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Department of International Trade
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‘What’s puzzling you is the nature of my game’: What the grand narrative of entrepreneurship doesn’t say

Geoff A. Goldman, Thea Tselepis

ABSTRACT

Objective: The objective of this article is to heighten awareness of the dangerous allure of entrepreneurship as leveraged by modern capitalism.

Research Design & Methods: By employing a critical dialectical approach, this work attempts to uncover the origins of the grand narrative of entrepreneurship as well as the origins of the iconic status that the entrepreneur enjoys, as it is postulated that there is a link between the grand narrative and the reverence of the entrepreneur.

Findings: A theoretical synthesis between entrepreneurship and capitalism is illustrated by unpacking the assumptions of entrepreneurship and the education thereof.

Implications & Recommendations: Irresponsible communication of the entrepreneurship narrative, particularly relating to the promise of deliverance, should be carefully considered and contextualised by governments and educational institutions.

Contribution & Value Added: Highlighting the important pitfalls that pervade current thinking on entrepreneurship and entrepreneurship education when only the “grand” part of the narrative is shared. A reflection around the entrepreneurship discourse within a capitalist context is offered as an unbalanced picture of what entrepreneurship offers, particularly within developmental economies. In this regard, the question that is posed for reflection of scholars who are involved in entrepreneurship, relates to the ethics revolving around ‘selling the dream’ of entrepreneurship. A plea for a more balanced approach when communicating the value of entrepreneurship, is offered as a final thought.

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INTRODUCTION

Scholars concerned with critical inquiry into entrepreneurship point out there is a *grand narrative* that runs through entrepreneurship (Berglund & Wigren, 2012). This narrative reinforces theory and research on entrepreneurship education, and therefore scholars should be aware of this narrative and its’ underpinning assumptions. This article explores the grand narrative on entrepreneurship and relate the implications to entrepreneurship education. This narrative posits that entrepreneurs offer solutions to some of the contemporary issues facing the global economy, such as slow economic growth, turbulent change, and unemployment (Farny *et al.*, 2016), in that entrepreneurs stimulate economic growth, establish new business ventures, reduce unemployment, and stimulate innovation and creativity. The creation of an entrepreneurial economy is seemingly the outcome that entrepreneurship pursues (Audretsch & Thurik, 1997). However, the narrative needs a vehicle to propagate itself, and education (particularly entrepreneurship education) provides such a vehicle

(Thrane *et al.*, 2016). There is thus a strong link between the role of the entrepreneur in the economy *per se*, and entrepreneurship education in this narrative.

The problem is that the *grand narrative* that runs through the entrepreneurship discourse and – education, portrays the entrepreneur as the embodiment of entrepreneurial activity and learning. This is a mechanism employed as a governance structure to maintain the basic ideology of capitalism, where entrepreneurs as owners of capital have control and promote an uneven balance of power over workers in an economy (Coste, 2020). The entrepreneur is depicted as the embodiment of the triumph of capitalism, and occupies a position of reverence (Coste, 2020; Jones & Spicer, 2005). Whether promoting entrepreneurs as the most powerful beings of the capitalist world is wise, is debatable and has been highlighted as a negative device in an economy (Farny *et al.*, 2016). Without interrogating the roots of the *grand narrative*, academics and policy makers apply the principles of capitalism and may fail to critically review each principle. The objective of this paper is therefore to interrogate the capitalist notion of the entrepreneur as a hero figure in the *grand narrative* brought about through entrepreneurship thinking and education. We wish to show that there are inherent pitfalls in an unchecked advancement of this narrative. The novelty of our approach lies in the application and illustration of criticality and how we have searched for root of the narrative as opposed to only using the latest sources that promote the grand narrative and uncritically citing them as the only scientific truth. In this regard we offer a caveat about this possible blind spot in entrepreneurship education. Major leaps have been made in terms of publishing on the various types of entrepreneurship in international contexts (Dilli *et al.*, 2018), the notion of entrepreneurial orientation (Omar & Nazri, 2016; Wach, 2018) and various types of knowledge that is applicable (Głodowska *et al.*, 2019), yet the general grand narrative as mentioned in the papers we found when searching for “*grand narrative*” has stayed the same over time.

The discussion turns to the methods employed in this article, then to an examination of the literature (which looks at the capitalist foundations of entrepreneurship, the *grand narrative* of entrepreneurship itself, and the assumptions that found in the entrepreneurship discourse that come from this narrative), where after conclusions are drawn and implications forthcoming from the dialectical argument are presented.

RESEARCH METHODOLOGY

Following a critical dialectical approach of reasoned argumentation, this paper interrogates entrepreneurs’ *grand narrative*, and the iconic status the entrepreneur enjoys. This suggests that we need to be sure that the assumptions that underpin this *grand narrative* are relevant, and focused on providing optimal solutions, as opposed to solutions that favour a particular agenda. The critical dialectical approach requires that the authors firstly identify the general narrative portrayed in critical scholarly work on entrepreneurship. The parameters used to search and select relevant literature were: ‘critical entrepreneurship studies’ and ‘entrepreneurship grand narrative’ and were applied to Google Scholar. Articles were chosen according to their applicability to the topic in terms of critique offered against the mainstream entrepreneurship discourse. The review of scholarship on entrepreneurship’s *grand narrative* is thus offered through a critical lens and questions are posed about the relevance of the underpinning assumptions of the *grand narrative* of entrepreneurship, and the role of the entrepreneur in particular. Google Scholar was used, as a recent study comparing it to 12 other search engines indicated that it is the most efficient search engine for literature (Gusenbauer, 2019).

Our role as authors should be noted, particularly regarding the applicability of the theory in practice. In line with the dialectical process in critical scholarship (How, 2017), we became the research instruments making links between theory and what the implications in the real world are. Thus, the ability to synthesise literature into a reasoned argument is the role of the author-as-researcher in critical theory (How, 2017). This ability to present a reasoned argument also affords us as authors to perceive the dangers inherent to the *grand narrative* of entrepreneurship, as practice is enhanced by our lived experience engaging with this narrative. As authors, we are realists with more than 30 years combined experience in academia, and participation in a developing economy. The synthesis of theory into reasoned argumentation is therefore constructed accordingly.

LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

The literature review commences with an examination of the capitalist foundations of entrepreneurship, to understand the ideological origins and theoretical foundations of entrepreneurship. The discussion then turns to the nature of the *grand narrative* itself and what it purports. Leading from that, assumptions that have formed over time as a result of this narrative, and that form part of the entrepreneurship discourse, are expounded upon.

The capitalist foundations of entrepreneurship

The effect of entrepreneurship on economic systems has widely debated, with evidence suggesting that this debate dates back to the mid-18th Century (Emami & Nazari, 2012; Wadhvani, 2012). Entrepreneurship as a disruptive force in economic systems propelled interest in entrepreneurship to the forefront. Whereas classic economic theory focused on equilibrium in markets, the rise in attention in entrepreneurship marked a shift in emphasis to free will and the role of individuals in initiating change and disruption in the capitalist system. Of importance here is the work of Joseph Schumpeter (McCraw, 2007), who viewed capitalism as a dynamic process that fosters economic change (McCaffrey, 2009), and viewed entrepreneurship as central to this process (Wadhvani, 2012). For Schumpeter, entrepreneurs discover and initiate new combinations and innovative ways of economic activity, thereby mobilizing economic growth (McCaffrey, 2009). This is not possible in an economy where perfect equilibrium exists, but is possible under uncertain economic conditions (Deutschmann, 2001). Through the application of these 'new combinations', new technologies, products, services and organizational concepts are introduced which create new demand, which translates to profits for the entrepreneur and growth for the economy (Deutschmann, 2001; Schumpeter, 1952). Thus, profit is the reward entrepreneurs stand to gain for their entrepreneurial activities. However, competitors will react to the application of these 'new combinations' with combinations of their own, inciting a competitive restructuring of the economy (Ebner, 2006). It is entrepreneurship that defines a dynamic, developing economy for Schumpeter (Knudsen & Swedberg, 2009).

Schumpeter realized that an economic theory of equilibrium could not account for a fundamental aspect of the capitalist economy, namely growth (Spicer & Jones, 2005). It is the application of the 'new combinations' and the restructuring of the economy that propels the capitalist economy forward, in what Schumpeter refers to as 'creative destruction' (Knudsen & Swedberg, 2009; Schumpeter, 1942). It is apparent that Schumpeter was of the opinion that innovation through entrepreneurship was pivotal for economic growth brought about by this 'creative destruction'. Schumpeter is seen as one of the most influential 20th century thinkers in entrepreneurship, and the centrality of entrepreneurship to dynamic economic growth and to capitalism is clearly evident in his work. Also, the seeds of admiration for the figure of the entrepreneur are also apparent in Schumpeter's work (McCaffrey, 2009; Sledzik, 2013).

It is not only Schumpeter who suggests a link between capitalism and entrepreneurship. For some scholars, entrepreneurship is *the* defining characteristic of capitalism (Dilli *et al.*, 2018; Lewin, 2002; Machan, 1999). Isreal Kirzner sought to understand the nature and implications of entrepreneurship in contemporary society, and wanted to defend and promote capitalism, viewing entrepreneurship as being at the heart of capitalism (Lewin, 2002). For Kirzner, capitalism is 'good for us' (Kirzner, 1985), as it produces outcomes that are superior, and hence desirable, in comparison to the outcomes of other economic systems (Lewin, 2002). This argument rests on two important premises:

1. that a set of outcomes are indeed produced, and
2. that these outcomes, if forthcoming, are indeed desirable.

In terms of the first premise, capitalism is usually associated with a variety of goods and services available to society. This gives society freedom of choice, assisted by advancements in technology, which results in prosperity for society. Thus, in terms of the first premise, outcomes are produced, although opinion differs on whether these outcomes lead to prosperity and advancement of society or not. In terms of the second premise, the desirability of these outcomes is a source of contention. The outcomes are desired by those who benefit from them, which are normally those who shape

and influence capitalism. However, those who are shaped and influenced *by* capitalism are, for example, exposed to exploitation and alienation, which is certainly not desirable (Dilli *et al.*, 2018; Ebner, 2006; McCaffrey, 2009).

Furthermore, one of the outcomes of capitalism is a distinct consumerist drive, which leads to materialism and commercialisation, which is certainly not a desirable outcome (Lewin, 2002; Machan, 1999), especially from a moral point of view. Capitalist doctrine counters these arguments by upholding the 'individual freedom and autonomy', rights-based defence (Machan, 1999), where the promise freedom and self-determination in a capitalist society is forwarded. Thus, by deflecting attention away from the undesirable consequences, and punting the rights-based argument, the ideal suggested by capitalism takes precedence over the consequences of capitalism. Stated simply, capitalism is trying to sell an aspiration.

The grand narrative of entrepreneurship in general

Weiskopf and Steyaert (2008), purport that entrepreneurship's *grand narrative* is a promise of deliverance, which seems in line with the aspirational, rights-based approach, as concluded in the previous section. This promise of deliverance posits that entrepreneurship is central to addressing many of the problems confronting contemporary economies, such as slow economic growth, high unemployment, and disruptive change (Emami & Nazari, 2012; Farny *et al.*, 2016). The economic deliverance offered by entrepreneurship is achieved through the creation of new business ventures, which in turn revitalize the economy (Lautenschlager & Haase, 2011). Stimulating entrepreneurship is a macroeconomic imperative for many governments (Emami & Nazari, 2012), as it is believed to have a positive effect on the welfare of a nations' economy and enhances an economy's productivity. Aspects of the *grand narrative* may be true in some instances or contexts (especially when market conditions are favourable), but the other side of the story of deliverance (when no jobs are created, when start-ups fail, when unemployment rises, and the economy slumps) is barely mentioned in literature, by governments, or by universities in their educational offerings.

To leverage upon the promise of deliverance, it has become apparent to impart an appreciation for the potential of entrepreneurship in the broader society. There has been a marked shift away from a 'managed economy', the post-war model of economic management through governmental policy processes where structural outcomes were managed by the state, toward an 'entrepreneurial economy', emphasizing risk taking and new ideas, where flexible enterprises of smaller scope are seen as key to economic prosperity (Knudsen & Swedberg, 2009; Thurik *et al.*, 2013). Innovation and flexibility are viewed as more essential than stability and control (Audretsch & Thurik, 1997). We agree that, to some degree, entrepreneurship may add to economic prosperity, but question the pervasiveness thereof, and note a caveat to those who do not fully contextualise these promises of deliverance particularly when we look at entrepreneurship from an entrepreneurial orientation perspective as recent scholars have done (Andersén, 2017; Korpysa, 2019).

To harness the potential offered by the 'entrepreneurial economy' it has become necessary to re-orient institutions (government, big business, and educational institutions) toward promoting entrepreneurial activity (Stam & Nooteboom, 2011; De Bernardi & Azucar, 2020). As a result, policy debates and policy shifts have been forthcoming by governmental bodies to promote entrepreneurship and, ultimately, the proliferation of new business ventures (Gstraunthaler & Hendry, 2011). In many instances, this has led to 'entrepreneurship polices' and the creation of state organs. Many of these policy shifts centre around removing barriers to entry for potential entrepreneurs, facilitating access to, and mobility of, resources, and assisting in opening national economies to international competition (Thurik *et al.*, 2013).

Along with the shift toward promoting entrepreneurship, education is a vital mechanism in promoting entrepreneurship (EC, 2012). Entrepreneurship education has received increased attention by Higher Education Institutions recently, and there has not only been heightened scholarly interest in entrepreneurship (Farny *et al.*, 2016), but also a proliferation of entrepreneurship programs globally (Martin *et al.*, 2013; Thrane *et al.*, 2016). It is thought that these offerings will stimulate an 'enterprising spirit', through development of entrepreneurial aspirations, nurturing initiative, in-

spiring creativity and innovation, and instilling a forbearance for risk and uncertainty (Blenker *et al.*, 2012; Farny *et al.*, 2016).

The entrepreneur, in this *grand narrative*, is depicted as the embodiment of entrepreneurial spirit (Farny *et al.*, 2016; Weiskopf & Steyaert, 2008). The *grand narrative* thus proposes that an enterprising mind-set is necessary to be part of the emergent 'entrepreneurial economy' (Blenker *et al.*, 2012; Op't Hoog & Skoumpopoulou, 2019; Rae, 2010; Stouraitis *et al.*, 2019), and if the knowledge gained by this education is applied correctly, people can act upon opportunities and create new business venture. Teaching venture creation through the application of an entrepreneurial mind-set is often depicted as a way to promote personal prosperity, economic growth, contributing to society, and assisting in reducing societal ills. We argue that only depicting this 'rosy' side of entrepreneurship education is not responsible or ethical, and that contextualising the venture creation to promote realistic expectations regarding the mind-set is equally important in the *grand narrative*, and not currently featured.

The *grand narrative* of entrepreneurship reveals some assumptions, which are not necessarily backed up by empirical evidence and are very rarely, if at all, contested, and thus virtually taken for granted (Choi & Majumdar, 2014; Farny *et al.*, 2016; Hallet, 2010). As such, these assumptions require deeper inquiry.

The assumptions of entrepreneurship

Five assumptions seem to underpin the *grand narrative* of entrepreneurship:

P1: Entrepreneurial education has the potential to turn people into entrepreneurs.

There is the assumption that entrepreneurial education leads to the instilment of an entrepreneurial spirit, that entrepreneurial education has the potential to turn people into entrepreneurs. This has been challenged by scholars (Anderson & Warren, 2011; Lautenschlager & Haase, 2011), as an apparent upsurge in personality trait literature on entrepreneurship poses the basic question of whether entrepreneurship can be taught or whether entrepreneurial abilities are innate (Klein & Bullock, 2006; Thompson, 2004). There is a lot of investment in the notion that entrepreneurship education will deliver outcomes that transcend the conventional teaching and learning arrangement (Farny *et al.*, 2016). It is seen as essential to survival in an uncertain world, a guard against economic stagnation, promoting self-employment, a key competency of active citizenship, and has become a 'must have' competence (EC, 2012; Komulainen *et al.*, 2009). Hence, becoming an entrepreneur, through entrepreneurial education is seen as imperative to becoming a responsible, respected citizen (Berglund, 2013). An alternative truth in recent studies seem to indicate that entrepreneurship education promotes entrepreneurial intention and innovation (Al-Awlaqi *et al.*, 2018; Sołek-Borowska & Numprasertchai, 2018; Wei *et al.*, 2019), but that the entrepreneurial culture in a county that promotes entrepreneurship over a period greater than 50 years has visible economic impact (Fritsch & Wyrwich, 2017). Scholarly work also affirms the ambiguity associated with entrepreneurship education and the factors that enable entrepreneurship (Nicotra *et al.*, 2018; Spigel & Harrison, 2018).

P2: Entrepreneurs and business people are the same thing.

Grey (1998) posits that there is a lack of evidence to suggest that traits are able to explain the business behavior of people who are seen to be entrepreneurs. Later studies on entrepreneurship confirm that ideation and innovation (underpinned by creativity) are more important than business acumen when it comes to entrepreneurship (Benazzouz, 2019). Although a person might be a recognized entrepreneur, concrete evidence does not exist to suggest that the same person will have a good sense for business. Yet, in the *grand narrative* the figure of the entrepreneur also has a head for business, suggesting a blurring of the boundaries between the discourse of management and entrepreneurship (Lautenschlager & Haase, 2011). This irresponsible message of the entrepreneurial 'super human' capable of doing and knowing it all could not only create false expectations, but could lead to burnout in aspiring entrepreneurs.

P3: The entrepreneur yields business prosperity.

There is an assumption that entrepreneurial activity is associated with new venture creation. In the entrepreneurship discourse, two schools of thought emerge in attempting to explain entrepreneurship, one viewing it as a function of the individual, the other viewing it as a function of the environment, but both culminate in the creation of new ventures (Thrane *et al.*, 2016). This supposes a narrow view of the scope of entrepreneurship and is criticized by scholars (Jones *et al.*, 2012; Wadhvani, 2012; Welter *et al.*, 2019). Entrepreneurship has application further than business venturing and new venture creation (Herrmann, 2019; Rae, 2010), although this picture is often neglected in the *grand narrative*.

P4: A positive correlation between entrepreneurship and economic growth.

Stemming from the assumption that the entrepreneur yields business prosperity is an assumption that there is a positive correlation between entrepreneurship and economic growth. Yet, some view this role of the entrepreneur as contentious (Emami & Nazari, 2012; Johannisova *et al.*, 2013; Korsgaard, 2013). Policy makers and researchers alike affirm entrepreneurship as the ‘holy grail’ to success, continually declaring it the engine of economic growth and national competitiveness. Davidsson (2002) comments that research can contribute to policy centred around the promotion of an enterprising culture, if the research addresses the relevant issues, and if this research is conducted and read, in what Weiskopf and Steyaert (2008, p.7) refer to, “in adequate fashion”. Are these authors suggesting that research is purposely geared toward telling policy makers what they want to hear, which in turn provides policy makers with ‘proof’ for their proposed policies? Davidsson (2002) and Weiskopf & Steyaert (2008) point to strong and successful ‘partnership’ that is evident between policy makers and entrepreneurship research.

P5: Entrepreneurs are the ‘heros’ in an economy.

It is assumed that the entrepreneur, as idolised figure, is a charismatic wealth creator and visionary ‘saviour of the economy’. (Down & Warren, 2008; Laine, 2017; Sorensen, 2008). This deification of the entrepreneur does more than present a symbol for students of entrepreneurship to aspire to, it glamorizes entrepreneurship and elevates the figure of the entrepreneur to that of a charismatic ‘hero’ with superior agency (Farny *et al.*, 2016; Giesen, 2005; Laine, 2017). It is common practice for governments and education institutions to share the success stories of entrepreneurs like Bill Gates and Elon Musk, who are the exception rather than the norm. This might be good to spark potential entrepreneurs, but how many accounts of potential entrepreneurs who did not make it are shared? This might be in opposition to the *grand narrative*, but could convey a more realistic picture and could enable more realistic expectations of aspiring entrepreneurs.

Explicating the assumptions of entrepreneurship

The problem with these assumptions is that they do not create a realistic picture of what entrepreneurship is all about. Instead, these assumptions could yield an uncontested belief system, which could demarcate the domain of entrepreneurship through the entrenchment of certain explanations, criteria, and principles which will limit the voices deemed credible within the domain (Gergen, 2001; Laine, 2017). The implication thereof is that the discourse becomes self-serving and ostracizes any voices challenging the *grand narrative*. The danger is that the discourse risks becoming incestuous and stagnating, as voices that disrupt the status quo presented by the *grand narrative*, and which could potentially bring about a paradigm shift are always branded as ‘alternative’ views and marginalised.

The following section provides a synthesis of the preceding discussion and suggests a more balanced *grand narrative* of entrepreneurship.

DISCUSSION

This article has unpacked the *grand narrative* of entrepreneurship, highlighted the assumptions that underpin it, argued that the *grand narrative* is one sided and irresponsible, and shown flaws in capitalism as an economic system in relation to the power of the entrepreneur. It asked questions of the responsibility that governments and educational institutions have to advocate a more responsible and

balanced narrative of entrepreneurship, particularly relating the promise of deliverance. The implications of these arguments and questions for the entrepreneurship discourse therefore relate to the realistic communication of what entrepreneurship offers.

Ethical implications presented by the grand narrative

It is apparent that a more balanced and realistic view of the entrepreneurship narrative is required. The reverence of the entrepreneur as aspirational token and symbol of the success of capitalism, brings along with it certain ethical issues. With national agendas pursuing entrepreneurial development, becoming an entrepreneur becomes an embodiment of success. Especially in developing economies, with high levels of poverty and unemployment, this is seen as a 'way out' from poverty and represents a better life. Subsequently, entrepreneurship seminars and workshops in South Africa lure aspiring entrepreneurs eager to get funding, and most of them see funding as the largest stumbling block to their aspirations. This, however, is problematic, as the thought is that funding is the key to success. This shows that there is something fundamentally flawed, either with how the narrative of entrepreneurship is conveyed, or with how this narrative is perceived.

