A configurational perspective on comparative international entrepreneurship: a new approach to examining entrepreneurial activity combining clustering and qualitative comparative analysis

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A configurational perspective on comparative international entrepreneurship: a new approach to examining entrepreneurial activity combining clustering and qualitative comparative analysis

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Abstract

Purpose – For two decades, the Global Entrepreneurship Monitor (GEM) has collected survey and national expert data to better understand entrepreneurial activity and the country context within which this occurs. In this paper, we re-envision GEM's country groupings, positing a novel approach to more fully understanding the nuances of entrepreneurial activity.

Design/methodology/approach – Using data from the GEM's Entrepreneurial Framework Conditions (EFCs) (2017–2020), we employ an unsupervised machine learning method (clustering) to classify countries into distinct groups according to country-specific government policies, education, sociocultural, and entrepreneurship infrastructure support. Then, building on the identified two sets of distinct economies (termed as "matured" and "maturing" entrepreneurial economies) and using the GEM's data on Entrepreneurial Behaviour and Attitudes (EBAs), fuzzy-set Qualitative Comparative Analysis (fsQCA) is applied to highlight the complex nature of entrepreneurial intentions and to identify configurations of possible conditions that confirm intention pathways in entrepreneurial activities in each cluster of economies.

Findings – Our key findings suggest that in "matured" economies, where entrepreneurship is well-supported, people are driven by opportunity and a supportive environment. Moreover, in "maturing" economies, where there is less support, factors like personal status and overcoming fear of failure play a bigger role in their motivations. This new perspective is crucial not just for understanding entrepreneurship but also for shaping policies that truly support budding entrepreneurs. The results suggest that governments should tailor their support for entrepreneurship based on their maturity level.

Originality/value – Historically, GEM grouped countries based on the level of economic development (efficiency, innovation and factor economies) and, more recently, used the level of income (high, medium and low). Both categorisations are essentially outcome factors reflecting economic progress. While it is useful to compare countries based on these dimensions, we propose grouping based on entrepreneurial framework or contextual conditions, enabling scholars and policy makers alike to better understand how context influences entrepreneurial activity.

Keywords Clusters, Comparative international entrepreneurship, Entrepreneurial behaviour and attitudes, Entrepreneurial intention, fsQCA, International entrepreneurship, GEM

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1. Introduction

Comparative International Entrepreneurship (CIE) helps to examine how different national contexts such as culture, legal frameworks, economic conditions, access to resources, government support, market conditions and social norms influence entrepreneurial behaviour, opportunities and outcomes (Głodowska, 2019; Terjesen *et al.*, 2016). Literature shows that the CIE research focuses on identifying differences across countries in two overlapping streams: (1) entrepreneurial activities and behaviour, and (2) government programmes and policies supporting or hindering entrepreneurial activities (Cervelló-Royo *et al.*, 2020). While CIE research helps scholars to better understand the complexities of entrepreneurial activities at several levels (individual, firm and country) (Baker *et al.*, 2005; Reynolds, 1991), it also helps to understand and their impact on business success, economic development and growth (Reynolds, 1991; Wach *et al.*, 2015). Government policies, infrastructure, support systems, and the overall cultural and social environment all play critical roles in the creation and growth of businesses. In addition, the quality of entrepreneurship education and market opportunities, among other factors, determine and influence the intention to start a new business.

Understanding how and why an individual chooses to become an entrepreneur remains a key focus in entrepreneurship research (Douglas and Shepherd, 2000). As entrepreneurship is one of the most essential activities contributing to economic development, understanding what motivates people to pursue an entrepreneurial career path is both an academic and a practical concern (Moriano *et al.*, 2012). While there exist general theories and models for entrepreneurial intention (Hueso *et al.*, 2020; Ajzen, 1991), prior research has also recognised the importance of comprehending behavioural traits and drivers of intention at the macroeconomic level. Based on Reynolds *et al.* (2005), external factors supporting or encouraging entrepreneurial intentions and behaviours to start a venture vary depending on the general national framework conditions. While it is important to consider economies one at a time to discover unique features of an economy (Boudreaux *et al.*, 2019), it can be equally important to identify patterns common to a subset of economies that characterise the environmental settings within that specific country or region. In other words, comparing entrepreneurship across international settings (CIE) can be useful for understanding differences and setting forth policies and educational initiatives.

