250/eb.2014.025

Spillan, J.E. & Harcar, T. (2013). A Comperativ Study of Patriotism, Protectionism, Social Economic Conservatism between Indian and Vietnemese Consumers: The Effect of those Constructs on Buying Inclination, *Eurasian Journal of Business and Economics, 2*(6), 1-26.

Sroka, W., & Vveinhardt, J. (2020). Nepotism and favouritism: how harmful are these phenomena?. *Forum Scientiae Oeconomia, 8(*2), 79-91. https://doi.org/10.23762/FSO_VOL8_NO2_5

Staerklé Ch., Sidanius J., Green E.G.T. & Molina L.E. (2010), Ethnic Minority-Majority Asymetry in National Attitudes around the World: A Multieval Analysis. *Political Psychology*, 31(4), 491-519.

Stahel, R. (2013). Globalisation and the Crisis. *Philosophica. Towards a Political Philosophy, 12*, 45-56.

Sułkowski, Ł. (2009). Interpretative Approach in Management Sciences. *Argumenta Oeconomica* 23, 127-49.

Sułkowski Ł., Ignatowski G., & Sułkowska J., (2017). Przedsiębiorczość patriotyczna. *Przedsiębiorczość i Zarządzanie, XVIII*(12/I), 91-105.

Suryadinata, L. (2000). *Nationalism and Globalization. East and West.* Singapore: Institute of Southeast Asian Studies.

Szanyi M. (2016). *The emergence of patronage state in Central Europe. The case of FDI-related policies in Hungary*IWE Working Papers 222). Institute for World Economics – Centre for Economic and Regional Studies- Hungarian Academy of Sciences.

Szanyi, M. (2017). Impacts of the Crisis on the FDI-Led Development Model in Hungary: Emergence of Economic Patriotism or Shift from the Competition State to Patronage? In Havlik, P., & Iwasaki I. (Eds), *Economics of European Crises and Emerging Markets* (pp. 149-170). Singapore: Palgrave. https://doi.org/10.1007/978-981-10-5233-0_7

Thompson, J., Lees A. & Alvy G. (2000), Social entrepreneurship–a new look at the people and the potential. *Management Decision*, 38(5), 328-338.

Thorgren, S., & Wincent, J. (2013). Passion and habitual entrepreneurship. *International Small Business Journal, 33*(2), 216-227. https://doi.org/10.1177/0266242613487085

Toften, K., & Hammervoll, T. (2013). Niche marketing research: status and challenges. *Marketing Intelligence and Planning, 31*(3), 272-285. https://doi.org/10.1108/02634501311324618

Waldinger, R. & Duquette-Rury, L. (2016). Emigrant Politics, Immigrant Engagement: Homeland Ties and Immigrant Political Identity in the United States. The Russell Sage Foundation, *Journal of the Social Sciences, 2*(3), 42-59. https://doi.org/10.7758/RSF.2016.2.3.03

Watson, J., & Wright, K. (2000). Consumer ethnocentrism and attitudes towards domestic and foreign products. *Eureopean Journal of Marketing, 34*(9/10), 1149-1166. https://doi.org/10.1108/03090560010342520

Westheimer, J. (2006). Politics and Patriotism in Education. *Phi Delta Kappan. 87*(8), 608-620. https://doi.org/10.1177/003172170608700817

White, J. (2003). Patriotism without Obligation. *Journal of Philosophy of Education, 35*(1), 141-151. https://doi.org/10.1111/1467-9752.00215

Wruuck P. (2006), Economic Patriotism. New Game in Industry Policy?, *EU Monitor*, June 14, 2006, 3-4.

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Conflict of Interest

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