The question that arises is how ethical is it to 'sell the dream' of entrepreneurship? As highlighted, capitalism attempts to sell something to aspire toward, and the 'ideal' of capitalism takes precedence over its consequences (Dilli *et al.*, 2018). An unbalanced narrative that reveres the ideal and hides the consequences can be questioned as being unethical, as it creates false expectations. Take the allure offered by post-school qualifications in small business management or entrepreneurship. The 'dream' that is being sold is that if you study *this* qualification, you will become an entrepreneur and run a small business. The reality is quite different, and there is an absence of evidence (in South Africa, at least) on how many of these graduates become entrepreneurs. One would expect that if there was a correlation between studying such a qualification and becoming an entrepreneur, educational institutions would boast about it.

It is important to note that we do not argue against the possible value that entrepreneurship might add to economies. We do not dispute that entrepreneurship education could result in innovation, or that aspects of entrepreneurship could at least be taught. Instead, we appeal to the mainstream discourse of entrepreneurship for a more realistic narrative, and that the current *grand narrative* needs to be questioned. We suggest the following moving toward a more realistic *grand narrative* of entrepreneurship, and the role a more realistic narrative will have on:

1. the economy, and
2. entrepreneurship education.

A plea for a more realistic narrative of entrepreneurship's role in the economy

Although entrepreneurship can in some contexts yield economic growth, one also has to note that it is in economies that are favorable for entrepreneurship. The *grand narrative* of entrepreneurship is however often driven in developing economies. In such economies the situation is often that entrepreneurship yields a survivalist culture that more often than not does not promote economic growth. Moreover, entrepreneurial activity should rather not always be associated with new venture creation (Omar & Nazri, 2016) and should ideally not be aspiring entrepreneurs' first point of departure when they do not have any experience of the industry and/or field of business that they want to pursue. Therefore, the *grand narrative* of entrepreneurship should rather communicate that in some economies economic growth is more conducive and spell out what those conditions for growth are. Furthermore, the narrative should also communicate that any aspiring entrepreneurs should have experience and contacts in an industry where they want to start their business as confirmed by Walsh (2019). More emphasis should be placed on intrapreneurship as a realistic career path which could have economic impact.

A plea for a more realistic narrative about entrepreneurship education

As discussed, the notion of training people to 'become' entrepreneurs, could be dangerous. The more realistic narrative is that some people have an inclination to be entrepreneurial and others not. Selection processes of Higher Education Institutions should therefore be honed to select those

who have already built a portfolio of evidence regarding venture creation, tenacity, perseverance and creative problem solving before potential candidates are admitted to programmes that relate to entrepreneurship. A critical point of reflection for Higher Education Institutions might be to decide whether entrepreneurship might not be better suited to post-graduate study, for those who have businesses and understand the industry they operate in.

More emphasis on building a network and agency to promote ideas could be beneficial because a more realistic narrative regarding entrepreneurship should rather be that it requires a team effort as highlighted by Cruise (2017). Entrepreneurship as study field should also be careful not to punt freedom and independence as an advantage of being an entrepreneur when the contrary is that entrepreneurs often have less free time and less independence compared to people employed in corporate jobs but at least entrepreneurs can create value in alternative ways (Lindner, 2018). The possible negative psychological impact as well as the possible negative impact on entrepreneurs' health should also be communicated to aspiring entrepreneurs as considering psychological effects of any career is also in line with the thinking of scholars such as Parente *et al.* (2018).

Entrepreneurship within a Higher Education Institution should ideally have a strong experiential learning component (Ferreira, 2020). Therefore, those institutions that do not have a strong experiential component can encourage students to gain particular skills for a particular industry through project based learning. The emphasis on the learning journey is important and a more realistic narrative would therefore require the success stories that inspire, but also the failures of those who have not made it and what they have learned on their journey.

CONCLUSIONS

In this article we argued the need to acknowledge that the *grand narrative* of entrepreneurship, apart from the positives associated with it, also contains a side we need to be cognisant of and that we should treat with caution. As this article has illustrated, that there is a link between entrepreneurship and capitalism, and capitalism uses the notion of entrepreneurship to perpetuate and sustain itself. Thus, the identity associated with the entrepreneur does not necessarily stem from being entrepreneurial, but rather in the space between entrepreneurial activity and the entrepreneur as object of desire (Jones & Spicer, 2005). This object of desire, sustains and fuels the discourse, sways opinion of the policymaker and the Director of the Business School. It speaks to parents contemplating their children's direction, and attracts students to courses. This echoes the allure of capitalism, that anybody who is willing to take the initiative and make the effort, can benefit from it. In theory, this is in fact so. However, the reality is that those who benefit from capitalism are a small minority, but this benefit is forthcoming through those who are influenced by capitalism, who are the vast majority. Thus, it is in the interest of those who benefit, to keep those who are influenced locked in. Those who are locked in are kept there by the allure of 'the dream', the carrot that is dangled before the donkey. The *grand narrative* helps make this carrot look very tasty.

The implications and recommendations for educators who disseminate their scholarship of teaching and learning within entrepreneurship as well as scholars who do research on entrepreneurship to include: 1) reference to "*alternative narratives*" in publications and presentations, and 2) contextualise all the aspects of the research in order to promote those alternative narratives. This is a way to inform others and governments about the contextual and ambiguous detail that promotes various types of entrepreneurship so that resources can be allocated accordingly.

Of course no article is without limitations and the main limitation of this article is that the literature search that was done on the *Grand Narrative*, which seemed to be implied in later sources but was not explicitly pointed out. Searching for a narrative is one way to look at entrepreneurship in a critical way. In this regard, further studies can be done on the implied or subtle narratives present over the past decade on entrepreneurship and entrepreneurship education. Another recommendation relating to further studies would be to involve students in the critical assessment of the entrepreneurial domain. Critical thinking as a skill is becoming increasingly important in the Fourth Industrial Revolution where humans may strive to become more critically engaged and more ethically responsible than ever before.

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Conflict of Interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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Practical knowledge in preparing financial statements and ICT-enabled financial plans: An empirical study among entrepreneurial students in Oman

Mohammed Muneerali Thottoli

ABSTRACT

Objective: This paper aims to examine practical knowledge in preparing financial statements (FStts), practical knowledge in information and communication technology (ICT) and ICT-enabled financial plan (ICTeFP) among entrepreneurial students within Universities in Oman.

Research Design & Methods: Primary data were collected from university students to analyze practical knowledge in preparing FStts and related ICT skills. Items of FStts were considered to measure entrepreneurial students' practical knowledge to prepare FStts. Besides, entrepreneurial students' skills in basic Microsoft tools have also been considered.

Findings: The findings were evaluated by applying structural equation modelling-partial least squares (SEM-PLS). The findings of the current study reveal that entrepreneurial students' practical knowledge in preparing FStts is lacking whereas it shows that the students possess adequate basic skills in ICT. Thus, automated ICTeFP can be useful in managing entrepreneurship creativity and innovation course more effectively.

Implications & Recommendations: The findings suggest that ICTeFP is an excellent contribution to enrich the recently compulsory course, (both for accounting and non-accounting students), entrepreneurship creativity, and innovation.

Contribution & Value Added: The study solely for the entrepreneurial students who are studying the course, entrepreneurship creativity and innovation, in Oman. The research is one of the first to empirically analyze the relationship between practical knowledge in preparing FStts, practical knowledge in ICT, and ICTeFP among entrepreneurial students within universities in Oman.

Article type: research article

Keywords: Entrepreneurship; Creativity; Innovation; ICT; Financial Plan; Oman; University

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INTRODUCTION

Young aspirant entrepreneurs should know that information technology (IT) or broader information and communication technology (ICT) enabled financial plans for their innovative business idea is an essential element for success. Systematic preparation of business' financial planning extends the entrepreneurial students to understand the financial feasibility of their proposed venture. A well-designed automated financial planning facilitates students to ascertain their intended business financial goals, such as short-term and long-term, and create a flexible financial budget to know various possible payback periods. Cost control, tax planning, and fair financial statements (FStts) will help entrepreneurial students with proper planning on their identified working capital. An ICT-based or ICT-enabled financial plan (ICTeFP) facilitates the estimation of venture capital, seed capital, and working capital

requirements in different combinations. ICT enables to use of predefined financial templates which can help beginners or non-accounting students to present their innovative business ideas' financials more quickly. An ICTeFP is useful to automate budgeting, analyzing, and forecasting the data that facilitates to assist the planned business' financial health and assist in predicting alternative financial strategy and financial impact. ICT-enabled financial tools heavily to depend on statistical assessment. The technology-enabled tool might be able to evaluate the intended business idea of potential entrepreneurs. The proposed automated software will assess business plans based on earlier data, business statistics, economic environment along related qualitative data. ICT-enabled software recommends improvements in the financial plan, recommendations on seed capital. Machine learning helps to upload past financial data to the software (Mavlutova *et al.*, 2020). ICT-enabled entrepreneurial education will gradually affect both classroom-based training or teaching, but more precisely it leads to an innovative way to deliver entrepreneurship courses (Sousa *et al.*, 2019).

However, higher education institutions were facing challenges to deliver entrepreneurship courses (Mavlutova *et al.*, 2020). Knowledge in preparing FSSts is considered an essential factor in adopting ICT-enabled entrepreneurship (Byun, Sung, Park, & Choi, 2018). Lack of support, less innovation in ICTeFP, and lack of practical knowledge in their academic in terms of accounting and business are some obstacles that challenge the adoption of e-entrepreneurship for e-startups (Islam & Alghobiri, 2018)

Students even though their major accounting, have less knowledge on various sections included in a financial plan; some of them don't know how to prepare income statements, statements of financial position, cash flow statement, and equity shareholder's statement.

Recently, in the Gulf Cooperation Council (GCC), entrepreneurship education considers special importance. Entrepreneurship education among students has received increased awareness in Oman. Now in Oman, the course, Entrepreneurship Creativity, and Innovation have been made compulsory for all the students who are diploma or bachelor irrespective of their major (accounting / non-accounting).

Technical and Vocational Education Training Strategy provides Oman to boost entrepreneurship education at the state level. The government has taken initiatives to include compulsory entrepreneurship creativity and innovation course with a practical section in the current curriculum development. The main aim of the program is to promote entrepreneurship, innovation, and to provide entrepreneurship creativity education, particularly among Omani students. Oman has considered this may enhance a mechanism for economic growth.

The above-listed challenges need attention for researchers to practical knowledge in preparing FSSts, practical knowledge in ICT, and ICTeFP among entrepreneurial students within universities in Oman. Thus, this paper aims to examine practical knowledge in preparing FSSts, practical knowledge in ICT, and ICTeFP among entrepreneurial students within Universities in Oman.

The following section provides a review of the literature, methodology, results, discussions, and conclusions of the study.

LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

An ICT-enabled financial plan

An information and communication technology-enabled financial plan is a software that supports, enhances, optimize, and integrates financial aspects of the proposed business plan that provides automation of FSSts with details of budgeting, payback period, ratio analysis. An innovative approach to entrepreneurial education and training through automated software has been required to test and improve the feasibility of students' innovative business ideas (Mavlutova *et al.*, 2020). The roles of ICT enabled entrepreneurial education and entrepreneurship development were examined by (Sulaiman *et al.*, 2020). The impacts of technology-enabled practical entrepreneurship teaching methods and students' entrepreneurial attitudes and intentions towards risk were examined by (Bandera *et al.*, 2018), and compare with entrepreneurship courses, students' majors, knowledge of ICT, and connections with business incubator were analyzed. Information technology-enabled tools facilitated interaction between students with entrepreneurial skills acquisition and improved entrepreneurial potential (Wu *et al.*, 2019). For promoting innovative ideas of business among non-accounting students have recommended entrepreneur-

ial software for their entrepreneurship courses (Buffardi, 2018). The entrepreneur-support standard model had facilitated to increase entrepreneurial performance by giving level and custom-made support substances to entrepreneurs preparing for their intended business. Through this ICTeFP possibly initiate a new start-up from the university which will lead to a future successful start-up company (Shin *et al.*, 2018). Automation attracted aspirant entrepreneurs to better convey their innovative business ideas well-thought-out way. It reveals that students who develop business ideas were ready to adopt ICTeFP for delivering their innovative business ideas (Wu *et al.*, 2018).

Practical knowledge in preparing FSsts

The students' knowledge in preparation of FSsts, financial accounting practices, and classification ledger accounts were examined by (Faccia & Mosco, 2019). Undergraduate students' understanding of accounting concepts and their practical knowledge from their first accounting class were studied by (Abbott & Palatnik, 2018). Accounting students' attitude to entrepreneurship course, entrepreneurial skills development was studied by (Reyad *et al.*, 2019). The level of non-accounting major students' knowledge on accounting through the establishment of automated Simplified Accounting Template for Apprentice in teaching was studied and found that it can assist the students to prepare FSsts (Shamsudin *et al.*, 2020). Teaching accounting concepts were insipid and tough to understand mainly for non-accounting major students. Entrepreneurship and accounting skills shall be used in learning through board games (Rosli *et al.*, 2019). Technology tools integrate financial transactions with technological facilities. It speed-up accounting records, builds a more secure business environment, and lowering human mistakes. It facilitates doing accounting work timely. In the current digital world, where technologies take over time-consuming, repetitive, and redundant jobs, giving accounting professionals extra time to consider the higher level and extra productive analysis (Moşteanu & Faccia, 2020). Knowledge in FSst preparation led to high intention on entrepreneurship education among undergraduates accounting students (Ahmad *et al.*, 2019). If instructors want to enhance the skills, efficiency, and concept of accounting education focused on developing entrepreneurial skills, university curricula or programs should be designed innovatively by including ICT for non-business major students (Boldureanu *et al.*, 2020).

Practical knowledge in ICT

Universities or colleges play a key role in the advancement of proficiency in ICT that equips their entrepreneurial graduate students to enter the labor market and produce new job opportunities choices through entrepreneurship that contributes to the solution of main international problems (Portuguez Castro & Gómez Zermeño, 2020). The personality traits of university students and how such traits influence their IT education were studied by (Al-Qirim *et al.*, 2018). MS Office and technology-based learning were decided by apparent usefulness. Students' frequent use of MS Office might be considered by educational institutions to aim their efforts on developing certain aspects of the platforms that would lead to greater levels of student interactions with technology. This will lead to greater levels of academic success as students engaged more by use of advanced MS Office skills apply using technology (Venter & Swart, 2018). IT skills are ever more cited as both workplace and curriculum weaknesses in accounting education. Employers and educators believe that MS Excel skills are considered as one of the technical competencies necessary for junior accountants. These IT skills developments embark on requiring MS Office Excel certification should include in some entry-level accounting curriculum (Rotondo, 2020). Microsoft Excel with Visual Basic for Application provides the students to draw graphs much interactive by diversified models. MS Excel facilitates economical, time effectiveness, easy find option, enhanced students' insight of accounting concepts, and nurture students' sense of confidence (Bernard *et al.*, 2018). Microsoft Excel is the best commonly used IT tool, the best crucial IT tool for fresh hires, and more importantly, MS Excel has been emphasized in colleges and universities' accounting curricula. MS Excel is reliable among different branches of accounting such as audit, FSsts, and tax across all other related experience levels. Further, PowerPoint, MS word, enterprise resource planning software, and the codes of accounting standard board were found as often utilized across several areas of accounting (Lee *et al.*, 2018).

Research questions and hypotheses

This study will answer two research questions steered by the study as mentioned below:

RQ1: Does practical knowledge in preparing FSSts influence ICTeFP?

RQ2: Does practical knowledge in ICT influence ICTeFP?

In essence, the present research study seeks to measure the degree of practical knowledge in preparing FSSts, practical knowledge in ICT, and ICTeFP among entrepreneurial students within Universities in Oman. Thus, the hypotheses made in the current study are as follows:

H1: Lack of practical knowledge in preparing FSSts associates with ICTeFP.

H2: Increased practical knowledge in information and communication technology associates with ICTeFP.

Consequently, the below depicted theoretical framework has been formed. The relationship among lack of practical knowledge in preparing FSSts and statement and increased practical knowledge in ICT with ICTeFP is shown in the below figure (Figure 1).

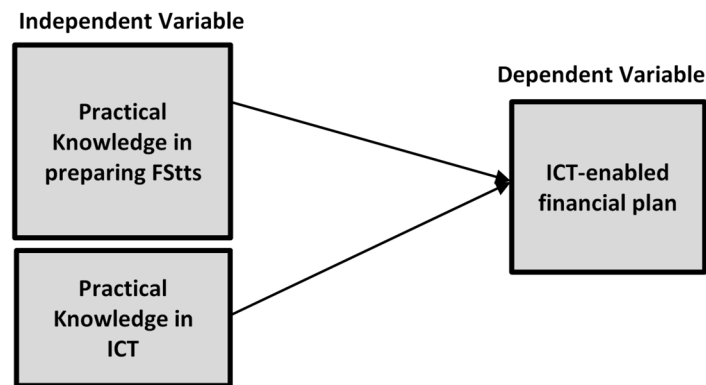


Figure 1. Theoretical Model

Source: own elaboration based on the hypothesis development.

RESEARCH METHODOLOGY

This current study has considered constructing and build a quantitative approach to assess a set of variables. The research questionnaire has employed a set of four instrument elements with a five-point Likert type scale/items to evaluate the defined variables. Some demographics comprised in this study have been based on demographic impact on students who study the compulsory course, entrepreneurship creativity, and innovation. Primary data were collected from University students to analyze practical knowledge in preparing FSSts and related ICT skills. Items of FSSts were considered to measure entrepreneurial students' practical knowledge to prepare FSSts. Besides, entrepreneurial students' skills in basic Microsoft tools have also been considered. This study has employed a set of four instrument items comprising questionnaires with a 5-point Likert type scale/items to evaluate the variables in the present study. A cross-sectional survey was conducted at various universities and colleges in Oman during the year 2020, comprising 174 students who are registered under various majors. The findings were evaluated by applying Structural Equation Modelling-Partial Least Squares (SEM-PLS).

Reliability and Validity

The initial part of the analysis consists of the factor loading, composite reliability, Cronbach alpha, and average variance extracted (AVE). Factor loading must be higher than 0.5 (Hair *et al.*, 2010). The AVE must be higher than or equal to 0.5 that accomplishes the internal consistency. The rule of thumb for deciding the value, alpha is; if the score " $\alpha > 0.9$ - Excellent, if it is $\alpha < 0.8$ - then Good, and if the $\alpha < 0.7$ - considered as Acceptable (Sijtsma, 2009). Table 1 shows the reliability and validity of the variables used in the current study.

Table 1. Reliability and Validity

Variables	Cronbach's Alpha	rho_A	Composite Reliability	Average Variance Extracted (AVE)
ICTeFP	0.940	0.943	0.951	0.737
PK in preparing FStts	0.975	0.977	0.977	0.719
PK in ICT	0.884	0.889	0.928	0.812

Source: own elaboration based on the results of PLS analysis.

RESULTS

Descriptive Statistics

The results of descriptive statistics have shown in Table 2. The dependent variable, ICTeFP, indicates that the level of practical knowledge in drafting entrepreneurial ICTeFP averaged 20%, along with a standard deviation of 0.69, minimum 7%, and maximum of 35%. Further, the determinants of practical knowledge in preparing FStts has an average of 51%, along with a standard deviation of 0.16, minimum of 17%, and a maximum of 85%; and the determinants of practical knowledge in ICT (PK in ICT) has an average of 10%, along with standard deviation of 0.03, minimum of 4%, and a maximum of 18%.

Table 2. Descriptive Statistics

Variables	Mean	Std. Dev	Minimum	Maximum
ICTeFP	0.20	0.69	0.07	0.35
PK in preparing FStts	0.51	0.16	0.17	0.85
PK in ICT	0.10	0.03	0.04	0.18

Source: own elaboration based on the results of PLS analysis.

The results of the discriminant validity construct have shown in Table 3. The discriminant validity calculates the extent to which the measures of various concepts are distinct. Apart from factor loadings, this research study has examined how properly the items described the latent variable by analyzing the average variance extracted (AVE) indicator. This study's correlations values between the variables shows smaller as compared to square-root averages (AVEs). In Table 3 such values are typed in bold. The AVE is included to ascertain the validity of a variable or to evaluate convergent validity (Chin, 1998; Hulland, 1999; Vandebosch, 1999).

Table 3. Discriminant Validity Constructs

Variables	ICT_FP	PK_Fsst	PK_ICT
ICT_FP	0.859		
PK_Fsst	0.846	0.848	
PK_ICT	0.706	0.767	0.901

Source: own elaboration based on the results of PLS analysis.

Besides of hypotheses test, the analysis was also revealing the variance explained (R²) in the endogenous variables. The R² is in the present study shows 0.724 (Table 4) which is a substantial value agreeing by Chin (1998). It specifies that all the two exogenous variables analyzed in the study, such as practical knowledge in preparing FStts and practical knowledge in ICT support, and explains 72.4% variance independent variable, ICTeFP.

Table 4. Variance Explained

Endogenous Construct	Variance Explained (R ²)
Exogenous Variables -> Endogenous (ICTeFP)	0.724

Source: own elaboration based on the results of PLS analysis.

Hypotheses Testing

Both the hypotheses H1 and H2 were expected to have either positively or negatively correlated with practical knowledge in preparing FStts, practical knowledge in ICT, and ICTeFP (Table 5). SEM-PLS employing bootstrapping methods were used for analyzing variables in the current study. The hypotheses and the structural model were analyzed to ascertain the significance of the path coefficients (β) with 5,000 iterations took for execution (Chin *et al.*, 2008). Range of the path coefficient acceptable if it is higher than 0.1 (Henseler *et al.*, 2016). The results of the path coefficient have shown in Table 5 and Figure 2, below, shows the results of the structural model analysis. All the factors, practical knowledge in preparing FStts and practical knowledge in ICT, have positive significant relation with ICTeFP. It shows that practical knowledge in preparing FStts (path coefficient value 0.000, $p < 0.001$) has a significant influence on ICTeFP. The result also reveals practical knowledge in ICT (path coefficient value 0.006, $p < 0.01$) has a significant influence on ICTeFP.