Literature shows that there are different ways to classify economies into distinct groups. For example, by using economic indicators such as the Human Development Index (HDI) (Sagar and Najam, 1998) or the UN classification of countries based on the World Economic Situation and Prospects (WESP). However, none of these classifications comprehensively provide information about economies when national policies and attitudes towards entrepreneurship are concerned. For instance, Japan is considered as one of the most developed and advanced countries by various indices. However, Japan has very low levels of entrepreneurial activity and attitudes (Honjo, 2015). In contrast, in Indonesia, a developing country with relatively stable economic growth, entrepreneurship is highly valued, and the rates of entrepreneurship are higher. In this country, there is a wide range of sociocultural diversity, and the entrepreneurial sector has been identified as a critical contributor to economic stability due to government policies and infrastructure support (Anggadwita *et al.*, 2017).

These examples highlight the need for a different strategy to group economies in a way that reliably links entrepreneurial behaviour to government policies and the socioeconomic environment. To address this issue, one possible starting point is to leverage the Global Entrepreneurship Monitor (GEM) research programme. For the past 25 years, GEM has carried out global entrepreneurship studies based on surveys and national expert data, providing a rich dataset to understand entrepreneurial behaviour and its association with the local government policies and society. In particular, the GEM data include the Entrepreneurial Framework Conditions (EFCs) (Sampaio *et al.*, 2018), which offer a selection of indicators that are considered relevant for starting and creating a new business or pursuing an entrepreneurship career path.

The importance of our research lies in introducing a novel classification that moves beyond traditional outcome measures like GDP or income level, focusing instead on contextual factors such as government support, entrepreneurial education and cultural norms, which are critical for understanding the entrepreneurial environment. While existing classifications using indicators such as HDI or the UN's WESP offer insights into economic development, these indicators often overlook the nuanced conditions that directly influence entrepreneurial activity. Moreover, existing classifications are primarily designed to evaluate broad metrics of economic and social development, yet ignore the dynamic interplay between structural and contextual factors that shape entrepreneurial ecosystems. For instance, missing is an understanding of how regulatory frameworks, market infrastructure or entrepreneurial culture collectively promote or hinder entrepreneurial behaviour within and across nations. This gap limits our ability to understand why economies with similar developmental indicators, such as Japan and Indonesia, exhibit different entrepreneurial outcomes.

By leveraging the GEM data and EFCs, we use practical and entrepreneurship-specific variables such as government policies, societal norms, and market readiness. This approach provides a deeper understanding of the nuanced and multifaceted drivers of entrepreneurial activity, advancing our ability to draw meaningful comparisons and identify patterns that conventional frameworks often fail to do. Moreover, the new proposed classification enables scholars and policymakers to better tailor strategies and interventions that are relevant to each country's unique entrepreneurial ecosystem.

The first objective of this paper is to use unsupervised machine learning, namely clustering, and apply it to EFCs data to create a grouping of economies focusing on the governments and the society's attitude towards entrepreneurship. This helps us to answer the first research question:

RQ1. How can we characterise an economy's entrepreneurial performance while accounting for the variables that shape the entrepreneurial environment?