Table 5. Path Coefficients

Hypotheses	Path	Path Coefficient	Standard Error	t-value
H1	PK Fstt -> ICT FP	0.000	0.040	***18.435
H2	PK ICT -> ICT FP	0.006	0.050	**2.776

Note: Significance levels: *** $p < 0.001$ ($t > 3.33$), ** $p < 0.01$ ($t > 2.33$), * $p < 0.05$ ($t > 1.605$) (based in one-tailed test).

Source: own elaboration based on the results of PLS analysis.

RESULTS AND DISCUSSION

Lack of practical knowledge in preparing FStts with ICTeFP

The first independent variable has taken as, students' practical knowledge in preparing FStts. Numerous studies were found that there was a lack of practical knowledge in preparing FStts among accounting as well as non-accounting major students (Junger da Silva *et al.*, 2020; Hao-Yang *et al.*, 2018; Jie, 2017). This could be overwhelmed by adopting ICT-enabled income statements (Zheng, 2020). Lack of practical knowledge in preparing FStts among (accounting as well as non-accounting major) students was obvious and faces significant constraints to complete their compulsory course, entrepreneurship creativity, and innovation. Technology integrated financial plans are much feasible for young and aspirant entrepreneurs to realize the financial feasibility of their future innovative projects (Reyad *et al.*, 2019). Entrepreneurship education through ICT-enabled software is much better. Adoption of technology improves course learning outcomes, students' attitude toward their innovative business start-ups, considered as the main goal of entrepreneurship and accounting education (Bandera *et al.*, 2018; Thottoli *et al.*, 2019b).

The above-depicted Table 5, Path Coefficients, results express positively and significantly related the link between lack of practical knowledge in preparing FStts with ICTeFP ($\beta = 0.000$, $p < 0.001$). Thus, the first hypotheses tested in the current study were supported. Meaning that some of the students in the universities were agreeing to adopt ICTeFP for their successful completion of the compulsory course, entrepreneurship creativity, and innovation. Thus, the hypothesis result conveys a strong and positive relationship between lack of practical knowledge in preparing FStts with ICTeFP. Hence, undergraduate students irrespective of their major were all agrees to prepare as well as understand different alternative feasibility reports for their anticipated innovative business plan by using automated ICTeFP. Accordingly, the cogent justification for achieving this outcome for the first hypothesis, is that entrepreneurial students' lack in knowledge of preparing FStt will upsurge the readiness to integrate ICTeFP by universities for the students' compulsory course, Entrepreneurship Creativity and Innovation.

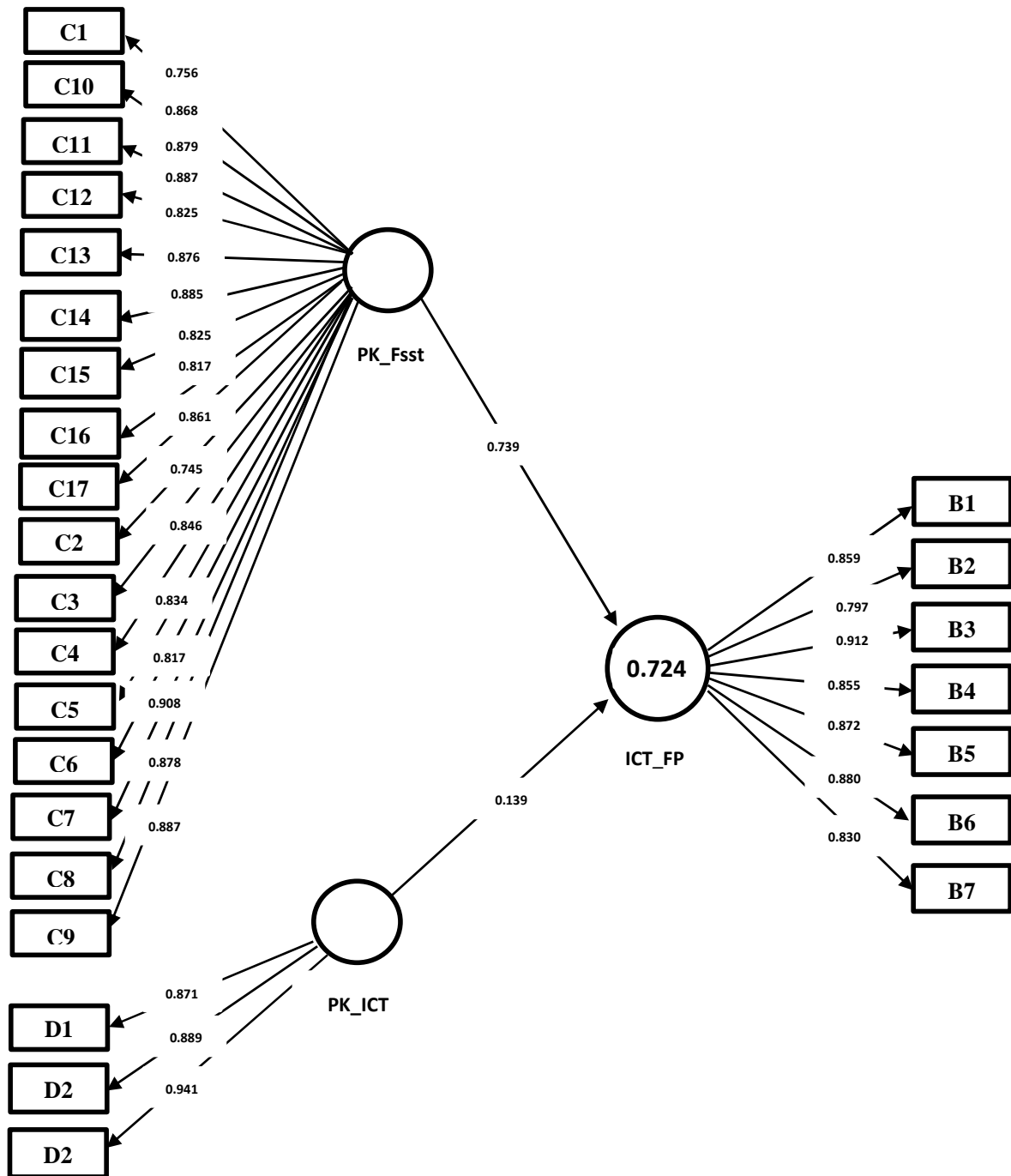


Figure 2. Structural model assessment
 Source: own elaboration based on the results of PLS analysis.

Practical knowledge in Information Communication Technology with ICTeFP

The second and final independent variable has taken as, students’ practical knowledge in ICT. Numerous studies were found that the majority of university students have adequate ‘basic’ knowledge in Microsoft office tools among accounting as well as non-accounting major students (Lee *et al.*, 2018; Thottoli, 2020a;). Basic knowledge in ICT has sufficient to use any accounting software including ICTeFP (Thottoli *et al.*, 2019a; Thottoli, 2020b). Adequate practical knowledge in ICT among (accounting as well as non-accounting major) students was obvious and has been considered as an added advantage for successfully use of ICTeFP to prepare automated FStts, payback period, equilibrium point, and flexible budget for their compulsory course, entrepreneurship creativity, and innovation. One may not

necessarily be professional in ICT to understand the ever-rising influence of ICT software applications in organizations. Consequently, certainly assumed that every person holds basic information technology skills and knows how to use simple IT applications. Particularly college and university undergraduates, who are deemed to be “IT natives” and who have had sufficient practical experience to a variety of IT software package and practical training, are often considered to be a consistent cluster with more similar basic IT practical skills and very high regular ICT practice (Verhoeven *et al.*, 2020). The level of technical competency among university students has a significant impact on ICT software applications in the day-to-day activities of students. Considerable distinctions among first-year university graduate students have observed software skills differ among countries (Eger *et al.*, 2018; Thottoli *et al.*, 2019c; Thottoli, 2021; Thottoli & Thomas, 2020).

The above-depicted Table 5, Path Coefficients, results express positively and significantly related the link between practical knowledge in ICT with ICTeFP ($\beta = 0.006$, $p < 0.01$). Thus, the second and final hypotheses tested in the current study were supported. Meaning that majority of students in the universities has increased ‘basic’ practical knowledge in ICT which will help to adopt ICTeFP for their compulsory course, entrepreneurship creativity, and innovation. Therefore, the second hypothesis result conveys a strong and positive relationship between increased practical knowledge in ICT with ICTeFP. Hence, undergraduate students irrespective of their major were all agrees to adopt automated handy ICTeFP to prepare as well as understand different alternative feasibility reports for their proposed innovative business plan. Accordingly, the cogent justification for achieving this outcome for the second and final hypothesis, is that entrepreneurial students have increased basic practical knowledge in the use of ICT (Microsoft office tool) and will motivate and ready to integrate ICTeFP by universities for the students’ compulsory course, Entrepreneurship Creativity, and Innovation.

CONCLUSIONS

This research study offers an explanation to practical solutions among accounting and non-accounting entrepreneurial students for their compulsory course, entrepreneurship creativity, and innovation, using automated ICTeFP. It ensures that fair presentation and budgeting of financial data for their innovative business ideas. This study may be helpful for Higher Educational Institutions to revitalize University curricula by including automated ICTeFP. The research is one of the first to empirically analyze the relationship between practical knowledge in preparing FSsts, practical knowledge in ICT, and ICTeFP among entrepreneurial students within Universities in Oman. The findings of the current study reveal that entrepreneurial students’ practical knowledge in preparing FSsts is lacking whereas it shows that the students possess adequate basic skills in ICT. Automated ICTeFP can be useful in managing entrepreneurship creativity and innovation course more effectively. The findings suggest that ICTeFP is an excellent contribution to enrich the recently compulsory course, (both for accounting and non-accounting students), entrepreneurship creativity, and innovation.

The study solely for the entrepreneurial students who are studying the course, entrepreneurship creativity and innovation, in Oman. In the future, the study can be extended to know the requirements of implementing ICT-enabled business plans throughout Universities in other states as well.

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Conflict of Interest

The author declares that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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The relationships between the macroeconomic situation and European skyscrapers

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ABSTRACT

Objective: The aim of this paper is to verify if economic prosperity is related to the number of skyscrapers built and their average height. It was done by examining the dependencies between GDP growth rate, unemployment rate, the Gini coefficient and the skyscrapers variables mentioned.

Research Design & Methods: In order to investigate the relationship between the number of completed skyscrapers, their average height, and year, a correlation was used. Linear regression was used to verify the relationship between macroeconomic variables and those relating to skyscrapers. The macroeconomic data were obtained from the World Bank, IMF, and WTO databases, and the data referring to skyscrapers – from Emporis.com.

Findings: The time variable (year) was positively correlated with the analyzed variables linked to skyscrapers. The research showed a negative impact of the unemployment rate and a positive impact of the Gini coefficient, on the number of completed skyscrapers. Further, the economic growth was negatively and Gini coefficient values were positively related to the average height of skyscrapers.

Implications & Recommendations: This study allows determining the periods in which an increased construction of skyscrapers could be expected. It may be useful for investors, global corporations or potential developers.

Contribution & Value Added: The analysis provided empirical confirmation of the hypotheses about the positive correlation between the number and average height of skyscrapers and the degree of economic inequality. Also, the negative dependencies between the number of these structures and the unemployment rate and between the average height of completed skyscrapers and the GDP growth rates, based on the example of European countries, were found.

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Keywords: skyscrapers; economic growth; GDP growth rate; unemployment rate; Gini coefficient

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INTRODUCTION

Skyscrapers, defined as multi-story buildings whose architectural height is at least 100 meters (Emporis, 2021), tend to be perceived as a symbol of wealth and power. Since their construction became commonplace, the race for the title of the world's tallest building gradually began. It was an image competition, which is most clearly presented in the 1930s – twice in 1930, and once in 1931 the record for the height of the building put into use was broken. In the case of Europe, the race for the tallest building picked up pace already in the 21st century, when the skyscraper's height record was broken 8 times (including 7 times by Russian buildings). A decisive argument in favour of the construction of high-rise buildings is decreasing space in urban areas. Therefore, it seems advisable to build higher structures, providing more office or living space (which can be clearly seen in the example of Hong Kong). However, it is also worth paying attention to the fact that the construction of skyscrapers is often associated with issues that are difficult to overcome. These include, in particular, technological barriers, legal restrictions (for example, the prohibition of the construction of this type of buildings in

certain areas), as well as the need to adjust high-rise buildings to city centers with historic buildings, which is particularly important in Europe (Begeç & Hamidabad, 2015) These issues limit the development of skyscrapers.

In the case of Europe, skyscrapers were not a particularly popular concept for most of the 21st century, which began to change since the 1970s. This trend is expected to continue and skyscrapers will play an important role in the architectural development of Europe (Pietrzak, 2014). Recently, a multitude of constructions of such structures has been observed, due to the growing demand for business and living spaces. It was particularly noticeable in Europe, for example in London, Moscow, Warsaw or Kyiv. Recently, the market is quite strongly affected, in a negative way, by the current pandemic situation, however, the trends pointed out above are still working – especially because of the constructions that are started before 2020. In general, skyscrapers are perceived as a sign of success and economic prosperity. However, is this belief supported by the data, based on the example of Europe? This study tries to provide an answer to this question. The aim of the article is to verify if economic prosperity is related to “the rise of skyscrapers”, by estimating the relationship between the GDP growth rate, unemployment rate, Gini coefficient and the number of skyscrapers completed and their average height, based on the example of Europe.

The paper presents a brief literature review, trends in the number of skyscrapers in individual European countries and analysis using some statistical tools (like correlation and regression). In the empirical part of the paper, the data related to the number and the average height of the skyscraper built were compared with economic growth rates, unemployment rates and the Gini coefficient.

LITERATURE REVIEW

Skyscrapers: symbols and happiness

The figures of skyscrapers are easily seen as symbols, which gives some room for maneuver to companies that want to be seen as synonyms of success and development, not just economic growth. It is easier to create a symbolic value in the form of a skyscraper than to improve general well-being. Likewise, skyscrapers are usually associated with corporations as their symbols. Typically, objects like shopping malls, culture centres or theme parks are not as clearly associated with corporations like skyscrapers (Sklair, 2006). On the other hand, high-rise buildings also have tangible advantages, which are also beneficial for the environment – examples are energy efficiency and environmental friendliness (Michaelson, 2014). A kind of excuse for the construction of taller and taller skyscrapers is the idea of “green skyscraper”, which on the one hand can be considered a marketing gimmick, but on the other – as an example of actually beneficial – for the environment, and even for the economy, action (McNeill, 2005). Apart from the benefits connected with the environment, the construction of skyscrapers has a positive impact on some countries, for instance emerging markets, in some ways. That is, especially, attracting foreign investors, which, due to the scarcity of natural resources (e.g. the shrinking oil deposits in the Middle East), seems to be a fairly good source of stimulating investments in the economy, or the creation of financial districts where many transnational corporations outsource, creating new jobs (Formanek, 2013). The role of skyscrapers in cities seems to be more and more important. With the influx of people to urban areas, there is gradually a shortage of building space. Therefore, three possible ways of developing skyscrapers are referenced – horizontal overcrowding, urban sprawl and vertical expansion. It seems necessary not to destroy agricultural lands during the cities’ development processes, and that is the way focused on skyscrapers (Al-Kodmany, 2018). It is also noted that skyscrapers are not only symbols of power and hierarchy, but also examples of being guided by the organization of the capital accumulation process. On the other hand, they are also often seen as a sign of social inequality (Barr, 2016). Overall, however, they should be perceived as examples of a good organization (Parker, 2013). Skyscrapers might have also a correlation with happiness. According to Barr and Johnson (2020), building high-rises has no significant impact on the level of happiness. However, for skyscrapers, there was found a positive influence of these types of constructions on society happiness. The research showed also that there is no negative influence of skyscrapers on the overall health of society. Similarly, an empirical study of the relationship between skyscraper

height and happiness showed a positive one. Depending on the regression method adopted, it was either insignificant or statistically significant (Barr, 2017).

In general, skyscrapers are seen as an image of proper management in the economic sphere and socio-economic development of the country. It is also worth focusing on the relationships between the eponymous structures and quite measurable economic concepts, such as business cycles.

Skyscrapers and business cycles

One of the most famous connections between skyscrapers and business cycles is *the Skyscraper Curse* (or *the Skyscraper Effect/the Skyscraper Index*), described by Lawrence (1999). The author stated that economic crises were often preceded by breaking the world height record by a skyscraper. However, he also pointed out the exception of this conception – after the Woolworth Building was put into use in 1913, there was no immediate crisis in the next few years. In general, this conclusion was based on the reasoning that investment in skyscrapers increases throughout a period of cyclical economic growth until it enters a recessionary phase (Thornton, 2005). Kaza (2010) presented a slightly different, more regional approach to this issue. He analyzed the 20 tallest buildings in chosen US states, concluding, however, that the Skyscraper Effect “is not meant to be a predictor of either economic contraction or financial crisis”. Another analysis was also conducted on the example of Great Britain. Jadevicius (2016) stated that there is a positive correlation between the announcement of the tallest building in UK and a business cycle peak. He also drew attention to the reasons confirming this dependence: low interest rates, easy to obtain a loan, employing a larger number of employees, increasing demand for office and residential space contribute to greater activity in the construction sector, where the skyscrapers are particularly attractive due to the decreasing number of vacant building space in cities. Also, a study conducted on the example of the Korean market showed a relationship between the construction of skyscrapers and the economy of the region. The differentiation of gross area (a variable related to skyscrapers) turned out to have a temporary negative impact on the Gross Regional Domestic Product, which is consistent with the previously mentioned conclusions (Heo *et al.*, 2013). Further, Thornton (2005) took especially the Woolworth Building into account, as a counterexample of the Skyscraper Index idea. Despite the common belief that there was no crisis in the period immediately after 1913, he noted that in the years 1913-1914 there was a significant economic slowdown, which, however, is often not noticed due to the outbreak of World War I. This period could therefore confirm the idea of the Skyscraper Effect. What is more, he also suggests a possible interpretation of the issue taken into account – skyscrapers reaching record heights and severe business cycles are related to the instability in debt financing. Hence, institutions that are involved in regulating it, ought to be improved or replaced. What is more, it is also worth paying attention to the reasons for possible differences in the assessment of the effectiveness of the Skyscraper Effect. These include divergent analysis methods, different criteria and different time series. The ideological differences related to the recognition of the causes and effects of business cycles in the economy cannot be overlooked. Therefore, the discussion on the Skyscraper Index might be perceived as an analogy of the dialogue between various ideological trends in economics (Kachniarz, 2014). It is also worth mentioning, that there is a correlation between skyscraper construction and investors’ sentiment and market credit terms. Over-optimism might lead to the intensification of skyscraper construction and overvalue in stock markets, which may direct towards the economic slump. These findings are quite consistent with the previously mentioned ones (Löffler, 2013). The test of the relationship between the height of skyscrapers and output was carried out in 2011 referring to the beliefs that the authors believed were common:

1. the presence of the sharpest growth of height competition near the peak of the business cycle,
2. extreme skyscrapers as an example of irrational actions of investors.

A study using the Granger causality test indicated that production influences the “height” variable. These variables are correlated, albeit to a small extent, although it can be considered as a certain, partial confirmation of the theses put forward by the authors cited earlier (Barr *et al.*, 2011).

In general, the connection of high-rise buildings with the macroeconomic situation can be explained as follows: the economic up-turn affects the increase in demand for real estate, which leads,

among others, to increase rents. As a result, a “building boom” can be observed, which increases with economic growth (Barras, 1994). Then more buildings are built, also of greater height – this is especially true for skyscrapers. It is claimed that “economic fundamentals are a key driver of skyscraper construction” (Barr & Luo, 2020). This shows, for example, potential links with the number and height of skyscrapers built: positive for economic growth, negative for the unemployment rate. Through the prism of the gradually improving general economic situation, as well as improvements in construction technology, this also applies to the hypothesis about the construction of an increasing number of higher and higher buildings in the following years. Further, in the case of developed economies, which include many European ones, economic growth may result in a decrease in economic inequalities (Kuznets, 1955). Hence, one can potentially expect a negative correlation of these inequalities (measured by the Gini coefficient) with the variables relating to skyscrapers – their number and height.

RESEARCH METHODOLOGY

As noted, studies focusing on the relationship between skyscrapers and macroeconomic values usually refer to the concept of the Skyscraper Index. However, there are almost no studies taking into account the correlation between skyscraper measures and economic development. Therefore, in the empirical part of the study, it was decided to analyze the relationship between the economic growth rate, unemployment rate (as the most popular macroeconomic variables relating to the real sphere) and the number and average height of completed skyscrapers, which might be considered as the aim of this paper. A measure relating to social inequalities – the Gini coefficient – was also taken into account. The analysis was carried out on the basis of European countries, covering the period 1961-2020. However, usually, the study period turned out to be shorter due to the lack of some data, e.g. for Russia before 1990. Buildings of the office and residential type were considered skyscrapers, the height of which is not less than 100 m. What is more, in the sample there are also buildings, which are topped out (according to the methodology of Emporis (2021), from where the data was obtained).

Research hypotheses were formulated based on common beliefs and a literature review. Their content is consistent with the purpose of the study presented above. They are as follows – on the example of European countries:

- H1a:** There is a significant positive relationship between the number of built skyscrapers and a year of their completion
- H1b:** There is a significant positive relationship between the height of skyscrapers and a year of their completion.
- H2a:** There is a significant positive relationship between GDP growth rate and the number of completed skyscrapers,
- H2b:** There is a significant positive relationship between GDP growth rate and the height of skyscrapers.
- H3a:** There is a significant negative relationship between the unemployment rate and the number of completed skyscrapers.
- H3b:** There is a significant negative relationship between the unemployment rate and the height of skyscrapers.
- H4a:** There is a significant negative relationship between the Gini coefficient and the number of completed skyscrapers.
- H4b:** There is a significant negative relationship between the Gini coefficient and the height of skyscrapers.