We will demonstrate that there are two distinct groups of countries, labelled as either maturing and matured entrepreneurial economies, each with unique governmental policies, financial systems, market structures and sociocultural factors that impact entrepreneurship. Using the results of clustering approach as the starting point, the next natural step is to assess how the identified groups of countries correspond to distinct behavioural patterns in relation to entrepreneurial intention. This is also motivated by Reynolds *et al.* (2005), who stated that while business activity at the national level varies with the general national framework conditions, at the same time, entrepreneurial activity varies with the EFCs. Based on this premise, we make use of Entrepreneurial Behaviour and Attitudes (EBAs) data from GEM's data from 2018 to 2020, and apply a configurational approach, specifically, a Fuzzy-set Qualitative Comparative Analysis (fsQCA) introduced by Ragin (2009), to identify different combinations of attitude variables that help to differentiate entrepreneurial activities in different groups of countries.

Although fsQCA is not a new method, it is relatively new for entrepreneurship researchers (Douglas *et al.*, 2020; Santos *et al.*, 2021; Martínez-Cháfer *et al.*, 2023; Nikou *et al.*, 2022). In contrast to the conventional statistical methods, which seek to determine the net effects of a single variable, fsQCA highlights patterns among multiple independent variables that collectively influence a dependent variable (Kraus *et al.*, 2018; Ragin and Fiss, 2008). In other words, the outcome is realised through the combination of multiple distinct configurations of conditions leading to the same outcomes of interest, known as "equifinality". Hence, the second objective of this paper is to identify configurations of conditions leading to entrepreneurial intention among maturing and matured entrepreneurial economies via the following research question:

RQ2. What configurations of conditions of entrepreneurial attitudes explain entrepreneurial intention, and how do these configurations differ across distinct entrepreneurial economies?

This paper makes both methodological and theoretical contributions. Firstly, it presents a novel sequential methodological approach, which combines national contextual data with individual attitudes towards entrepreneurship. The sequential approach systematically analyses and comprehends the entrepreneurial landscape in diverse countries, providing researchers and policymakers with a means to identify distinctive challenges and opportunities for entrepreneurs within each context. This approach aligns with CIE theory by offering a nuanced framework that goes beyond traditional outcome measures like GDP, focusing instead on GEM data and contextual factors such as government support, entrepreneurial education and cultural norms to compare entrepreneurial activity across countries. Secondly, the paper introduces a novel classification approach that considers different entrepreneurial conditions and contextual factors influencing entrepreneurial activity. Unlike conventional approaches that rely on outcome measures such as income or economic development level, this classification approach offers a more precise depiction of the entrepreneurial landscape across different countries. Additionally, the configurational approach allows for a deeper understanding of how distinct configurations of attributes influence entrepreneurial intention in different national contexts, contributing to CIE theory to examine the conditions that help or hinder entrepreneurship across diverse economies. From a more practical level, by utilising this new approach, the study presents a more accurate understanding of the factors contributing to entrepreneurial activity and offers insights for policy development that supports entrepreneurship. Thus, we claim that this method provides a more relevant and insightful framework for assessing the level of entrepreneurial activity in various countries than previously used in GEM research and, therefore, has associated implications for policy and education.

The paper is organised as follows: in section 2, we summarise relevant literature related to the two research questions by focusing on CIE and antecedents of entrepreneurial intention. Then, we present the developed methodological approach and the data used in the empirical analysis in Section 3. The results are presented in Section 4, and discussed in Section 5, with some conclusions, limitations and future research directions offered in Section 6.

2. Literature review

This section discusses the current practices of classification of the countries based on the GEM data. Then, the CIE and other relevant theories are explained, and we present why new methodological approaches are necessary to address the key issues in traditional classification methods, especially when comparing different groups of economies. Lastly, a brief overview of entrepreneurial intention research is presented, along with its key determinants, to provide a foundation for the GEM EBAs data used in this research.

Historically, GEM grouped countries based on the level of economic development (efficiency, innovation and factor economies) and, more recently, has used the level of income (high, medium and low) (Herrington and Coduras, 2019). But these categorisations are essentially economic development outcome factors reflecting economic progress. While it is useful to compare countries based on these dimensions, we argue that grouping based on EFCs, or contextual conditions will be a more useful way to understand how context influences entrepreneurial activity (Van Burg and Romme, 2014). By dividing economies into groups (clusters), for example, based on how similar the characterising patterns are, we may then infer important structural differences on entrepreneurial behaviour across distinct groups and their relationship to the external factors. The EFCs include finance, government policy, education, research and development, infrastructure and sociocultural norms. In other words, grouping countries based on EFCs allows us to classify countries based on their level of maturity in ways they might support new venture creation.

2.1 Comparative international entrepreneurship

Multi-country entrepreneurship studies provide an understanding of the similarities and differences among countries with respect to various antecedents of entrepreneurial behaviour

(Almodóvar González *et al.*, 2020; Sá and de Pinho, 2019; Terjesen *et al.*, 2016). There are several research streams dedicated to international entrepreneurship (Wach, 2018), with CIE being one of the primary research domains in the field, combining entrepreneurship and international business (Terjesen *et al.*, 2016; Wach *et al.*, 2015). Głodowska (2019) argues that (1) institutional and cultural conditioning of entrepreneurship, (2) the operationalisation of entrepreneurship and (3) the assessment of the effects of entrepreneurship for economic growth and development are the major factors influencing a new venture creation.

In addition, a country's regulatory environment also has an impact on its entrepreneurship rate (Ghosh, 2017). Lombardi *et al.* (2017) have found that in international entrepreneurship, co-dependence of institutional and cultural practices in different countries impact the business performance. Furthermore, Jeon (2018) stated that international entrepreneurship is both contextual and situational, and in most comparative studies, the level of institutional or economic development of a country has been used as the contextual component that determines various entrepreneurial activities.

As pointed out in a study by Orobia *et al.* (2020), an institutional theory developed by North *et al.* (1990) offers a useful theoretical lens to understand the impact of external, economic and cultural factors on entrepreneurial behaviour and actions. According to the institutional theory, the fundamental political, social and legal ground rules of the society serve as the foundation for production and distribution, and organisations must adhere to them to receive support and legitimacy. This implies that in the context of entrepreneurship, the role and practices of institutions in any economy can hinder or help entrepreneurs in achieving success. In other words, the environment and context in which entrepreneurial activities and practices take place have significant impacts on them. Moreover, research has demonstrated that entrepreneurial behaviour indeed varies across different levels of EFCs (Sá and de Pinho, 2019). A commonly used source to measure environmental effects is the set of variables in the GEM data, specifically the EFCs (Valliere, 2010). These 12 variables, defined in Appendix 1 and exemplified below, are identified by experts as the most critical factors influencing the creation of new businesses in each country, either enhancing or hindering entrepreneurial activity, for example,

Taxes and bureaucracy: The extent to which public policies support entrepreneurship–taxes or regulations are either size-neutral or encourage new and SMEs.

R&D transfer: The extent to which national research and development will lead to new commercial opportunities and is available to SMEs.

Commercial and professional infrastructure: The presence of property rights, commercial, accounting and other legal and assessment services and institutions that support or promote SMEs.

Several attempts have been made to apply EFCs more systematically as a foundation for segmenting economies and connecting the resulting segments to entrepreneurial behaviour. For example, Farinha *et al.* (2020) used the EFCs and applied clustering and factor analysis and found that economies can be grouped into four clusters: (1) moderate entrepreneurial performance, (2) emerging entrepreneurial culture, (3) high entrepreneurial support and (4) advanced entrepreneurial economies. These four groups identify different levels of distinct entrepreneurial performance in terms of, e.g. innovation capabilities or business dynamics. Costa e Silva *et al.* (2021) explored how European experts' perceptions of their home countries' EFCs evolved from 2000 to 2019. The study focuses on how the grouping of countries shifts over time, emphasising the changes in experts' views on the entrepreneurial framework in Europe based on the similarities in the economic performance of European nations. By using a hierarchical clustering index, the authors found that two clusters were optimal to separate economies into distinct groups, with countries in one of the groups typically performing better on average considering all the indicators.