Macroeconomic data (GDP growth rates, unemployment rates, Gini coefficient values) were obtained from the World Bank, International Monetary Fund and World Health Organization databases. The analysis was carried out separately for countries with the largest number of skyscrapers in Europe and for the entire sample (European countries with skyscrapers). Correlation and regression were used to estimate the relationships presented in the hypotheses. The equations of linear regression used in this study are as follows:

$$n_t = \beta_1 * dGDP_{t-2} + \beta_2 * GINI_{t-2} + \beta_3 * UNE_{t-2} + \varepsilon_t \quad (1)$$

$$H_t = \beta_1 * dGDP_{t-2} + \beta_2 * GINI_{t-2} + \beta_3 * UNE_{t-2} + \varepsilon_t \quad (2)$$

where:

n - the number of skyscrapers built in a given year;

$dGDP$ - GDP growth rate;

$GINI$ - Gini coefficient;

UNE - unemployment rate;

H - mean height of skyscrapers built in a given year.

It is worth noting that the construction of skyscrapers in European conditions usually takes about 2-2,5 years. Hence, the variables relating to the height of skyscrapers and the number of such structures for the year were delayed by 2 years. Apart from it, there is no problem of collinearity between the explanatory variables, which allows them to be used together in a linear regression model. It was decided to use the OLS method because this analysis can be considered as a signal of the research potential of the area of links between skyscrapers, their number and average height, and macroeconomic variables. As part of further research, it is worth considering using models based on panel data.

RESULTS AND DISCUSSION

Situation and tendencies related to the European skyscrapers

Before measuring the relationship between the above-mentioned measures, it is also worth taking the trends observed on the European skyscraper market into account. In the beginning, the brief focus was on the tendencies in the construction of skyscrapers observed in European countries over the past years. Attention was drawn to the number of skyscrapers completed in the years 1961-2021, as shown in Figure 1.

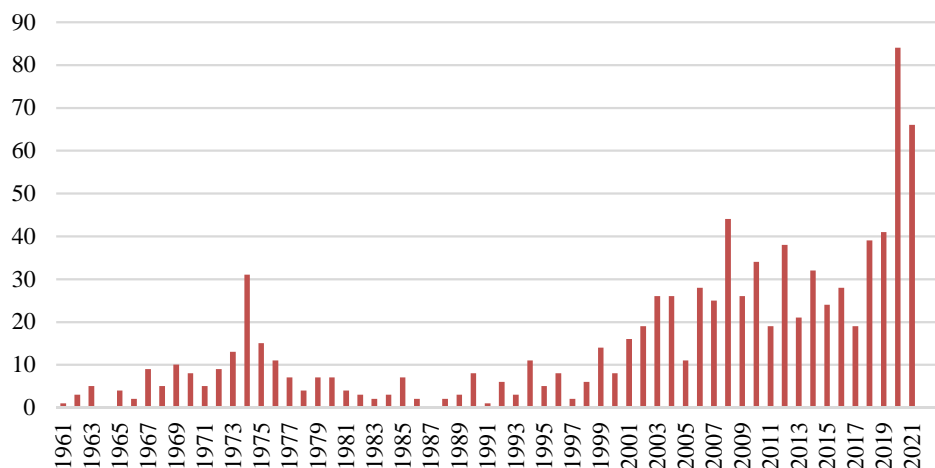


Figure 1. The number of completed skyscrapers in a given year in Europe in the period 1961-2021

Source: author's own work based on Emporis (2021).

As stated earlier, the last decade has been full of skyscraper construction in Europe. The year 1974, which stands out from the 1960s, 1970s, 1980s and 1990s, is noteworthy. This year, 31 skyscrapers were built, 20 of which were in France. In general, it seems that more and more skyscrapers have emerged in recent years. This view is empirically confirmed – especially in the 21st century, a growing trend in their numbers from year to year was observed. The correlation between the year of construction and the number of skyscrapers was relatively high, at the level of 0.673. For comparison, in the 21st century, 675 skyscrapers have been built in Europe so far, while in the years 1961-2000 – only

254. This shows that the scale of construction of the title buildings has increased noticeably in recent years. One may wonder to what extent these changes are driven by economic growth.

Next, attention was paid to the number of skyscrapers built in individual European countries. The number of these buildings by country is presented in Table 1.

Table 1. Number of skyscrapers by European country in 2021

Country	No.	Country	No.	Country	No.
Albania	1	France	95	Poland	35
Austria	16	Germany	83	Portugal	4
Belarus	4	Greece	1	Romania	5
Belgium	20	Italy	37	Russia	275
Bosnia and Herzegovina	4	Latvia	5	Serbia	5
Bulgaria	4	Lithuania	2	Slovak Republic	13
Croatia	4	Luxembourg	4	Spain	76
Cyprus	5	Macedonia	4	Sweden	9
Czech Republic	4	Montenegro	5	Switzerland	6
Denmark	5	Netherlands	49	Ukraine	38
Estonia	4	Norway	2	United Kingdom	133
Finland	2				

Note: No. – the number of skyscrapers built in a given country.

Source: author's own work based on Emporis (2021).

The European countries where most of the continent's skyscrapers were built are Russia, the United Kingdom, France, Germany and Spain. These countries are usually seen as the economic powers of Europe, which would be consistent with the hypothesis of a positive relationship between the strength of the economy and the number of skyscrapers constructed. On the other hand, relatively few skyscrapers were built in Scandinavia, despite the high degree of economic development of countries such as Norway, Sweden and Finland. In recent years, a relatively large number of skyscrapers have also been built in Poland (especially in Warsaw), Ukraine (mainly in Kiev) and Italy.

It is also worth paying attention to the relationship between the height of skyscrapers and the year of their completion. It seems, also in line with hypothesis 1, that one can expect a positive correlation between these variables. Figure 2 shows this relationship.



Figure 2. The relationship between the height and the year of completion of European skyscrapers in the period 1930-2021

Source: author's own work based on Emporis (2021).

As it can be seen, the vast majority of skyscrapers reach a height of between 100 and 150 m. The largest number of such structures was built in the 1970s and since 2000. The intensified race for the title of the tallest building in Europe or the European Union began to be observed relatively recently, all European skyscrapers over 300 m were built in the 21st century. In general, there is a statistically significant correlation between the height of the skyscraper and the year of its completion, although the level of correlation between these variables is small (0.171). This result, however, is in line with the common belief in building taller and taller buildings. Therefore, in this context, taking also into account the conclusions based on Figure 1, hypothesis 1 can be considered as a confirmed one. The decreasing free space in city centers or the willingness to settle in urban areas, based on the example of Europe, have in recent years contributed to the intensification of the construction of skyscrapers, characterized by the increasing height of these structures.

Empirical analysis of the relationships between macroeconomic data and European skyscrapers

The next empirical part of this paper is focused on the number of skyscrapers built in a given year and their average heights. Initially, the focus was on the correlation between the GDP growth rate, unemployment rate, Gini coefficient values and variables referred to the skyscrapers. The calculation results of these measures are presented in Table 2.

Table 2. Correlation between macroeconomic indicators and the skyscraper variables in given European countries in the period 1961-2020

Country	H-dGDP	n-dGDP	H-UNE	n-UNE	H-GINI	n-GINI
France	-0.461***	0.349***	0.266	-0.494***	-0.099	0.273
Germany	0.068	-0.047	-0.224	0.176	0.037	-0.264
Italy	-0.178	-0.418	0.135	0.180	0.447	0.119
The Netherlands	-0.496	-0.165**	0.069	-0.432***	-0.412	-0.214
Poland	-0.355	0.168	-0.249	-0.243	-0.292	-0.160
Russian Federation	-0.009	0.293	-0.414**	-0.548***	0.237	-0.152
Spain	0.128	-0.165	-0.007	-0.133	-0.123	-0.267
Ukraine	0.265	0.107	0.200	-0.356	0.155	-0.330
United Kingdom	-0.061	-0.152	0.262	-0.421***	-0.266	-0.101

*, **, *** means in sequence: statistically significant at the level of 0.01; 0.05; 0.10.

Source: author's own work based on Emporis (2021).

The results presented above are somewhat differentiated. On the example of France, along with the ever-higher rates of GDP growth, the average height of the constructed skyscrapers decreased. On the other hand, the number of completed skyscrapers showed a positive correlation with GDP growth. This means that the favorable economic situation is reflected in the growing number of completed skyscrapers, although their average height then decreases. The same signs of estimation are observed in the case of Poland and Russia, however, they are statistically insignificant. In the case of the Netherlands, there was a negative correlation between GDP growth rate and skyscraper variables (height or number). This indicates the negative impact of economic growth on the number and average height of the constructed skyscrapers, which is rather contrary to the assumed hypotheses. Likewise, such directions of dependence were also observed for Italy and the United Kingdom (but they are also not statistically significant).

In most cases, unemployment was negatively related to the number of skyscrapers constructed. This conclusion is in line with the expectations and hypothesis 3. This relationship with the greatest strength is observed for Russian Federation, France, the Netherlands and the United Kingdom. However, there are other types of observable relationships between unemployment and the average height of skyscrapers, where only in the case of Russia such a relationship can be considered significantly negative. As the unemployment rate rises, fewer high-rise buildings can be expected. As for their height – it is impossible to clearly define its average sign for this sample, there is a significant differentiation in this case.

On the example of the analyzed sample, no statistically significant relationships were found between the number of skyscrapers completed in a given year or their average height and the Gini coefficient. Especially in this case, however, one cannot ignore the fact that relatively few observations of the Gini

coefficient are available, hence the correlations at an absolute level exceeding 0.4 are still statistically insignificant. However, taking into account the estimates of most of the coefficients, with access to more data, it could be expected that there are negative correlations between the number of skyscrapers and the Gini coefficient on average. This conclusion can be considered in line with hypothesis 4, according to which the construction of high-rise buildings is associated with decreasing socio-economic inequalities.

Overall, the interpretation of statistically significant rates was as expected for Russia, 2 out of 3 for France, 1 out of 2 for the Netherlands, and 1 for the United Kingdom (thus 75% of the rates). On the basis of these observations, it could be concluded that the increase in the unemployment rate negatively influenced the number of skyscrapers, which partially confirms hypothesis 3. In the case of the analysis of relationships between the variables n-dGDP, H-dGDP, H-UNE and n-GINI, the results differed significantly between countries. The “n” variable seems to be negatively related to the Gini coefficient on the example of the 9 analyzed countries, which would indicate a linear relationship between the decrease in socio-economic inequalities and the number of skyscrapers constructed, however, these dependencies are statistically insignificant. On the other hand, it is worth bearing in mind that the statistical insignificance of most estimates does not result from the lack of a linear relationship between the variables, but rather from the small amount of available data (e.g. in the case of the Gini coefficient or the number of completed skyscrapers in some of the analyzed countries). The correlations between individual variables vary significantly between countries, due to the already mentioned low (and different between countries) data availability or a different period of analysis.

Hence, the relationships were examined taking into account the average for Europe (variables n and H, as well as macroeconomic variables relating to the entire continent). The estimates of the parameters of the models with the sum of constructed skyscrapers as a dependent variable are shown in table 3.

Table 3. Models with n as a dependent variable, estimated on the basis of European data in the period 1961-2020

Parameter/feature		Model 1	Model 2
dGDP	Coefficient	0.5583	–
	Std. error	0.4077	–
	P-value	0.1981	–
GINI	Coefficient	1.2193	1.3233
	Std. error	0.2219	0.2187
	P-value	0.0002	5.75e-05
UNE	Coefficient	-1.4430	-1.7150
	Std. error	0.7905	0.8022
	P-value	0.0952	0.0538
R ²		0.7124	0.6627
Adjusted R ²		0.6601	0.6346
F test value		607.9978	830.6572
P-value for F test		1.69e-12	1.36e-13

Source: author's own work based on Emporis (2021) using GRET.L.

Referring to the estimation of the UNE parameter, it can be concluded that the negative correlation observed between unemployment and the number of skyscrapers in only a few countries is reflected in the entire sample of European countries. The estimation of the GINI parameter is also statistically significant, but its value was positive. Other conclusions could be drawn initially on the example of selected European countries, however, the regression results indicate that socio-economic inequalities are deepening along with the increase in the number of skyscrapers constructed. On the other hand, GDP growth seems to be positively related to the “n” variable – periods of better economic conditions abounded in high-rise construction, however, it cannot be conclusively stated on the basis of the above model. As a part of backward stepwise regression, the variable with the highest p-value was removed from the model, it was dGDP. The model without this variable was characterized by a lower degree of fit to the data, however, the estimates of other parameters remained similar. In general, on the basis of the above models, it can be concluded that the unemployment rate is negatively related and the

Gini coefficient is positively related to the number of skyscrapers. Hence, hypothesis 3a can be considered confirmed, whereas hypothesis 4a – rejected.

The further part of the study focuses on the relationship between the average height of skyscrapers and macroeconomic variables. Models built to estimate these dependencies are presented below.

Table 4. Models with H as a dependent variable, estimated on the basis of European data in the period 1961-2020

Parameter/feature		Model 3	Model 4
dGDP	Coefficient	-2.6026	-3.0032
	Std. error	1.4397	1.4897
	P-value	0.0980	0.0668
GINI	Coefficient	2.8738	4.2350
	Std. error	0.8917	0.1329
	P-value	0.0081	5.75e-013
UNE	Coefficient	4.9292	–
	Std. error	3.1842	–
	P-value	0.1499	–
R ²		0.3415	0.2306
Adjusted R ²		0.2218	0.1665
F test value		796.0552	758.8241
P-value for F test		3.86e-13	2.33e-13

Source: author's own work based on Emporis (2021) using GRET.L.

The parameter estimate for the dGDP variable is below 0. This indicates a negative correlation between GDP growth rates and the average height of European skyscrapers completed in a given year. This is a different result than expected. On the other hand, the relationship between the Gini coefficient and the dependent variable is positive, as in the case of 1-2 models. There was no statistically significant correlation between the unemployment rate and the average height of the constructed skyscrapers, however, the estimation of the parameter with the UNE variable allows to suppose that these variables are positively related. Taking everything into account, it can be concluded that the degree of socio-economic inequality, measured by the Gini coefficient, is positively related to the average height of the constructed skyscrapers, which allows accepting hypothesis 4b as false. GDP growth turned out to be negatively related to the variable H. Hypothesis 2b should also therefore be rejected. The models presented above do not fit the data very well (although the 1-2 models could be considered acceptable in this regard). However, through the prism of this study, it seems that the relationships between the explanatory variables and the number of constructed skyscrapers and their average height are more crucial.

CONCLUSIONS

This study provides some empirical insight into how macroeconomic variables are related to the number of skyscrapers built and their height. Overall, the number of skyscrapers constructed and their average height turned out to be positively related to the time variable (years). This means that, on the example of Europe, in the period 1961-2020, each year on average more skyscrapers of higher height were built. This is in line with the results of the study by Ahlfeldt and Barr (2020).

The relationships between the GDP growth rate, unemployment rate, Gini coefficient and the number and average height of skyscrapers constructed in Europe were different between the analyzed 9 countries. In the case of the entire sample (where more observations could be distinguished, which makes it more reliable), a positive correlation between the Gini coefficient, and a negative relationship between the unemployment rate and the number of skyscrapers constructed were observed, which can be considered consistent with the popular views. However, the conclusion regarding the Gini coefficient is inconsistent with the hypothesis based on the theory of Kuznets (1955). The average height of skyscrapers turned out to be negatively related to the GDP growth rates, and positively related to the Gini coefficient. In times of economic prosperity, when the unemployment rate is lower, more skyscrapers

were built. However, higher economic growth affects the construction of lower average skyscrapers. Also, the more socio-economic inequalities deepened, the number of completed skyscrapers, and its average height is higher. The negative correlation between the average height of skyscrapers and the GDP growth can be considered consistent with the result of the study by Heo *et al.* (2013). Further, according to Löffler (2013), economic over-optimism, for instance, related to the drop in the unemployment rate, may intensify the construction of skyscrapers. This statement is in line with the negative relationship between the unemployment rate and the number of completed skyscrapers. The positive relationship between the Gini coefficient and the skyscraper variables is consistent with the work of Barr (2016). As indicated, this paper can be treated as a preliminary attempt to confirm theses regarding the connection between economic growth or economic inequalities and the construction of skyscrapers.

This study allows determining the periods in which an increased construction of high-rise buildings could be expected. It may be useful from the point of view of investors interested in the office space market in high-rise buildings, global corporations looking for appropriate buildings for their offshore headquarters or for potential developers of this type of housing investments.

It is worth bearing in mind that the relationships observed on the basis of data from 1961-2020 do not necessarily repeat in the future. The most significant research limitations include also the relatively low availability of observations for the Gini coefficient, which could have influenced the results of the analysis. In addition, some of the countries considered are characterized by a relatively low number of skyscrapers (especially completed in the periods 1960-1970 and 1980-1990), which is also not insignificant.

Among suggestions for further research, it could be mentioned taking other countries (for instance from Asia or North America) into account and also an extension of the analysis period. This may make particular sense in the case of the analysis of skyscrapers in the United States, where the history of such buildings is by far the longest. In the case of research based on several countries, it is worth considering panel models.

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Conflict of Interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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Public entrepreneurship literature from 2010 to 2019: A systematic review

Ahmed Mohammed, Umaru Mustapha Zubairu, Emmanuel Olayiwola Oni

ABSTRACT

Objective: The aim of the article is to review some basic issues surrounding public entrepreneurship (PE), as it is perceived as a measure to improve the performance of public organizations.

Research Design & Methods: This article uses Systematic Assessment Quantitative Technique (SQAT) advanced by Australian researchers (Catherine Pickering and Jason Antony Byrne). It allows the reproduction of verifiable reviews, through geographical, theoretical, and methodological gaps identification in literature. 61 peer-reviewed PE articles from six quality academic databases were systematically reviewed based on the following headings: time and geographical distributions, article type (conceptual or empirical), theories, themes, and methods of data collection.

Findings: The analysis shows that large numbers of PE articles were published in 2016, with more publications in North America and Europe, while Africa has meagre publications. Most of PE articles are conceptually inclined and this suggests more empirical studies be conducted so as to have scientific knowledge of PE adoption. Besides, the study revealed that PE is mostly adopted by federal and state governments across the globe with little or no adoption at the local government level. Significant numbers of PE articles utilized one research method (the survey was dominantly used), future researchers can explore PE studies by merging more research methods to broaden the scope of PE.

Implications & Recommendations: This study provides a clear picture of what is been investigated and has provided guides for future researchers to widen the knowledge adoption of PE around the globe for better service provision by public stakeholders

Contribution & Value Added: The study systematically reviewed 61 peer-reviewed PE articles from six quality academic databases (Emerald, Elsevier, Sage, Springer, Taylor & Francis, and Wiley), thereby facilitating the understanding of PE and providing guides for future researchers of PE around the globe.

Article type: research article

Keywords: public entrepreneurship; Systematic Assessment Quantitative Technique (SQAT), review

JEL codes: L26

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INTRODUCTION

The concept of public entrepreneurship (PE) has received different notions from different scholars (Hayter, 2015; Klein *et al.*, 2013; Zampetakis & Moustakis, 2010). It has been perceived from a political or public entrepreneurial perspective to serve as a medium for individuals or group of individuals (public entrepreneurs) to exercising their responsibilities diligently and invent new ideas that will lead to effective service delivery (Diefenbach, 2011; Fuller & Dellsanti, 2017; Kearney & Meynhardt, 2016; Klein *et al.*, 2010). It is also viewed as a policy instrument (policy entrepreneurship) that enhances the initiation of activities by the government for improved public sector productivity (Delabio & Zeering, 2013; Hayter, 2015; Klein *et al.*, 2010; Liddle & McElwee, 2019; Prelipcean *et al.*,

2014). PE is conceived as corporate entrepreneurship (CE), that is, a combination of political/public entrepreneurial activities and policy entrepreneurship (Diefenbach, 2011; Najmaei & Sadeghinejad, 2016; Zampetakis & Moustakis, 2010). To put it differently, CE is equated to PE (Ćwiklicki, 2017; Diefenbach, 2011; Zampetakis & Moustakis, 2010) as it entails a collective initiation that leads to the establishment of new institutions or improves on the already existing ones that will pave way for improved public sector productivity and the wellbeing of the citizenry.

PE has become an area of interest to public sector managers in recent times (Zampetakis & Moustakis, 2010). It is aimed at inculcating innovation in the public sector through efficiency enhancement in the productive process of public institutions (Leyden, 2016). The practice of PE by developed countries like the United States of America (USA), Germany, the United Kingdom (UK), and China has led to an improvement in the gross domestic product (GDP) and living standards (Delabbio & Zeemering, 2013; Diefenbach, 2011; Lyon, 2016; Rivera & Landahl, 2019; Seo & Chung, 2012) and its instilment in Sweden educational system has led to improved educational standard through proper monitoring and accountability (Gofen & Blomqvist, 2014). With these benefits derivable from PE, little or no efforts were made for its adoption in the African continent (Dhliwayo, 2017). Hence, the implementation of PE is dependent on the nature environment and system of government practiced around the globe (Delabbio & Zeemering, 2013; Rivera & Landahl, 2019; Seo & Chung, 2012).

A large number of studies concentrated their investigation of PE at federal and state levels, with little attention given to local governments (Hayter *et al.*, 2018; Lerner, 2010; Lucas, 2017). This is despite the role played by local governments in bringing government closer to the people at the grassroots (Eleni & Lorraine, 2019). This oversight has been linked to poor management and administration of local governments around the globe (Ali *et al.*, 2019; Delabbio & Zeemering, 2013; Fuller & Dellsanti, 2017; Smith, 2012). However, the role of local governments on national development can never be overemphasized (Smith, 2012). It provides social amenities and improves the wellbeing of people at the grassroots (Eleni & Lorraine, 2019). This calls for researchers, regulatory authority, and stakeholders (elected executives and electorates) to direct their attention to the implementation of PE at all government levels.