In this investigation and building on previous work, we begin by conducting a cluster analysis of EFCs. However, to address the research questions more thoroughly, we extend the analysis beyond this initial step. We use another important component of GEM data, which

gathers information about EBAs, and we will proceed with the fsQCA method to identify configurations of behavioural traits for each cluster. These configurations will offer an understanding of how entrepreneurial intention is the result of various attitudes and how this is different as affected by environmental conditions. A rising number of studies within the last few years focus on modelling entrepreneurial intention as the result of the non-linear, equifinal interaction of a set of, typically, behavioural and attitude-based variables (Beynon *et al.*, 2016). This perspective, termed as configurational thinking, allows researchers to discover novel insights to complement traditional approaches focusing on the assumptions of linearity and individual effect of independent variables on the outcome. In CIE research, Beynon *et al.* (2020) studied entrepreneurial intention in 59 African countries using GEM data. The authors identify five combinations of conditions providing a rich understanding of various levels of entrepreneurial activities.

2.2 Entrepreneurial intention and behaviour

There is rich literature that shows several factors, such as entrepreneurial motivation and external entrepreneurial environment (Ghosh, 2017), influence the entrepreneurial attitudes and intentions or help to explain why individuals want to become entrepreneurs (Douglas *et al.*, 2021). For example, Abbasianchavari and Moritz (2021) studied role models in an entrepreneurship context and discovered that the type of role model (who), the stage of life (when) and the context of exposure all influence entrepreneurial intentions and behaviour. Moreover, Armuña *et al.* (2020) found that entrepreneurial competencies have an equal influence on entrepreneurial intentions in both men and women, challenging the traditional assumption that women possess lower entrepreneurial intentions than men. Tekic and Tsyrenova (2024) used configurational thinking and found multiple conjunctural causations where attitudes, subjective norms, perceived behavioural control and barriers combined shape entrepreneurial intentions in different cultural settings. Yi (2021) argued that entrepreneurs need to align behaviour with dominant societal rules, beliefs and government requirements in order to acquire institutional support (e.g. public consumption habits, tax rebates and market information. Thus, entrepreneurial behaviour is anchored in and impacted by the local institutional context (Zhang *et al.*, 2017, p. 968).

Moreover, focusing on social context and its impact on entrepreneurial intention, Meoli *et al.* (2020) argued that the social context of an individual complements her or his entrepreneurial intentions. Souitaris *et al.* (2007) found that entrepreneurship programmes and education also impact entrepreneurial intention. Similarly, other work has explored intentions in regions, such as Europe (Teixeira *et al.*, 2018), where the authors found that immediate context surrounding the individual (i.e. the influence of relevance of others) and the larger context (i.e. organisational and environmental influences) moderate the relationships between entrepreneurial intention and new venture creation. Using the GEM data, Fernández *et al.* (2009) found that personal, opportunity and sociocultural perceptions do help explain entrepreneurial intention.

In the following, we discuss the theoretical foundation of the GEM data in relation to entrepreneurial attitude variables (e.g. perceived capabilities and perceived opportunity). Variables used in the GEM data are grounded in well-established theoretical foundations within entrepreneurship literature, such as the social cognitive theory (e.g. fear of failure) (Bandura, 1989), opportunity recognition theory (perceived opportunities) (Shane and Venkataraman, 2000) and theory of planned behaviour (Ajzen, 1991). These theories provide valuable insights into various aspects of entrepreneurship, including entrepreneurial attitude variables. By analysing GEM data, researchers can explore how these attitude variables differ across countries, regions and demographic groups. For example, GEM data may reveal patterns such as higher perceived opportunities in more developed economies or stronger perceived capabilities in regions with a strong entrepreneurial ecosystem. These variables are important for understanding not only the likelihood of individuals to engage in

entrepreneurship but also the barriers and enablers they perceive in their respective environments.

2.2.1 Perceived capabilities. Entrepreneurial experiences, education and training are found to influence the development of self-confidence and capability and, consequently entrepreneurial intention (Tsai *et al.*, 2016). It is possible to assume that perceived capabilities are linked to entrepreneurial self-image or social identity. As a result, some people with poor self-esteem may find it difficult to start a business, but others with more confidence may have a stronger desire to do so (Brush *et al.*, 2017; Rotefoss and Kolvereid, 2005). Tsai *et al.* (2016) found that both cognitive phenomena (perceived opportunity and perceived fear of failure) mediate perceived capability and entrepreneurial intention. Jeon (2018) also used the GEM data, including data from 30 countries and found that perceived capability influences entrepreneurial intention.

2.2.2 Perceived opportunity. Individual cognitive factors that describe a person's entrepreneurial decision process include perceived opportunity and perceived fear of failure, and both are considered to be strong predictors of entrepreneurial intention (Krueger and Dickson, 1994). Starting a business is a risky decision-making process, hence, a person's inclination to take the risk may be directly related to perceived competency. The recognition of entrepreneurial opportunities is referred to as perceived opportunity. In other words, it is possible that a person with the relevant knowledge, information, experience, know-how and skills for entrepreneurship will be more likely to recognise opportunities. As such, it can be assumed that the higher propensity of risk-taking leads to higher entrepreneurial intention (Wasdani and Mathew, 2014). Using the GEM data, Jeon (2018) noted that perceived opportunity positively and directly impacts the intention of individuals to become entrepreneurs. Moreover, Ali and Jabeen (2022) found that attitudes towards entrepreneurship in terms of opportunity perception, career choice and risk of failure also significantly affect start-up intention.

2.2.3 Fear of failure. Fear of failure is an emotional reaction linked to the decision of whether or not to perform an activity, for example, to start a new business (Cacciotti, 2014). Literature shows that fear of failure is (1) negatively related to emotions (Patzelt and Shepherd, 2011), (2) an experience of shame or humiliation because of failure (Wood *et al.*, 2013), (3) an appraisal of a person's ability to accomplish goals (Noguera *et al.*, 2013) or (4) attitudes towards risk (Koellinger *et al.*, 2013; Shinnar *et al.*, 2012). Anwar Ul Haq *et al.*, (2014) found that in China, entrepreneurial behaviour is significantly influenced by the fear of failure to engage in entrepreneurial activity.

However, the effects of perceived opportunity and fear of failure may not be the same on the intention to create a new business venture. While we can argue that perceived opportunity is expected to have a positive relationship to entrepreneurial intention, the effect of perceived failure might be negative. A person with high cognitive ability to recognise the opportunity may be willing to take risks and make use of the available opportunities, whereas a person with low confidence and competence, skill and knowledge might be less likely to have a positive attitude towards becoming an entrepreneur. In other words, fear of failure can be a factor to inhibit one's entrepreneurial tolerance of risk; hence, one is less likely to take the risk of starting a business.