This study aims at addressing this research gap on PE by conducting a systematic review of PE research. The papers for this study were sourced from six publishers' databases. That is Emerald, Elsevier, Sage, Springer, Taylor & Francis, and Wiley. These databases were selected because of their reputation in the publication of peer-reviewed papers. Though, peer-reviewed papers are said to have a high-quality impact as they undergo serious scrutiny in their review process (Bikefe *et al.*, 2020).

This study is time framed as it focuses on articles published between 2010 and 2019. This particular period is chosen to enable the researcher to understand current advances in the area. Life itself is dynamic and human needs change as society grows from one stage to another. The adoption of PE became necessary as wastes are no longer tolerated in the management of public scarce recourse (Diefenbach, 2011; Smith, 2012; Zampetakis & Moustakis, 2010). Because of this, several matters have been added to the areas of PE, for example, interoperations of public institutions, capabilities of employees, and environmental scanning by public institutions are all considered in the studies of PE (Delabbio & Zeemering, 2013; Rivera & Landahl, 2019; Seo & Chung, 2012).

To achieve the goal of the study, some features of PE were pointed out base on the analytical examination of downloaded papers. The downloaded papers were examined on the following headings: time distribution, geographical distribution, article type (conceptual or empirical), theories, themes, and methods of data collection. The analytical examination of the downloaded papers will help to identify gaps in this area for future researchers to dive into. And for public stakeholders, the gaps will identify their lacking areas for proper challenging of resources.

The remaining part of this paper is outlined as follows: In section 2, literature was reviewed based on previous systematic reviews on PE. This review is different from previous ones as it's all-inclusive and covers more current issues. Section 3, discusses the method and techniques used in conducting the present study. Section 4, addresses the findings of the study, and also provides research directions for future researchers based on the findings. Section 5 concludes the paper and discusses the limitations of the study and makes suggestions based on the limitations identified.

LITERATURE REVIEW

A review of PE literature from the six databases exploited by this review revealed that five systematic reviews were published between 2010-2019 (Ali *et al.*, 2019; Eleni & Lorraine, 2019; Hayter *et al.*, 2018; Lerner, 2010; Lucas, 2017). While Lerner (2010); Lucas (2017); Hayter *et al.* (2018); and Eleni & Lorraine (2019) focused on specific aspects and location of PE research (public policies), only Ali *et al.* (2019) did a comprehensive review of PE research. Hence, the subsequent paragraphs will discuss these studies.

Lerner (2010) in conducting a systematic review on PE compared Jamaica and Singapore public policies that are geared towards improved economic growth and development. The study was conducted not based on reviewed articles but analyzed statistical data of Jamaica and Singapore from 1965-2006. The study indicated that in 1965, Jamaican gross domestic product (GDP) was \$2,850 a bit higher than that of Singapore GDP of \$2650, but four-decade later, Singapore GDP jumps to \$31,400, while that of Jamaica was \$4,800. The systematic review was focused on the economic comparison between Jamaica and Singapore.

Lucas (2017) in conducting a systematic review of PE reviewed Evidence-Based Policy (EBP) in the USA. EBP is an instrument used in exploring the implementation and evaluation of government policies based on scientific researches. The instrument was used to analyze the "Housing First" for the homeless in the USA. And according to Lucas (2017) in 1984, about 250,000 and above homeless people were estimated by the United States Department of Housing and Urban Development, and the implementation of EBP was used to curtail the number. Though, the focus of this systematic review was specific as it was aimed at examining PE instruments.

Hayter *et al.* (2018) conducted a systematic review of PE by analytically analyzing the Government Performance and Result Act (GPRA) of 1993 of the USA. The GPRA is an initiation by the government to checkmate the level of responsiveness of public employees to the effective utilization of public resources. The adoption of the GPRA has enhanced accountability and efficiency in government-owned institutions.

Eleni & Lorraine (2019) in conducting a systematic review of PE research utilized undisclosed case studies from different databases from Greek local governments between 2010-2014. The study was bent on examining inefficiency in Greek local government areas and therefore clamoured for local government reforms. The reforms were aimed at reducing or cutting local government spending and embark on strict supervision of local government activities.

Ali *et al.* (2019) conducted a systematic review of PE research and focused on the performance of the public sector. The study reviewed 90 English peer-reviewed articles sourced from undisclosed databases. The study was time bound as articles published between 1990-2016 were utilized. The articles were reviewed based on the following PE themes: definition, goals, limitations, influencing factors, and research streams. The earliest article in the systematic review was published in 1990 and the latest was published in 2016. The latest publication year for the articles in the study was 2016 and the study was published in 2019. The systematic review was concentrated on the themes of PE research.

There are little shreds of evidence of systematic reviews of PE studies to the best of this study knowledge. This is because only five systematic reviews of PE articles were found out of which four were policy-based and are limited to a particular locality, and only one was article based. This meagre number of systematic reviews may be because PE researches are just coming up in recent times (Ali *et al.*, 2019).

The most recent systematic review of PE research (Ali *et al.*, 2019) reveals that the researchers concentrated on the themes of PE. The present study conducts a comprehensive review of PE research and its findings will be of utmost importance to the development of localities as it will seek to improve the livelihood of people. The next section will be the methodology of the study.

RESEARCH METHODOLOGY

This study adopted the Systematic Quantitative Assessment Technique (SQAT) developed by Pickering and Byrne (2013) in conducting its systematic review. The SQAT allows the reproduction of

verifiable reviews, through geographical, theoretical, and methodological gaps identification in the literature (Pickering & Byrne, 2013).

According to Pickering and Byrne (2013), SQAT has about 15 stages in undertaking systematic quantitative literature reviews, but five important steps are always recommended for a study. The steps include Topic definition, Research questions formulation, Keywords Identification, Identification and searching of databases, and Reading and assessing publications. Each step and how it was applied in this study is described in Table 1. A total of 61 peer-reviewed English PE articles met the selection criteria from six databases. Table 2 presents the number of articles downloaded from each database utilized.

Table 1. Description and Application of SQAT

Steps	Application in the current study
1. Define topic	Public Entrepreneurship
2. Formulate research questions	Six research questions: 1. What is the time distribution of PE research articles? 2. In which countries were these articles written? 3. What kind of PE articles published? (Conceptual vs. Empirical) 4. What kind of theories applied in these articles? 5. What are the specific themes these articles explored, and what were the major findings in each theme? 6. What research methods were utilized to conduct the research?
3. Identify keywords	Public Entrepreneurship
4. Identify and search databases	1. Six databases utilized: Elsevier; Emerald, Sage, Springer; Taylor and Francis; Wiley 2. "All in title" search using the exact phrase: a. "Public Entrepreneurship"
5. Read and assess publications	1. Abstracts of papers found were read to ensure that they were dealing with Public Entrepreneurship 2. Literature reviews, book chapters, and conference proceedings were not included; only peer-reviewed conceptual and empirical papers

Source: own study.

Table 2. Number of Papers Downloaded in Databases

Database	Number of Papers
1. Emerald	20
2. Elsevier	3
3. Sage	8
4. Springer	15
5. Taylor & Francis	9
6. Wiley	6
Total	61

Source: own study.

RESULTS AND DISCUSSIONS

Time distribution of articles on public entrepreneurship (PE)

Figure 1 shows a time distribution analysis of PE research based on this study's sample of 61 articles, published from 2010-2019. The analysis revealed that a peak was reached in 2016 (15 articles), with only one article published in 2011 and six articles published in 2013, 2014, 2015, and 2018 respectively. Articles were published every year between the timeline of 2010-2019.

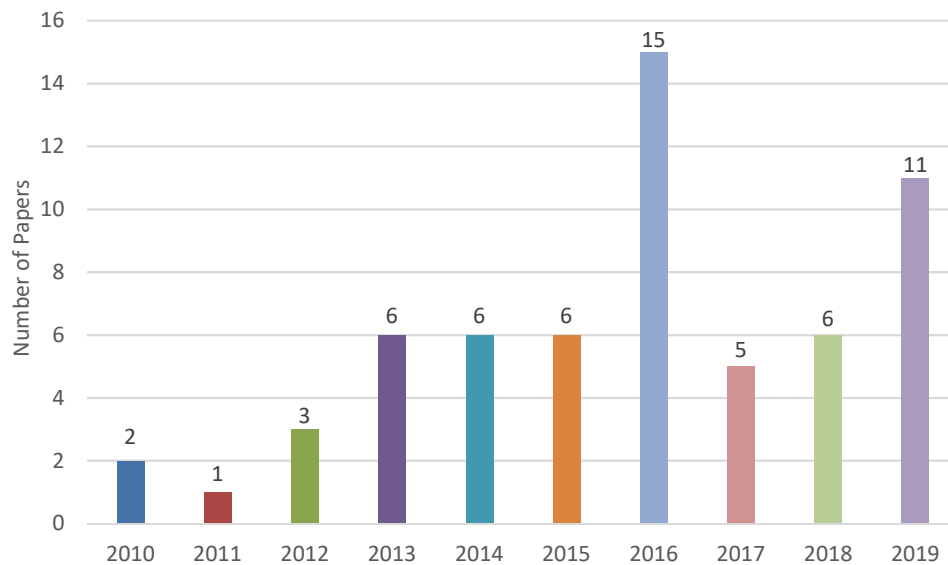


Figure 1. Time distribution of articles on PE from 2010-2019

Source: own elaboration.

Geographical distribution of articles on PE base on continents

Figure 2 presents the geographical distribution of the 61 PE articles reviewed in this study. It shows that 107 data were obtained from the 61 articles reviewed based on the countries. The analysis revealed the number of data sourced from each continent. The analysis further showed that North America had the highest number of articles published (46), followed by Europe (41), Asia (10), Australasia (5), South America (3), and Africa (2). Africa had the least number of studies in this area, and this reflects a geographical gap in PE research.

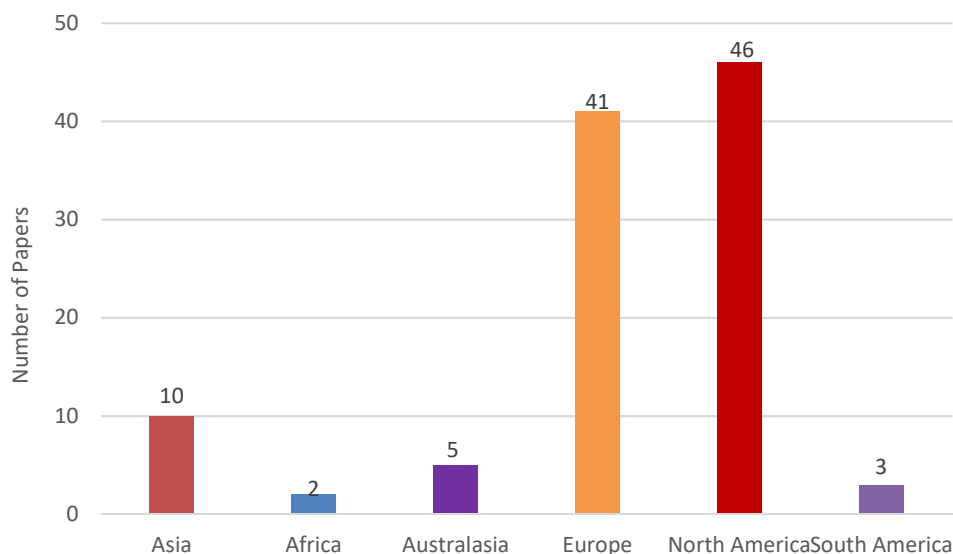


Figure 2. Geographical distribution of articles on PE from 2010-2019

Source: own elaboration.

Africa had been described as one of the underdeveloped continents characterized by inadequate generation and utilization of public resources and outputs (Ndedi & Antonites, 2015). One of the objectives of public entrepreneurship is to ensure adequate generation and utilization of public resources to fulfil public interest (Dhliwayo, 2017). It would thus be an important avenue for future PE research

to explore nascent cases of PE in various African countries and to determine their impact in improving the efficiency and effectiveness of African public bureaucracies.

From a country perspective, 23 countries were represented in the systematic review of PE research. Figure 3 presents the top three countries where PE research was conducted. The analysis showed that the United State of America (USA) is the country with the highest number of articles (43), followed by England (21), then Greece (5).

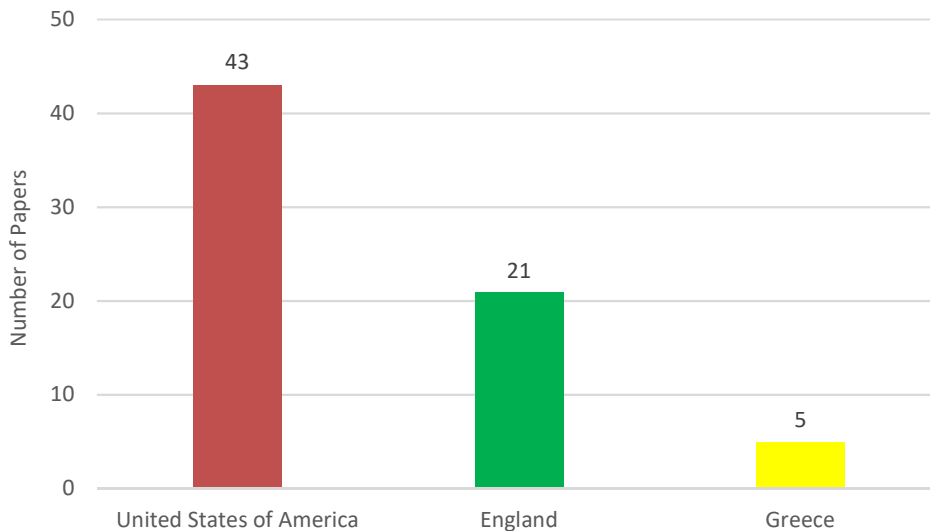


Figure 3. top three countries by research on PE from 2010-2019

Source: own elaboration.

The country analysis showed that 23 countries had published PE research; this number is low when compared with the total number of countries in the world. According to worldatlas.com, there are currently 196 countries in the world, including Taiwan (World Map, 2019). A limitation of this study is its inclusion of only articles published in English. Nonetheless, many countries are not represented in PE research. Considering that citizens of all countries typically rely on the public sector to provide basic services necessary for maintaining the quality of life, PE has the potential to improve the ways these government agencies use scarce resources to better serve their citizens. For this reason, researchers in every country of the world must holistically investigate PE.

Article type

Empirical and conceptual articles are the two approaches that are commonly employed while conducting research (Olivia, 2011). Conceptual articles are those that are related to some abstract idea(s) or theories and are generally used by philosophers and thinkers to develop new concepts or to reinterpret existing ones (Bikefe *et al.*, 2020). Empirical articles are those articles that involve data collection and observations. It involves a quantitative analysis of the data collected (Bikefe *et al.*, 2020). Figure 4 shows the breakdown of the 61 PE articles based on the above classification.

Figure 4 indicates that large numbers of the articles reviewed are conceptually inclined (56%, 34 out of 61). The studies tried to provide a better understanding of PE as it tries to promote innovation and efficiency in public bureaucrat organizations for improved service delivery (Lerner, 2010; Wiseman, 2014; Xing *et al.*, 2018). The analysis also showed that there are limited numbers of empirical articles reviewed (44%). However, because of the limited number of empirical articles on PE, more empirical researches need to be carried out based on the articles reviewed.

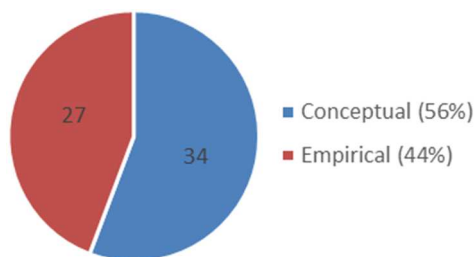


Figure 4. Article type breakdown on PE from 2010-2019

Source: own elaboration.

Theory breakdown

This study made use of the theories utilized by the 27 empirical articles reviewed for the breakdown (Figure 5). A significant number of papers did not adopt any theory in their analysis (39%). The top four theories applied in PE are Public Entrepreneurship Theory (14%), Transaction Cost Economics Theory, Agency Theory and General Theory of Business Modeling has 7% respectively. The public entrepreneurship theory provides innovative ideas by way identifying and acting on opportunities that will enable proper management of public resources (Carnes *et al.*, 2019; Delabbio & Zeemering, 2013; Dhliwayo 2017; Diefenbach, 2011; Najmaei & Sadeghinejad, 2016; Pugalis *et al.*, 2016; Smith, 2012). Transaction costs theory is useful in explicating market, public, and institutional failures, allowing a comparative assessment of imperfect alternatives rather than an unnatural focus on an ideal public outcome (Klein *et al.*, 2010; Pitelis, 2013). The agency theory tries to explain how a dispute between business shareholders and agents (executives) that would disrupt output can easily be resolved in an organization (Klein *et al.*, 2010; Pitelis, 2013). The General theory of business modelling analyses risks identification and the ability of organizations to invest in those risk and reap future benefits (Marie, 2016; Xu & Carey, 2015).

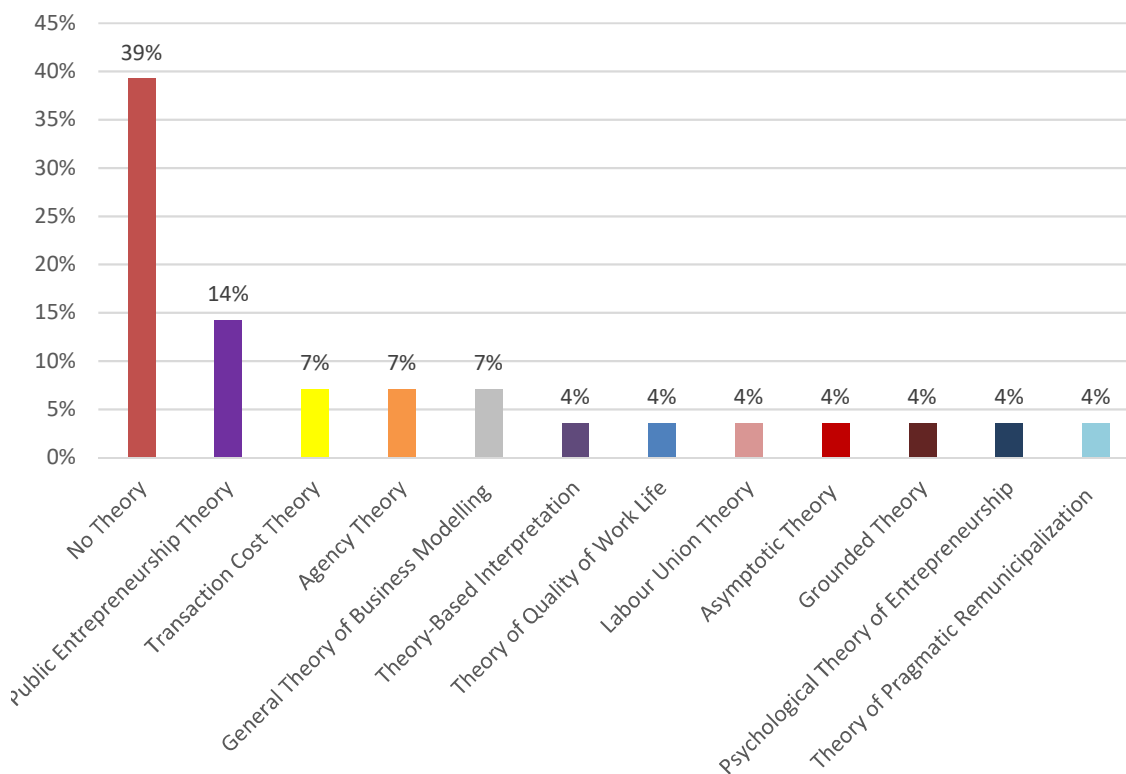


Figure 5. Empirical theory breakdown on PE from 2010-2019

Source: own elaboration.

PE research themes

A comprehensive analysis of the 61 PE articles reviewed for this study revealed that they could be classified into three distinct themes: 1) Efficiency in PE (e.g., Xu & Carey, 2015; Klein *et al.*, 2013; Lee *et al.*, 2012), 2) Employee involvement in PE (e.g., Marie, 2016; Rivera & Landahl, 2019; Zampetakis & Moustakis, 2010), and 3) Determinants of PE (e.g., de Andrade *et al.*, 2016; Gofen & Blomqvist, 2014; Zikou *et al.*, 2017). Figure 6 reveals the number and percentage of the 61 PE articles that make up each category.

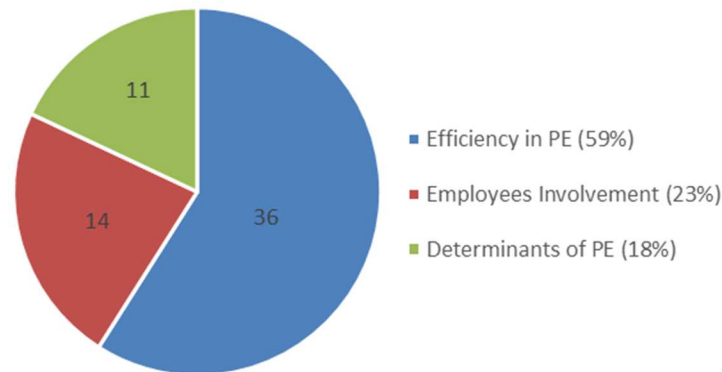


Figure 6. PE Research themes from 2010-2019

Source: own elaboration.