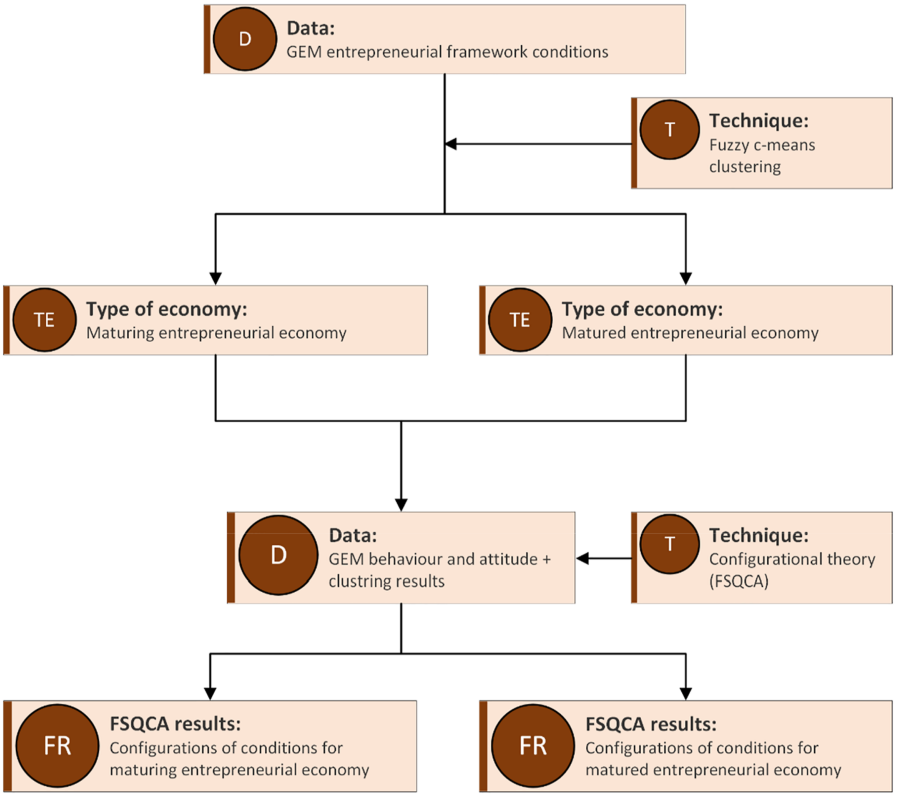
2.2.4 Career choice. Regarding career choice, contextual factors play an important role and are directly associated with how individuals assess and interpret the surrounding opportunities, resources or difficulties in the environment. Contextual factors may influence individuals to be more inclined to pursue their interests and take actions if they perceive their surroundings as supportive (Lent *et al.*, 2000). While entrepreneurial intention can be argued as inherently related to career choice, career choice itself can act as a predictor of entrepreneurial intention. For instance, Asante and Affum-Osei (2019) argue that the ability of individuals to recognise entrepreneurial opportunities influences their intention to pursue entrepreneurship, suggesting that career choices shape and reinforce entrepreneurial intentions.

2.2.5 Perceived status. Status refers to the perception of individuals, as successful entrepreneurs may receive high status. For example, Blind (2017) argued that entrepreneurial status is the actual position the entrepreneur holds, and it can be used to measure how the life of the individual has changed after entrepreneurship education (Yokoyama and Birchley, 2020). Moreover, Parker and Van Praag (2010) argued that entrepreneurship status, in general, may shape individual's occupational preferences and, therefore, their choice of behaviour.

In conclusion, variables from GEM data on EBAs will be combined with those from GEM's EFCs to conduct both cluster analysis and a configurational approach.

3. Materials and methods

In this section, we introduce the data collection and the applied methodologies and discuss how it was prepared for the analysis. The research process is depicted in Figure 1. As we reasoned above, to understand entrepreneurial activities, it is imperative to consider the social and political environment, and its supporting (hindering) impacts. However, instead of focusing on individual economies, we can identify distinct groups among them (Farinha *et al.*, 2020), which are very similar to each other in terms of the variables describing the broader contextual factors that affect entrepreneurial activities. After these groups are created, we can analyse them separately through the lens of a configurational approach to discover various ways (paths) in which behavioural and attitude variables combine to explain entrepreneurial intention.