The analysis revealed that the majority of the articles reviewed (59%) explored efficiency in PE based on the premise that PE can catalyze organizational and regional development (Ali *et al.*, 2019). However, a lack of a business mindset in the public sector was a major reason for its usual bureaucratic and inefficient reputation (Liddle, 2016a; Najmaei & Sadeghinejad, 2016). However, in recent times, public agencies in countries like the United States of America, Canada, England, and Switzerland have started to adopt PE as a means of improving their efficiencies. It is expected that PE adoption by public agencies will lead to the maximization of public outputs with fewer resources or inputs (e.g. Ali *et al.*, 2019; Cunningham *et al.*, 2016; Dhliwayo, 2017; Klein *et al.*, 2013; Kouakou, 2018; Lee *et al.*, 2012; Lindholst, 2019; Najmaei & Sadeghinejad, 2016; Xu & Carey, 2015). However, despite the expected efficiency improvements of PE adoption, some countries have been reluctant to embrace PE in their public agencies (Carnes *et al.*, 2019; Liddle, 2016b; Najmaei & Sadeghinejad, 2016). Business modelling is described as a logical way an organization creates and captures values. It is a process by which organizations construct and modifies production processes (Najmaei & Sadeghinejad, 2016).

The next most common theme focused on investigating is employee involvement in the PE process (23%). It was discovered that employees that worked in entrepreneurial public sector organizations had higher levels of job satisfaction as compared to those working in conventional public sector organizations (e.g., Diefenbach, 2011; Hayter, 2015; Lewis, 2014; Zampetakis & Moustakis, 2010).

It was also discovered that an important success factor for the success of PE adoption was the involvement of employees in the idea creation and execution phases of projects. This involvement energized and motivated employees to be fully engaged in ensuring that projects were effectively and efficiently completed (e.g., Maranto, 2015; Marie, 2016; Rivera & Landahl, 2019; Seo & Chung, 2012).

The last theme amongst the PE themes is PE determinants (18%), whereby articles sought to understand the factors that determine whether or not a public sector organization adopted an entrepreneurial mindset. These factors were categorized into internal and external factors (Zikou *et al.*, 2017). The internal factors included personal motivation and knowledge, while external factors included the level of economic activities and organization strategy and structure (e.g. de Andrade *et al.*, 2016; Gofen & Blomqvist, 2014; Smith, 2012; Zikou *et al.*, 2017). Centralization and decentralization of government activities are also said to determine PE in localities (e.g. Beyes, 2015; de Andrade *et al.*, 2016; Delabbio & Zeemering, 2013; Paik *et al.*, 2018; Strow & Strow, 2018). Centralization of government leads to concentration of government power and resources on one region of government thereby limiting their

entrepreneurial adaptability while decentralization, on the other hand, diffuse government resources and enhances interrelation among localities thereby encouraging PE (Rossiter & Smith, 2017). Additional determinants of PE in localities include barriers to entry and exit for consumers and producers, increased centralization and concentration in government, the lack of residual claim amongst public-sector actors, the rise of public-sector union membership, and increasingly uncompetitive elections.

Data collection methods

Figure 7 shows that survey was the highest data collection method utilized (43%) (e.g., Cunningham *et al.*, 2016; Diefenbach, 2011; Hayter, 2015; Zampetakis & Moustakis, 2010), followed by secondary data (27%) (e.g. Lee *et al.*, 2012; Pitelis, 2013; Rivera & Landahl, 2019), interview (20%) (e.g. de Andrade *et al.*, 2016; Lyon, 2016; Xu & Carey, 2015) and then observation (10%) (e.g. Klein *et al.*, 2013; Maranto, 2015; Paik *et al.*, 2018).

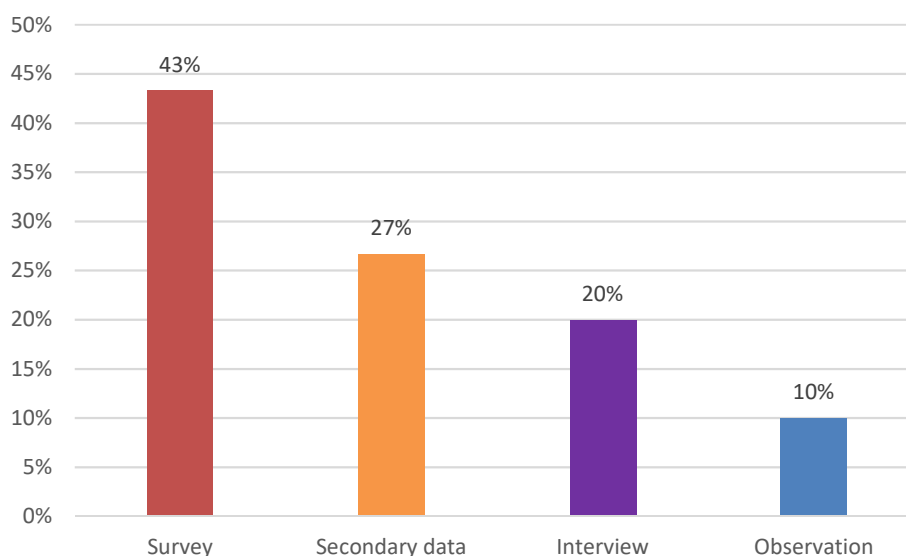


Figure 7. Data Collection Methods Utilized by Empirical Articles Reviewed on PE

Source: own elaboration.

The four methods of data collection highlighted in figure 2 had their benefits and challenges. For instance, the survey method can be useful in covering all aspects of a topic from the questions offered to respondents but can lead to dishonest in answering the questions administered (Delabio & Zeemering, 2013; Smith, 2012). It is economical to use secondary data because it saves efforts and expenses, though; the accuracy of the data is not known (Lee *et al.*, 2012). Interviews are expected to yield a high percentage of the result as it uses perfect samples from a research population, but it can appear to be costly and time-consuming (Xu & Carey, 2015).

The observation method is useful in framing hypothesis as researchers easily get acquainted with the phenomenon; the disadvantage with this method is that some occurrences may not be open to observations especially when activities are treated as confidential (Paik *et al.*, 2018). Future researchers on PE can explore the observation method or combination of any of the methods listed in figure 7 since the majority of the studies utilized only one method.

Table 3. Summary of findings from the 61 reviewed PE articles

S/N	Headings	Key Findings	Implications
1	Time distribution (2010-2019)	<ul style="list-style-type: none"> - There were PE publications in every year of the period under review (2010-2019). - Larger numbers of the publications (15) were made in 2016 and only one publication was made in 2011. 	- Studies in PE have been captivating over the past decade.
2	Geographical distribution	<ul style="list-style-type: none"> - 23 of the countries out of 196 around the globe have contributed to researches on PE. - USA had the highest number of articles (43) published on PE. - Majority of the PE publications (46) amongst the continents were made by North America, while Africa had two publications. 	- There is need for more researches on PE around the globe and especially Africa and South America as they have the least researches in this area.
3	Article type	- Substantial numbers of the articles reviewed are conceptual in nature (34 out of 61), only 27 are empirically inclined.	- Empirical studies are required in the direction as it will provide scientific approach to PE dealings.
4	Theory breakdown	<ul style="list-style-type: none"> - The top most adopted theory in PE researches is the PE theory (14%). - Other adopted theories include transaction cost theory, agency theory and the general theory of business modeling with seven percent respectively. 	- There are no specifications to the theories to be adopted for PE studies; hence, scholars are at liberty to adopt theories that best describes the phenomenon they are investigating.
5	PE research themes	<ul style="list-style-type: none"> - The review recognized three different PE themes namely: efficiency in PE, employee involvement and determinants of PE. - 59% of the reviewed articles explored efficiency in PE, 23% explored employees involvement and 18% were concerned with the determinants of PE 	- PE is essential in the economic transformation of locality as it helps in the maximization of output in the event of scarce resource management.
6	Data collection methods	<ul style="list-style-type: none"> - Four methods of data collection were utilized by the reviewed articles. - 43% of the articles reviewed utilized the survey method, while 27%, 20% and 10% of the articles utilized secondary data, interview and observation methods respectively. 	- Future PE scholars can make use of multiple data collection methods so as to have better empirical knowledge of PE.

Source: own study.

CONCLUSIONS

This study reviewed 61 peer-reviewed journal articles on PE. The articles were examined based on six key elements: time and geographical distribution of the articles, article type, theories utilized, research themes, and methods. The results from the review were analyzed and discussed to serve as guidance to future PE researchers. However, reasonable numbers of researches have been conducted on PE, but there is more space for empirical researches in the area, especially when considering the role played by PE in fostering economic growth and development in localities around the globe.

There are no researches without limitations, and the limitation of this study will be discussed on the following headings: time-bound, the use of title search, language, and the use of the phrase to search for articles.

Firstly, the study was conducted based on time-bound, that is, only articles published between 2010 and later years were considered. Futures researchers may inculcate earlier years to have more practical ideas.

Secondly, the study used a title search for six databases (Emerald, Elsevier, Sage, Springer, Taylor & Francis, and Wiley). These databases were recognized in the publication of high-quality peer-reviewed papers. Though they may not cover all peer-reviewed PE articles and with this, future researchers can improve on the scope of databases to broaden PE researches.

Thirdly, as for language limitation, this study only considered journal articles written in English and excluded books and conference proceedings. This was done to maintain the quality as stipulated by the SQAT methodology. Future researchers can explore books and conference proceedings to widen the knowledge obtainable in PE studies.

Fourthly, the study used phrases for searches in the databases explored rather than keywords. This is because phrases are precise in providing information about PE. Though keyword search is also important, it will provide more articles that may not be directly related to PE for review. And this may distract the researcher from the objective of what is being investigated.

However, despite that limitations discussed highlighted for the study, it is still pertinent to note that this study is relevant as it provides a clear picture of what is being investigated and has provided guides for future researchers to widen the knowledge adoption of PE around the globe for better service provision by public stakeholders.

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Conflict of Interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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Export performance research: Where should we go next?

Piotr Trąpczyński, Henrik Mertens, David Peters, Krystian Barłożewski

ABSTRACT

Objective: Research into firm-level exporting, has been criticised for being excessively fragmented and inconsistent. The objective of this paper is to review extant research on export performance and propose a research framework which will go beyond the currently studied relationships and variables, and therefore formulate several recommendations for future research.

Research Design & Methods: In doing so, the review adopts a broader view of export performance, which accounts for the possibility of a negative development of export ventures.

Findings: The paper finds that institution-based, resource-based and industry-based views have been often used to address the determinants of export performance. While there are some complex interactions between host-country institutional factors, firm-level factors, and industry-level factors, these have been studied to a lesser extent. Also, the review highlights the need for a more nuanced and fine-grained understanding of export strategy, particularly embracing modern business models and devoting more attention to foreign market partners.

Implications & Recommendations: Scholars should be more sensitive to previously neglected variables which can enhance the understanding of export performance and lead to more comprehensive empirical studies.

Contribution & Value Added: The paper includes a conceptual framework proposing directions for future research, whereby a broader understanding of export performance is adopted, including also the possibility of export exits.

Article type: research article

Keywords: export; export performance; firm internationalisation; systematic review; future research directions

JEL codes: F23, M16

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INTRODUCTION

Export can be considered to be one of the most rapid and feasible methods of entering foreign market entry (Brache & Felzenstein, 2019; Oliveira *et al.*, 2018). Meanwhile, research into firm-level exporting has been *inter alia* criticised for being fragmented (Leonidou *et al.*, 2010) and characterised by divergent results (Tan & Sousa, 2013). While a number of theoretical concepts have been developed, single theories can only shed light on export performance in an isolated manner. As such, a systematic conceptual foundation embracing the determinants of export performance is still missing (Lages *et al.*, 2008; Tan & Sousa, 2013). Moreover, it is also less frequently discussed in extant research that export success is not guaranteed, as firms may discontinue exporting (Sousa & Tan, 2015). Thus, the identification of antecedents of export performance is of key relevance both for exporting firms and the entire economy.

Accordingly, the objective of this article is to review extant studies on export performance and propose a conceptual framework which will go beyond the currently studied relationships and variables, and therefore allow formulating recommendations for future research. While there have been recent literature reviews devoted to export performance and its different antecedents (Chen *et al.*,

2016; Oliveira *et al.*, 2012; Francioni *et al.*, 2016), the aim of our present work is not to overlap with the previous diagnoses of the field, which already identified a plethora of determinants of export performance, their specific operationalisations or research designs. Nor is it to simplistically criticise extant research by merely highlighting what has been less explored. More importantly, we attempt to place export performance research in a broader context of IB research in order to highlight issues which could be addressed by scholars, which – as we argue – can help to advance this strand of IB research. We propose to consider studies on export survival and export exits as part of the same intertwined field. Not only has survival often been considered as a measure of export performance (Kadochnikov & Fedyunina, 2017; Martuscelli & Varela, 2018), but its antecedents and logic are important for understanding export success as a whole. Not least, export exit can affect exporting firm performance and its overall competitiveness, which is an aspect that goes beyond assessing the performance of a single export venture and allows decision makers to adopt a broader perspective on managing export markets. Still, exit research has developed separately, not allowing the two strands to build on each other and reap conceptual synergies that can drive new fruitful research questions.

The paper is organised as follows. The subsequent section explains the methodology of the conducted literature review. Next, a brief discussion of existing research on export performance ensues with focus on the main achievements and deficiencies of current research. Further, we introduce our conceptual framework which includes proposed research areas for further investigation. We discuss each of these areas in dedicated subsections.

MATERIAL AND METHODS

Literature review design

Existing literature reviews in the field of management have recurred to different methodologies, contingent on the objectives and topics of the literature review. In fact, the aim of this present review is not to devise an exhaustive quantitative overview of existing research on export performance, as such reviews can already be found (Chen *et al.*, 2016; Francioni *et al.*, 2016; Barłożewski & Trąpczyński, 2021; Trąpczyński & Halaszovich, 2021). Instead, the aim of the paper is to develop an overarching conceptual framework for studying export performance, based on the current shortcomings of this research and the proposals how to address them.

Within a systematic procedure, papers were identified in databases based on keywords. This stage was complemented with a manual lookup for printed materials, books, etc. A preliminary list of keywords developed based on general readings on export strategy, export organisation and export performance, it was subsequently expanded and adapted owing to the heterogeneity of the related vocabulary. Importantly, the search phrases also included export exits/withdrawals/survival or international/foreign market exit/withdrawal/survival. The search parameters were configured to include peer-reviewed papers published in academic journals between 1970 and 2020.¹ This allowed for the scholarly discussion emerging on firm internationalisation in the 1970s to be incorporated in the review, but would eliminate a wide range of potentially irrelevant reference items from earlier years.

After the extraction of peer-reviewed scholarly journal articles from relevant academic databases using the EBSCO and ProQuest search engines, a screening process of the search results took place. After an initial examination of search results, criteria were established for exclusion of certain articles. Editorials and commentaries were excluded because they may be relevant to the topic, they usually do not contain specific scholarly sources or empirical evidence. Case studies without conceptualisation and analysis were excluded because they do not contain evaluation of the authors comparable to other papers. It was deemed appropriate to eliminate the need for non-systematic judgement and evaluation by the authors. The complete list of articles extracted from the search engines was reviewed and items not corresponding to the search criteria were removed from the list. This was done based on the titles, keywords and abstracts of the articles. A further iteration of filtering was implemented using the exclusion criteria, based on the full text of the articles.

¹ The literature review was completed by September 14, 2020.

Review sample description

An initial search result of 379 articles extracted from the EBSCO and ProQuest search engines was further refined. The application of the aforementioned exclusion criteria led to the extraction of 285 relevant empirical articles for systematic analysis. Depicting the review sample by publication year, it becomes apparent that the time period from 2014-2016 featured 80 publications, whereas the highest year before 2014 was 2012 with 18 publications. The key factor to point out is that export performance seems to be a modern phenomenon, as 81% of all articles analysed were published after 2005 (see Figure 1).

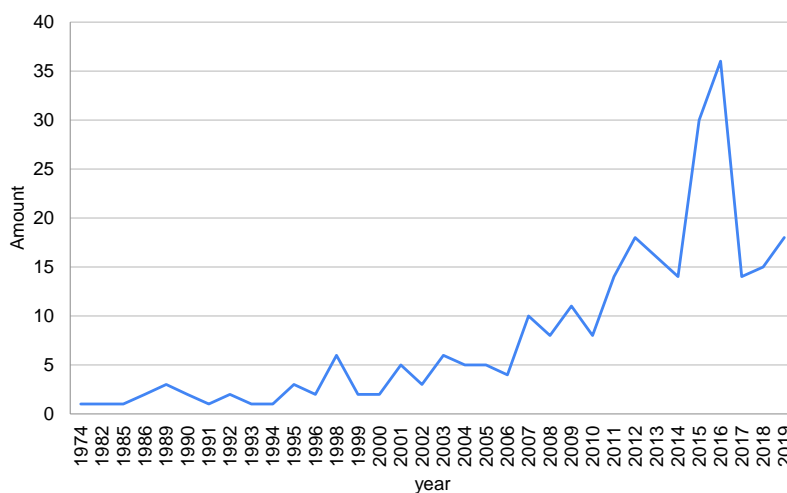


Figure 1. The evolution of export performance papers

Source: own elaboration.

The majority of articles were featured in a huge variety of journals, with 123 journals featuring a total of 156 articles. The notable exceptions to the aforementioned rule are the *International Business Review* with 33 papers and the *International Marketing Review* with 32 papers (see Figure 2).

Of the 285 papers analysed, 240 used quantitative methods including structural equation modelling or various types of regression models, whereas only 12 used only qualitative analysis such as case studies. The remaining 33 articles used a mixture of qualitative and quantitative methods. 243 papers focused on export performance, whereas 42 put their emphasis on export withdrawals.

The detailed topical analysis reveals that inherent capabilities of the firm and strategy (consisting of the strategy process, overall strategy and the more specialised topic of marketing strategy adaptation) are most important with 73 and 80 papers respectively whilst environmental determinants and factors such as industry level determinants or host- or home country factors feature prominently with 43 articles as well (see Figure 3). The firm capabilities focus on factors that are internally related to the companies, starting from simple factors such as company size or organizational structure, but also including more complex topics such as managerial leaning towards exports or a company's ability for adaptation and learning. Strategic aspects researched in the papers start with general strategic decisions such as the choice of an export mode or strategy processes – e.g. the dynamics of the decision-making process regarding export entry and exit. They also include quite specific and detailed papers on the question of marketing strategy adaptation as a necessary antecedent to export and export performance.

The vast majority of the analysed papers focuses on antecedents & outcomes of export performance, whilst only a small margin of 28 articles mentions the processes involved (see Figure 4). Generally, the antecedents involved are based on the question whether and how factors linked to the company or its surrounding environment are linked to the export performance of said company, whereas processes are more deeply involved in researching the tasks involved in a company achieving the target export performance.

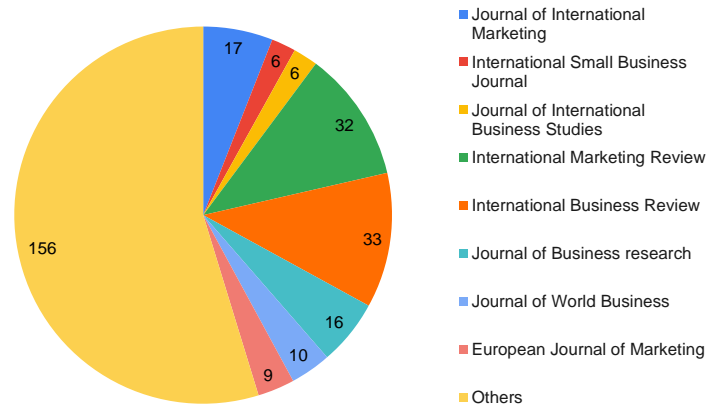


Figure 2. The distribution of papers by academic journals
Source: own elaboration.

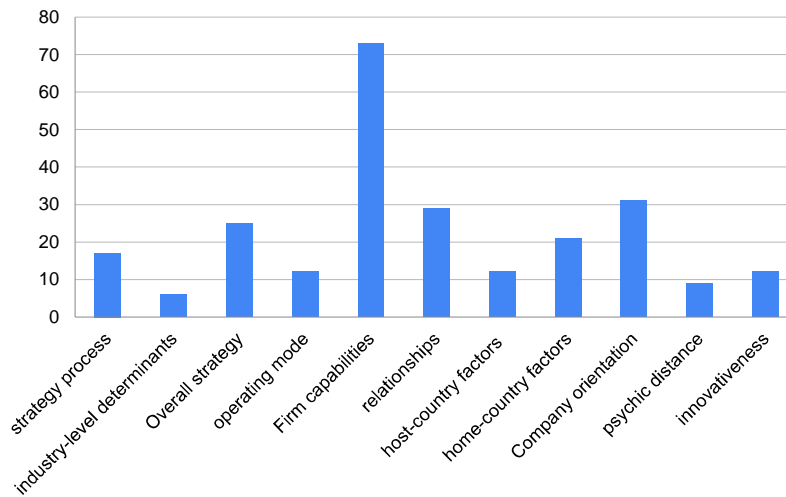


Figure 3. The leading topic areas of the analysed papers
Source: own elaboration.

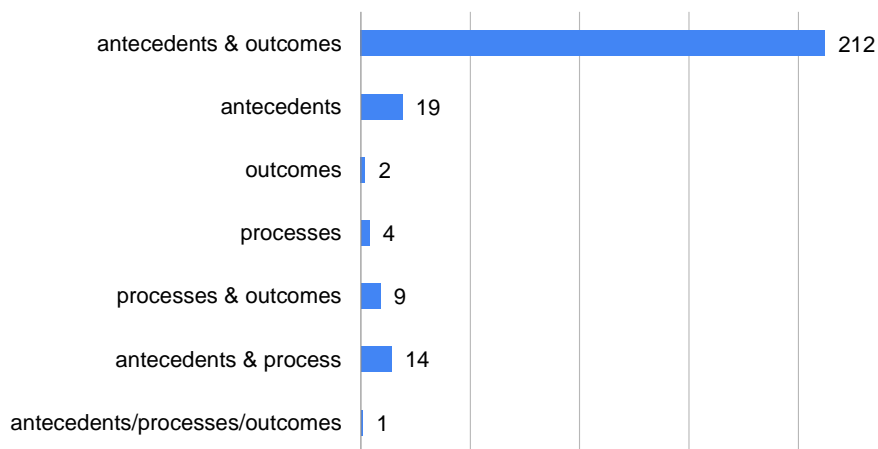


Figure 4. The leading research perspectives
Source: own elaboration.

LITERATURE REVIEW

Major theoretical approaches and the resulting antecedents of export performance

Taking a closer look at the home countries of export companies, it can safely be said that the existing research is strongly based on a Western perspective with 208 of 285 papers featuring companies exporting from Europe, America or Australia. In total, 67 different countries were analysed with the UK taking the top spot with 24 papers, closely followed by Spain with 20 articles and China with 18 articles. A possible reason for such a focus on the UK and Spain can be found in the ties to export market by history and language, factors that are connecting both home countries (see Figure 5).

A number of conceptual approaches have been applied in extant research thus far. First, the industry-based view links firm performance to industry conditions (Porter, 1980). In the majority of identified export papers multiple industries have been considered, which allows controlling for sectoral specificity and generalising the research findings (Chen *et al.*, 2016). With regard to factors related to the foreign market, the intensity of competition has gained visible research attention, albeit with conflicting findings. The level of competition which firms need to confront in foreign markets has broadly been considered to have a positive effect upon marketing strategy adaptation because of the pressure exerted by the competition (Cui & Lui, 2005; Lages *et al.*, 2008). In this context, some scholars find a positive linkage between the standardisation of marketing strategy standardisation and the level of competitive intensity (Katsikeas *et al.*, 2006). However, the relevance of the context of the industry for further decisions, such as the choice of export locations and export models, and the performance repercussions thereof, have been studied far less.

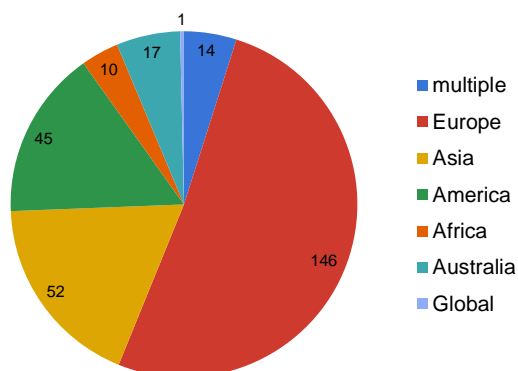


Figure 5. The home countries of the reviewed papers

Source: own elaboration.

Second, the resource-based view (RBV) indicates that differences between companies account for the adopted strategy and its outcomes (Barney, 1991). The RBV regards an organisation as an individual pool of value-generating resources, both tangible and intangible, which explain a firm's competitive position in international markets (Barney *et al.*, 2001; Katsikeas *et al.*, 2000). In this vein, Cadogan *et al.* (2009) show that the market orientation of a firm is conducive to its export performance. However, many studies on firm internationalisation have focused on firm capabilities in the understanding of intangible assets, with a particular focus on product innovation or brand equity, devoting less attention to further sources of competitive advantage, such as the organisation of export activities, the ability to adjust export behaviour to foreign market conditions, or experience-based advantage, which may be an asset of firms from economies only recently having joined the international business environment (Cuervo-Cazurra & Genc, 2008).

The third influential perspective, the institution-based view emphasises the importance of institutional environment as a determinant of corporate behaviour and performance (Dacin *et al.*, 2002). Influenced by North (1990) and Scott (1995), This perspective argues that internationalisation behaviour results from an interplay between institutions and organisations. Thus, firm strategy emerges not only as

a result of an interplay of firm-specific and industry-factors, but also of formal and informal institutional conditions that firms come across in a foreign market (Peng, 2006). Accordingly, empirical evidence suggests that a high quality of the institutional environment enhances export performance (Lipuma *et al.*, 2013). With regard to informal institutional differences among countries, a significant number of related studies come to the conclusion that psychic distance between countries leads to a higher level of offer adaptation (Sousa & Bradley, 2005; Sousa & Lengler, 2009; Sousa & Lages, 2011). Hereby, psychic distance pertains to all factors affecting foreign activities by hindering information flows. One of the key problems of extant research, however, may be the predominant focus on the magnitude of perceived distance, instead of taking into account the direction of differences, i.e. either more or less developed countries as opposed to the home market (Shenkar, 2001).

Further, governmental export promotion is considered as a vital resource to engage in export activities for many exporters, in particular small and medium enterprises (SMEs) (Durmuşoğlu *et al.*, 2012). Leonidou *et al.* (2011) argue that export promotion and assistance are one of the aspects that have attracted comparably scarce research efforts thus far. For many governments, an active promotion of export activities is a strategic goal. However, scientific evidence about the effectiveness of these programs remains unclear. While some authors report positive effects, other studies find no or even negative effects (Durmuşoğlu *et al.*, 2012). In fact, the effectiveness of different measures varies greatly (Alvarez, 2004; Durmuşoğlu *et al.*, 2012; Wilkinson & Brouthers, 2006).

Export channels and international marketing strategy

Apart from the motives, stimuli and barriers to exporting, the strategic aspects of exporting and their performance consequences for the exporter have been considered as a key area of interest (Cieślik *et al.*, 2015; Leonidou *et al.*, 2010). One of the focal aspects in this research field is the degree of foreign market strategy adaptation or standardisation, regardless of which mode of market entry was adopted (Theodosiou & Leonidou, 2003). Yet, extant studies remain inconclusive with regard to whether adaptation or standardisation leads to superior outcomes, and under which specific conclusions (Chen *et al.*, 2016).

In extant literature on exporting there have been several attempts at conceptualising foreign market strategy (Klein & Roth, 1990; Li *et al.*, 2017; Peng *et al.*, 2006). Apart from the issue of organisation of exporting activities, most studies focused on whether to standardise or adapt the export marketing strategy (Morgan *et al.*, 2012). Thereby, they usually examined merely some selected dimensions of the marketing strategy, while overlooking potential interrelationships in or adapting them. For instance, Tan and Sousa (2013) find that product standardisation has a negative impact upon foreign market performance, although the effect of promotion standardisation is not significant, whilst the standardisation of price and distribution standardisation positively affect performance.

Moreover, the degree of adaptation was in many instances studied from a general perspective, without considering more detailed aspects of the strategy. For instance, promotion was in some cases decomposed into advertising, sales promotions or PR, yet scholars have unsuccessfully called for more fine-grained conceptualisations (Theodosiou & Leonidou, 2003). We find that almost no research on exporting has referred to the concept of the business model (Zott *et al.*, 2011; Hennart, 2014), instead focusing on selected marketing strategy aspects.

Avenues for further research

Based on the conducted review of extant research and the relative paucity of specific aspects and their interrelations, we propose to intensify research efforts along three dimensions (see Figure 6):

- antecedents (at exporting firm level, export venture level including the perspective of foreign market partners, as well as external determinants including home and host country factors);
- outcomes, including different levels of performance as well as export survival/exit and its broader implications;
- process perspective, putting export performance into a broader context which has been frequently neglected in extant research.

Level 1: antecedents

Institutional home- and host-country determinants

The current rise of scepticism towards globalisation poses new challenges towards firms and economic policy-makers alike and calls for a more complete consideration of the institutional determinants of the internationalisation of firms and economies. The understanding of export antecedents in diverse institutional settings is the more so relevant that it has been agreed that there is a causal relationship between export expansion and economic growth (Dunning & Lundan, 2008; Mah, 2005). Export performance can be driven by the extent of institutional differences between home and host countries, which can be positive if a given host country is more advanced than the home country, or negative if the host country is less developed as compared to the home market of the exporter. Although earlier research has devoted attention to the magnitude of institutional distance, the aforesaid direction of research depending on whether an export market is institutionally more or less developed as compared to the home country, has remained far less explored (Cuervo-Cazurra & Genc, 2008). Future research can contribute to reducing this gap by accounting for the type of institutional environments to which exporters expand. A potential explanation for the incongruence of the findings might yield from the different country contexts used in the studies. As was shown in other studies, the location of exporters impacts their performance (Freeman *et al.*, 2012). The relevance of locations, thereby, is based on the location specific opportunities to access resources and networks (Halaszovich & Lundan, 2016).

The relevance of the specific context is further strengthened by findings that illustrate a mismatch between the governmental programs and the actual needs of firms (Seringhaus & Botschen, 1991). For those firms who incorporate export promotion, the interdependencies with the other elements of the business model seem to matter for their effectiveness. This interaction, so far, has not been addressed in the academic literature. To adjust the programs with the exporters' business models, governmental export promotion agencies and exporters have to engage in co-evolutionary processes, as described by Cantwell *et al.* (2010) in the broader field of institutional co-evolution and foreign direct investments. Moreover, the efficiency of governmental export promotion depends on the individual export models of the exporting firms, which has not been addressed in the academic literature. Thus, scholars can plausibly contribute to extant research by more explicitly considering the significance of home-country institutional support for export performance in conjunction with firm- and industry-level variables.

Industry-level determinants

A number of studies examining export behaviour adaptation have looked into the product features such as its type, cost, or positioning (Myers & Cavusgil, 1996). The majority of research suggests that a standardised approach is more appropriate in the case of industrial rather than consumer products, as less adaptation is required. Notwithstanding, extant evidence on the effect of the product type on the degree of standardisation of export marketing is not consistent (Cavusgil & Zou, 1994). The present focus on product characteristics and fulfilled needs does not provide a complete image of contemporary strategies of competing in international markets (Dhanaraj & Beamish, 2003). We argue that a more explicit consideration for the role of technological intensity, which reflects the advancement of products and thus the relative suitability of certain export markets in relation to others, should shed more light on the logic and success factors of exports in different institutional locations.

Exporting firm and export market business models

As highlighted above, export behaviour has been predominantly conceptualised with simple dimensions of marketing strategy or level of channel integration, neglecting further performance-affecting dimensions related to the implementation of exports, such as export logistics and the use of information technology (particularly e-commerce) for export development. Future studies should contribute to extant research by adopting a broader concept of export model, including channel integration, use of modern distribution and sales concepts, in addition to the previous understanding of market

strategy used in export research. Moreover, the role of foreign partners who take over a number of responsibilities in export market operations requires more attention, particularly with regard to their influence on foreign market strategy and its evolution over time.

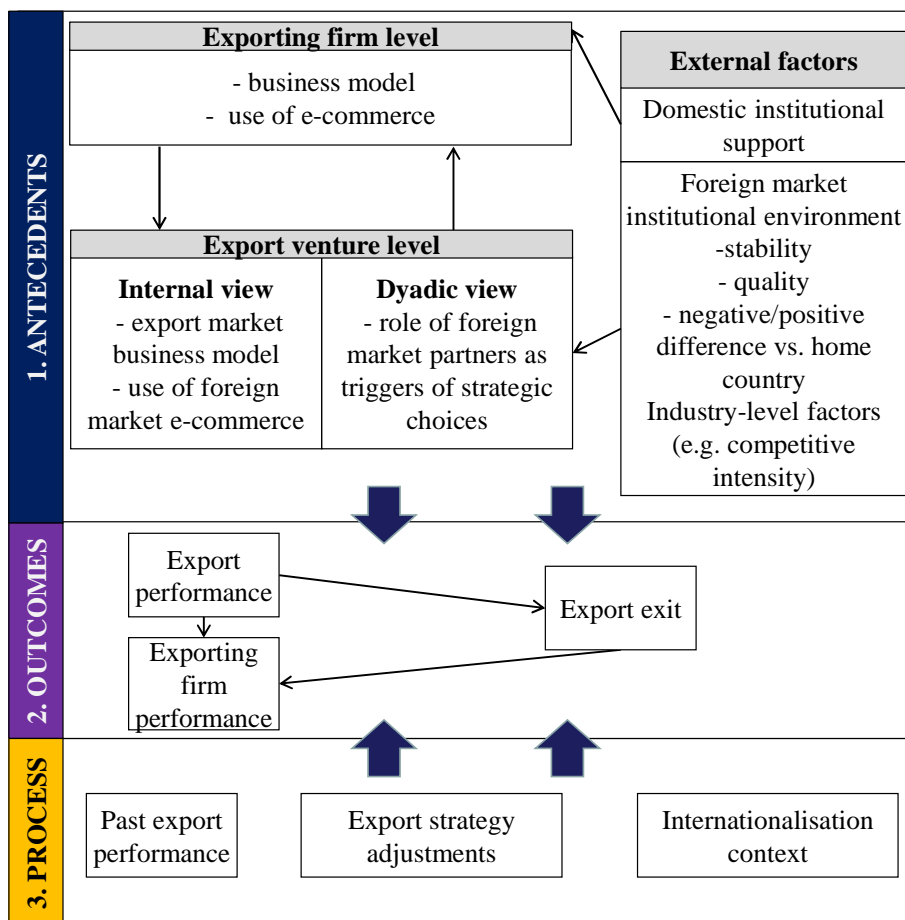


Figure 6. Export performance research framework

Source: own elaboration.

Moreover, a significant number of studies have regarded foreign market strategy and its adaptation as a mediator of some firm-level variables (such as marketing capabilities) or host-country level variables, such as distance in its various dimensions, on export performance, using perceptual measures in such research designs. However, as Brouthers (2013) argues, performance is affected by objective variables, while strategic choices are influenced by managerial perceptions. Thus, it may be a worthwhile avenue to investigate the influence of objective host-country factors, moderated by firm-level factors, particularly different dimensions of the business model.

Level 2: outcomes

Export performance and exporting firm performance

Most studies devoted to export performance have concentrated on such dimensions as export intensity, export sales, export profitability, or export sales growth (Tan & Sousa, 2013). Non-financial performance measures, such as export performance satisfaction or the accomplishment of export objectives, are less frequently employed (Chen *et al.*, 2016). Noticeably, many extant studies merely recur to a single performance indicator, thereby neglecting the multi-dimensional nature of export. Besides, firms learn from their prior export commitments in order to grasp the causality between specific foreign market conditions, appropriate strategic behaviour and its performance outcomes (Lages *et al.*, 2008). Indeed, it has been implied by scholars that the performance of export operations in a given

year has a bearing on the export strategy decisions in the subsequent year as a result of organisational learning (Lages *et al.*, 2008).

To summarise, the role of export success on its subsequent evolution has not been studied to date. IB scholars need to go beyond the hitherto predominant focus on export performance as economic results of a given venture, and consider both export withdrawals and their determinants as an expression of export sustainability. Moreover, research designs will need to be re-adjusted to also examine the entire exporting firm performance as an outcome of overall export behaviour and choices of foreign institutional contexts.

Export exits and their long-term implications

We argue that export learning and adaptation of the foreign operations can also lead to temporary or permanent reduction of export activity or withdrawal from the foreign market (Freeman *et al.*, 2013). However, the recognition of this – at first glance – negative development of international operations is very rare in existing research. While studies have shown that difficulties faced by the firm in the foreign market, as well as internal resource limitations or deficiencies can increase the likelihood of export exit, as does the lack of strategic fit of the firm with its environment (Sousa & Tan, 2015). Pauwels and Matthyssens (2004) indicate that withdrawal from an export market may lead to strategic renewal in the exporting firm. However, the existing conceptualisation of export activities has inadequately considered exporting as part of its overall strategic development (Leonidou *et al.*, 2010). Currently, a very limited number of studies could be found that explicitly analyse product-related international decisions and their antecedents (Owen & Yawson, 2006; Iavocone & Javorcik, 2010).

Yet, while it is relatively common in divestment research to study implications for the firms (e.g. Lee & Madhavan, 2010), more research seems relevant to shed more light on the non-financial, competitiveness-related consequences of the different forms export reduction or exit in the long term. Few studies, such as Baldwin and Yan (2012) considered firm performance after export market exit decision depending on whether firms re-internationalise or maintain a reduced international footprint. This is an aspect which clearly deserves further investigation.

Pauwels and Matthyssens (2004), in turn, analysed strategic export market withdrawal within firm internationalisation, incorporating strategic flexibility in the process model. They also identify cost-related effects of export exit (Pauwels & Matthyssens, 1999). For instance, strategic re-structuring creates an opportunity for firms to service their export markets more cost-effectively, by entering collaborative arrangements with local competitors (Freeman *et al.*, 2013).

Level 3: process perspective

The contingency view implies that export performance is driven by the contingent compatibility, which is changeable and individualised to every company or export venture (Hultman *et al.*, 2011). As it has been noted in the previous section, the organisational learning theory refers to the linkages between previous organisational actions and the subsequent strategic choices and performance (Santos-Vijande *et al.*, 2012).

However, while export performance research has acknowledged the role of past experience on current export strategy and performance, this role has not been explored in a sufficiently nuanced manner. And yet, since the overall experience of operating in international markets is not always market-specific and hence its applicability to foreign contexts may be limited, also its role for performance may not be as pronounced (Guillen & Garcia-Canal 2009). On the other hand, research suggests that different modes of foreign market entry result in different types of experience (Gao *et al.*, 2008). Moreover, experience gained in an institutionally similar context to the foreign market under study has different implications than for a dissimilar one (Trąpczyński & Banalieva, 2016). Clearly, extant export performance research has neglected the direction and type of experience of exporters. Thus, more research is warranted to contribute to this gap by studying different types of experience and their effects on export performance.

CONCLUSIONS

The literature review and the identified gaps in extant research performance research lead to the development of a conceptual framework which may be useful in guiding future research in the field. As discussed earlier, the purpose of the framework is by no means to provide an exhaustive collection of export performance determinants, nor to categorize their relationships in a technical manner (i.e., whether they must be included as moderators or mediators, etc.), but more importantly to propose in what ways we can advance IB research by recurring to some already known theoretical concepts. Thereby, several advancements can be made:

1. scholars may become more sensitive to previously neglected variables which can enhance the understanding of export performance, particularly those related to the business model of the exporter, as well as the changes in this model with regard to foreign markets,
2. it may become more apparent that the hitherto isolated research strands employing distinct variables can be integrated within consistent theoretical frameworks,
3. export performance cannot be understood as a narrow, isolated concept, but has some important effects on the success of the entire exporting firm
4. as firm internationalisation may not be linear, also export performance research should acknowledge export exits as an inherent development option, which both affects performance, and can actually be regarded as its manifestation.

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Conflict of Interest

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Forecasting the number of cases and deaths from Covid-19

Aldona Migąła-Warchoł, Monika Pichla

ABSTRACT

Objective: The aim of this publication is to analyze the value of the number of new cases and deaths from COVID-19 in selected European Union countries: Poland, France and Belgium.

Research Design & Methods: Data were collected from the on-line database: <https://covid.ourworldindata.org/data/owid-covid-data.xlsx>, which demonstrate the daily number of new cases and deaths due to the COVID-19 pandemic. The forecast was based on a linear trend function and a 7-period moving average, using Statistica 13 software.

Findings: The test results facilitated an evaluation of the diversity in the number of cases and the number of deaths in the assessed countries. Implications & Recommendations: From the obtained results, it can be concluded that the pandemic caused by the SARS-CoV-2 virus will end in 2021, about a year after the first case that appeared in Europe, provided that the vaccines are also effective against the mutated form of the virus.

Implications & Recommendations: Based on the results obtained by China, where the pandemic ended after a year, it can be assumed that EU countries will also win the fight against Covid-19 at a similar time provided that the vaccines are also effective against the mutated forms of the virus. This is indicated by the results of research obtained in this paper. However, it should be remembered that the pandemic is unpredictable and it is difficult to predict the values of variables for a longer period of time.

Contribution & Value Added: The article indicates the methods of combating Covid-19 in selected countries of the European Union.

Article type: research article

Keywords: Epidemiology; COVID-19; forecasting; trend function; moving average method

JEL codes: I12, I13, I14

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INTRODUCTION

The previous year has turned out to be the year of fighting the new and deadly virus. Around the beginning of spring 2020, almost the whole Europe has been affected with the novel coronavirus outbreak. The Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2), which causes the disease called COVID-19 was reported for the first time in Wuhan, Hubei Province, China, in December 2019. Since then, it has been spreading worldwide. Due to the manifestation of a wide range of symptoms – from asymptomatic or mild to severe and deadly – this airborne virus has paralyzed the whole world (Esakandari *et al.*, 2020). World Health Organization (WHO) declared the pandemic on 11th March 2020 (Chun, Baek, & Kim, 2020). The pandemic has brought about many changes in the lives of Europeans as well as those of other continents.

Coronaviruses are enveloped, positive-sense single-stranded RNA viruses that infect humans, but also a wide range of animals. Coronaviruses were first described in 1966 by Tyrell and Bynoe, who cultivated the viruses from patients with common colds (Tyrell & Bynoe, 1966). Based on their morphology as spherical virions with a core shell and surface projections resembling a solar corona,

they were termed coronaviruses (from Latin: *corona* = crown) (Velavan & Meyer, 2021). Among the seven subtypes of coronaviruses that can infect humans, the beta-coronaviruses may cause severe disease and fatalities, whereas alpha-coronaviruses cause asymptomatic or mildly symptomatic infections. SARS-CoV-2 belongs to the B lineage of the beta-coronaviruses and is closely related to the SARS-CoV virus (Bedford & Hodcroft, 2021; Zhou *et al.* 2020). Coronaviruses are common and cause variety of diseases, mainly respiratory, hepatic, enteric and neurological. The world has been already two times hit by the epidemic of coronaviruses – severe acute respiratory syndrome coronavirus (SARS-CoV) in 2003, with fatality rate of 10% and Middle East respiratory syndrome coronavirus (MERS-CoV) in 2012, with 40% morbidity (Jiang *et al.*, 2020).

The aim of this publication is to forecast the value of the number of new cases and deaths from COVID-19 in three selected European Union countries: Poland, France and Belgium. We will make a prognosis of the number of new cases and COVID-19-related deaths in Belgium, France and Poland. Moreover, in the article were compared the stringency indexes of selected European countries at the time of the onset of the peaks and with the overall impact of COVID-19 on the number of new cases and COVID-19-related deaths.

The article starts with the literature review (on the impact on the pandemic of the economy as well as on the coronavirus itself), which is followed by the material and methods section explaining the applied research methodology. The main part of the article is included in the empirical findings section. The article ends with the final conclusions.

LITERATURE REVIEW

The scientific literature emphasizes the fact that, unlike previous crises, the Covid-19 crisis has many dimensions. In order to limit the spread of the pandemic, the governments of countries decided to confine millions of people to their homes (Kinnunen *et al.*, 2021), which turned out to be an effective way to slow down the increase in few infections, but it brought significant economic costs, such as a collapse of many enterprises or the depletion of a large part of societies destitute (Žak & Garncarz, 2020). The current pandemic is very challenging for the whole economy (Lipkind, & Kitarar, 2021), for its sectors and industries (Marona & Tomal, 2020) or for businesses, especially family firms (Marjański & Sułkowski, 2021).

At first, it was hard for everyone to believe that life could change like this in the context of fighting the virus. However, the immediate spread of SARS-CoV-2 has forced many countries to shut down in order to curb the pandemic. A broad spectrum of governments' responses has been observed. The most common restrictions include travel bans, prohibition of gatherings, closing of schools and other public places e.g., cinemas, shopping centres, gyms etc., as well as contact tracing and subjecting people to quarantine (Cheng *et al.*, 2020).

For example, the Polish government introduced restrictions on economic activity, as well as in the social life of the inhabitants of Poland. Of course, there have been changes in these restrictions.

The following restrictions related to COVID-19, called the 'first lockdown', have been introduced in Poland. The stages of changes in the restrictions during the first lockdown in Poland are listed in Table 1.

During the second lockdown in Poland (from November 7, 2020), the following restrictions were introduced:

- cinemas, theatres, museums and other cultural institutions have been closed,
- hotel facilities are available only to people on business trips,
- distance learning for children in grades 1-3 has been introduced,
- in stores up to 100 m², trade can be carried out in the following way, there may be 1 person per 10 m², and in stores over 100 m², 1 person per 15 m²,
- shops in shopping malls are closed, except for grocery and service shops, i.e., pharmacies and drugstores,
- a ban on meetings and events has been introduced,
- 1 person per 15 m² may stay in churches.

Table 1. Stages of changes in the restrictions during the first lockdown in Poland

Dimension	STAGE I	STAGE II	STAGE III	STAGE IV
Economic activity	New rules in trade and services (up to 100 m ² – 4 people for 1 cash desk, over 100 m ² 1 person for 15 m ²).	Opening DIY stores on week-ends. Opening hotels and other accommodation facilities.	Gastronomy – stationary with restrictions, opening of hairdressing salons and beauty salons, opening stores in shopping malls.	Opening massage salons and solariums. Allowing the activities of gyms and fitness clubs.
Social life	Lack of possibility to move for recreational purposes (social distance and covering the face). Forbidden access to forests, parks, and playgrounds. Religious worship 1 person per 15 m ² . Exclusion from restrictions on the movement of non-adult persons over the age of 13.	Opening some cultural institutions: libraries, museums and art galleries.	Sports events for up to 50 people (in open space without audience participation) Organization of childcare in nurseries, kindergartens and in school grades 1-3 – determined max. number of children in the room.	Theatres and cinemas under the new sanitary regime.

Source: own study.

There has been and still is, a considerable diversity between adapted measures and time when they were put into place, thus there is a number of reasons why some countries have been more severely affected than others. The Government Stringency Index (GSI) is an index that demonstrates the strictness of government approach to COVID-19. It is a composite measure of nine metrics i.e., school and workplace closures, restrictions on public gatherings and cancellation of public events, public transport shutdown, stay-home requirements and restrictions on internal and international movements, and public information campaigns (Ritchie *et al.*, 2020). The indexes are presented in Table 2.

Table 2. Comparison of the GSI in selected EU countries at crucial periods of the coronavirus pandemic

Variable	Belgium	GSI BE	France	GSI FR	Poland	GSI PL
First confirmed case	04/02	11.1	24/01	11.1	04/03	11.1
Ban of gatherings >1000 people	10/03	19.44	10/03	43.98	10/03	25
Closure of public spaces	12/03	23.15	12-13/03	43.98	12/03	41.67
Only necessary everyday activities	17/03	50.93	17/03	87.96	25/03	57.41
Closed borders to non-essential travel	20/03	81.48	17/03	87.96	09/04	83.33
Mandatory masks	12/08	58.33	28/08	48.15	16/04	83.33
Days to lockdown from the first case	42	–	53	–	21	–
First peak	15/04	81.48	18/04	87.96	11/04	83.33
Second wave onset	04/09	52.78	18/07	46.3	09/09	36.11
Second peak	31/10	56.48	3/11	78.7	11/11	71.3

Source: (Ritchie *et al.*, 2020).

Nevertheless, these are only the examples of undertaken measures to slow down the spread of the virus. It is very important to emphasize that this scenario will happen again in the future – we have been warned twice – as aforementioned, once in 2003 and then in 2012. Researchers are able to select viruses with potential to cause a pandemic, namely Nipah virus (Luby, 2013), H7N9 influenza A virus (CDC 018) and others (Fernandez-Montero *et al.*, 2020).

RESEARCH METHODOLOGY

Data were collected from the on-line database: <https://covid.ourworldindata.org/data/owid-covid-data.xlsx>, which demonstrate the daily number of new cases and deaths due to the COVID-19 pandemic. The forecast was based on a linear trend function and a 7-period moving average, using Statistica 13 software.

The following methods were used in the article – linear trend function and moving average (Hydzik & Sobolewski, 2007; Zeliaś, Wanat & Pawełek, 2020). The least squares method was used to estimate the parameters of the linear trend function. For the moving average, a 7-period moving average was used to predict new COVID-19 cases and new deaths in three selected European countries.

The analysis shows that the number of new cases is time-dependent for each country. The daily increase in the number of cases for Poland is 59 ± 4 , for France 80 ± 5 , while for Belgium the increase is 21 ± 2 .

The trend matching coefficient for Poland was 48%, France 42%, and for Belgium 26%. The coefficient of determination R^2 is relatively high in relation to the data for Poland and France, while it is unsatisfactory in the case of Belgium. This may be due to relatively mild disease peaks in Poland and France, while the sharp increase in cases, reaching as much as 18,000 in Belgium. The parameters of the trend function were estimated using the least squares method for three selected European Union countries – Poland, France and Belgium. On their basis, forecasts for subsequent periods were made (the obtained results are presented in Table 3).

There was also calculated the differentiation of countries in terms of the number of new cases with the use of descriptive statistics – standard deviation and the coefficient of variation. For all three countries, the coefficient of variation is very high and amounts to 171%, 152% and 172%, respectively for Poland, France and Belgium.

The analysis of the increase in the number of deaths shows that the number of new deaths is time-dependent only for Poland. The daily increase in the number of people who died for Poland is 1 ± 1 . Due to the lack of correlation between the increase in the number of deaths in France and Belgium, the forecast was calculated on the basis of a 7-period moving average. The results are shown in Table 3.

There were calculated also statistical measures describing the number of new deaths in the EU countries: Poland, France and Belgium. For all three countries, the coefficient of variability is very high and amounts to 171%, 123% and 126%, respectively for Poland, France and Belgium.

RESULTS AND DISCUSSION

The results of forecasts of the number of new cases for the next 3 periods (days) for individual countries are presented in Table 3. The forecast results were obtained on the basis of the linear trend and with the use of a 7-period moving average. First, the number of new cases of COVID-19 was predicted, followed by the number of deaths. Figures 1, 2 and 3 show the results for three European Union countries: Poland, France and Belgium.

The results of the forecasts of the number of new deaths for the next 3 periods (days) for individual countries are presented in Table 4. Figures 4, 5 and 6 show the results for three European Union countries: Poland, France and Belgium.

Table 3. Country-specific COVID-19 new cases results

Methods	Period	Poland	France	Belgium
Forecast based on a linear trend function – prepared in the Statistica 13 program	Day 1	12624,08	20817,08	5379,85
	Day 2	12683,17	20897,46	5401,39
	Day 3	12742,26	20977,83	5422,92
Forecast based on a moving average	Day 1	4106,02	6266,12	1144,78
	Day 2	2730,31	4023,71	724,35
	Day 3	1362,47	2040,10	361,22

Source: own study.

Table 4. Country-specific COVID-19 death forecast results

Methods	Period	Poland	France	Belgium
Forecast based on a linear trend function – prepared in the Statistica 13 program	Day 1	266,54	246,12	59,97
	Day 2	267,8	246,37	59,94
	Day 3	269,05	246,63	59,90
Forecast based on the moving average method	Day 1	155,61	166,14	42,27
	Day 2	103	107,71	26,9
	Day 3	51,31	53,63	13,12

Source: own study.

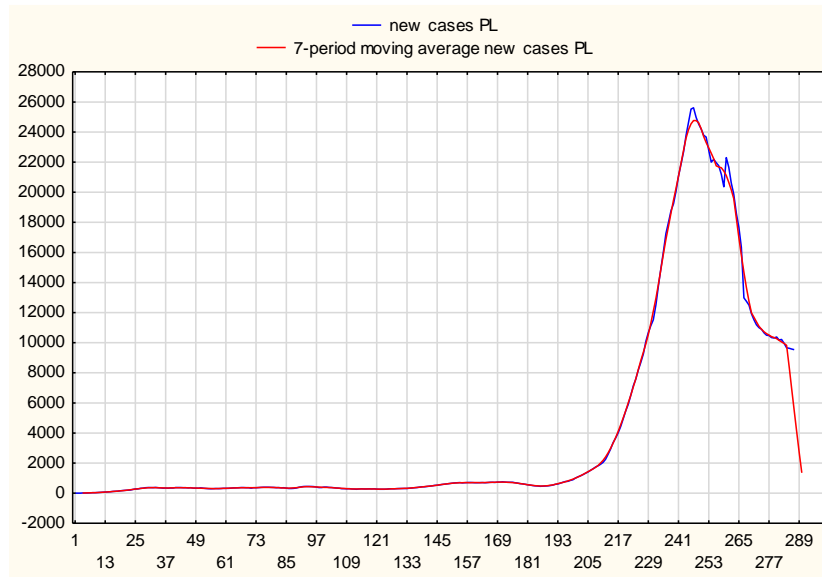


Figure 1. Forecast of new COVID-19 cases for Poland based on a 7-period moving average

Source: own elaboration.

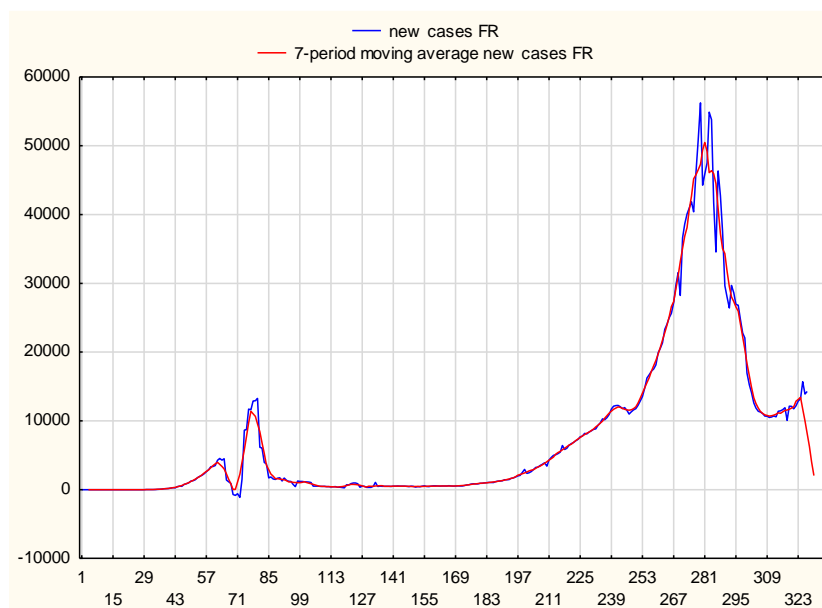


Figure 2. Forecast of new COVID-19 cases for France based on a 7-period moving average

Source: own elaboration.

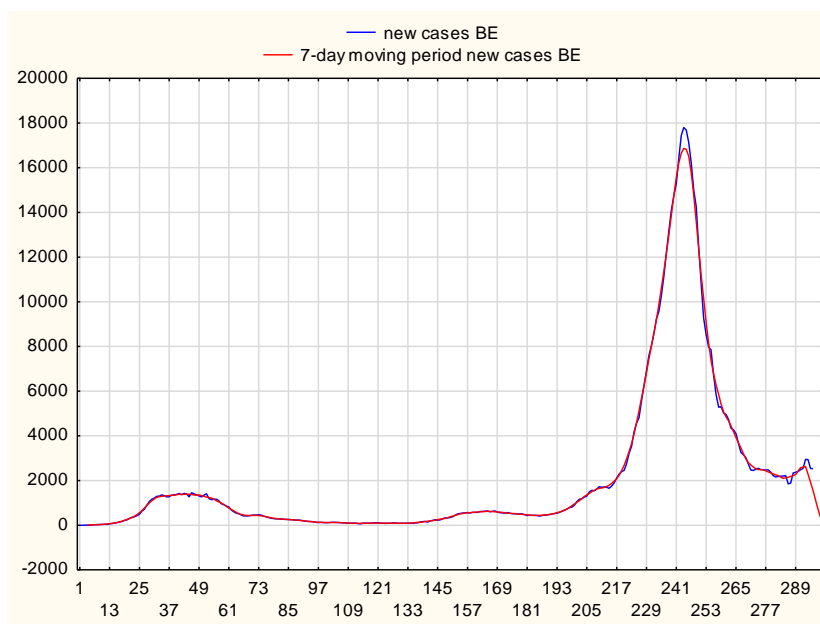


Figure 3. Forecast of new COVID-19 cases for Belgium based on a 7-period moving average

Source: own elaboration.

In the following figures there are figures presenting the results of the forecast of new deaths due to COVID-19 for three European Union countries: Poland, France and Belgium.

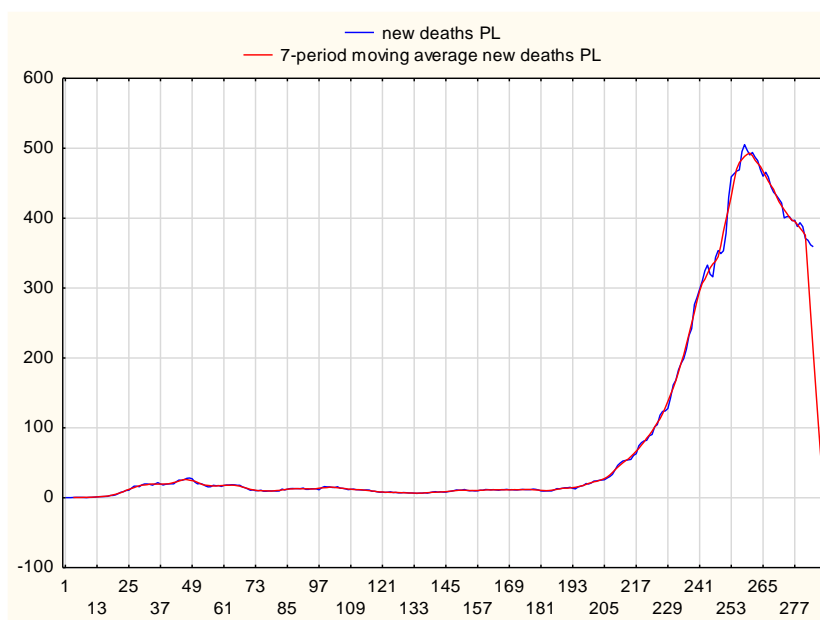


Figure 4. Forecast of new deaths due to COVID-19 for Poland based on a 7-period moving average

Source: own elaboration.

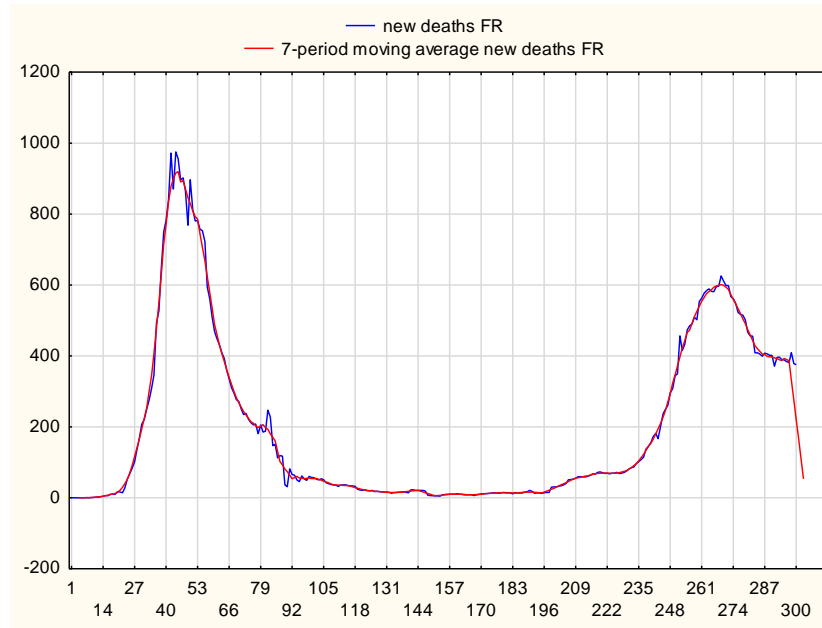


Figure 5. Forecast of new COVID-19 deaths for France based on a 7-period moving average
 Source: own elaboration.

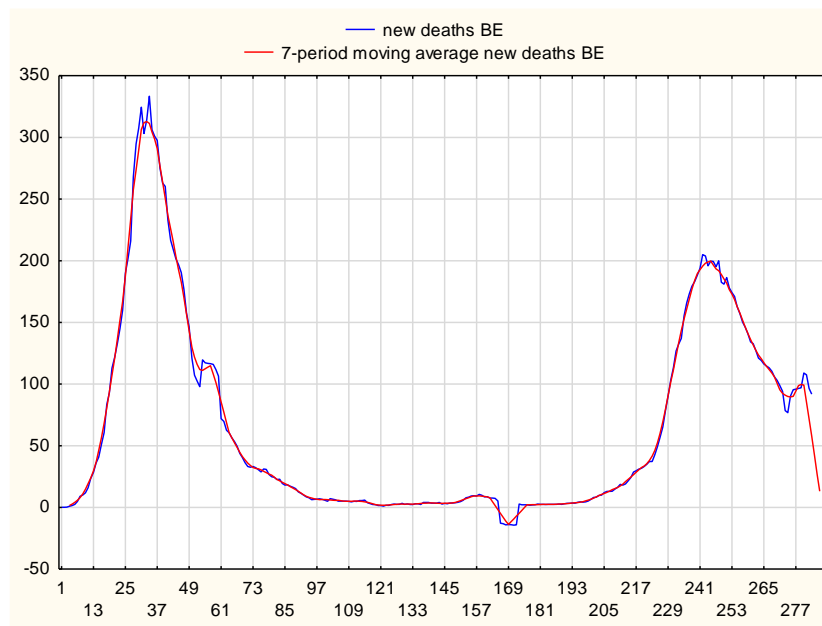


Figure 6. Forecast of new COVID-19 deaths for Belgium based on a 7-period moving average
 Source: own elaboration.

Moreover, the data show that Poland had the quickest response to COVID-19 among other studied countries with just 21 days from the first case to full lockdown, comparing to 42 days and 53 days for Belgium and France, respectively. One of the reasons of the second wave of the novel coronavirus pandemic was loosening the restrictions, whereas the GSI equalled 52.78, 46.3 and 36.11 for Belgium, France and Poland, respectively. Governments to regain control over the spread of SARS-CoV-2 have implemented restrictions one more time. The most stringent country during the second peak was France and the less one was Belgium.

CONCLUSIONS

The article presents the results of the forecast, which made it possible to estimate the values of new cases and the number of deaths caused by the SARS-CoV-2 virus in selected European Union countries: Belgium, France and Poland. The forecast results were obtained on the basis of the linear trend and with the use of a 7-period moving average. Moreover, in the article were compared the values of the stringency index of selected European countries at the time of the onset of the peaks and with the overall impact of COVID-19 on the number of new cases and COVID-19-related deaths.

The increase in the number of new cases was similar for all three countries, with the most similar increase in cases between Poland and France (Table 3). In the case of the increase in deaths due to COVID-19, Poland stood out comparing to other countries – France and Belgium had two peaks in the number of deaths, which corresponds to two waves of the disease – the first in the first quarter of 2020 and the second at the turn of the third and fourth quarter 2020. In the case of Poland, the aforementioned restrictions introduced at the beginning of the pandemic allowed to avoid infections and deaths caused by the SARS-CoV-2 virus. Therefore, the coefficient of variation for Poland is much higher than for France and Belgium.

Based on the results obtained by China, where the pandemic ended after a year, it can be assumed that EU countries will also win the fight against Covid-19 at a similar time. From the obtained results, it can be concluded that the pandemic caused by the SARS-CoV-2 virus will end in 2021 in the analysed countries, about a year after the first case that appeared in Europe, provided that the vaccines are also effective against the mutated form of the virus. Summing up, it should be emphasized that the forecasting is erroneous and the values never obtained can be considered 100% certain. The data are difficult to interpret because they are often incomplete and released with a significant delay. Furthermore, the analysis can be unclear and unreliable due to the differences between specific country COVID-19 testing regimes.

Another issue that should be noted is the fact that EU governments should allocate more resources to health protection and improving the living conditions of the inhabitants of the European Union countries [Migąła-Warchoł & Sobolewski, 2020]. In further studies which aim will be the analysis of the results of the third wave caused by the SARS-CoV-2 virus is planned to use the SIR model.

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Conflict of Interest

The authors declare that there is no conflict of interest regarding the publication of this paper.

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