Source(s): Authors

Figure 1. The research methodology

3.1 Data collection

The data for the analysis was obtained in May 2022 from the GEM Consortium website (https://www.gemconsortium.org/data). The data on EFCs, along with variables related to EBAs, covers 69 countries from 2018 to 2020. We selected countries for which there is data available in each of the considered years. The GEM collects information on EFCs, which are linked to entrepreneurship dynamics helping (or hindering) a new firm creation in each country. The GEM gathers this information from the National Experts Survey (NES). In NES, at least 36 carefully selected experts from each country evaluate the various EFCs, with the final value calculated as the aggregated result of their individual evaluations (https://www.gemconsortium.org/wiki/1599). The goal of this information evaluation is to get professional opinions on entrepreneurship support in their respective disciplines. In the second phase of the methodology, the configurational analysis, we make use of the data from the Adult Population Survey (APS) of GEM, which examines the traits, motivations and aspirations of individuals launching businesses, along with societal perceptions of entrepreneurship. The APS is conducted with a minimum of 2,000 adults in each economy, guaranteeing a nationally representative sample. The number of respondents varies across countries and from year to year. These two data sources, the NES and APS, capture not only business characteristics but also individuals' motivations for starting a business, the steps involved in establishing and managing a business, attitudes toward entrepreneurship and the factors that enable or hinder the creation of new businesses.

3.2 Cluster analysis

In the first step of the analysis, the GEM data of the EFCs (see Appendix 1) (e.g. Governmental Support and Policies, Basic School Entrepreneurial Education and Training and R&D Transfer) has been used to create distinct sets (clusters) of economies. Clustering is one of the central tasks in pattern recognition and machine learning and aims at partitioning a set of data points into groups of "similar" observations (Hastie *et al.*, 2009). In other words, the aim of clustering is to divide observations into disjoint groups in a way that observations in the same group are like each other but differ from observations in other groups.

As the outcome of clustering, the main expectation is to obtain disjoint groups of economies (observations) with similar framework conditions within groups. Fuzzy c-means clustering (Bezdek, 1981), is an established methodology and one of the prominent approaches in unsupervised learning. The essential idea behind fuzzy sets (i.e. degree of belonging to sets) naturally translates to clustering algorithms: elements can belong to several (overlapping) fuzzy clusters. However, it is always possible to assign each observation to one cluster based on the level of membership in different clusters. In fuzzy clustering, the fuzzy c-means (FCM) clustering algorithm (Ghosh and Dubey, 2013) is the best known and used method.

In our analysis, we have not followed the method often used in academia and practice, which classifies countries as developed and developing on the basis of their economic status, such as GDP, GNP, per-capita income or industrialisation. Instead, we used the GEM data on EFCs information such as financing for entrepreneurs, post-school entrepreneurial education and training as inputs for clustering different economies, where countries are more like each other in terms of EFCs. We argue that using such information provides a much more realistic overview of the entrepreneurial conditions in each country. To perform the analysis, we used various data manipulation and cluster analysis libraries in the Python programming language.

3.3 Configurational analysis

In the second stage of the analysis, GEM data about EBAs (e.g. perceived opportunity and perceived capability) has been used to determine multiple configurations of conditions that explain why individuals in each cluster show (high) intention to become entrepreneurs or chose entrepreneurial career paths. Theories based on the idea of (organisational) configurations are

increasingly present in many fields of study, particularly in management and business. In contrast to traditional statistical analysis-based methods, fsQCA, as a prominent example of configurational methods, enables us to capture asymmetric and equifinal relationships present in the underlying phenomenon and provide causal explanations (Ragin, 2009). While fsQCA was originally proposed in political sciences, the use of this method has rapidly increased in various disciplines, specifically entrepreneurship, in recent years (Kumar *et al.*, 2022). Literature shows that fsQCA is used to understand causal configurations of, e.g. (1) entrepreneurial intention, (2) firm performance, (3) business model innovation, (4) entrepreneurial activities and capabilities and (5) the complexity of causally relevant conditions (Douglas *et al.*, 2020; Harms *et al.*, 2009; Kraus *et al.*, 2018; Nikou *et al.*, 2019).

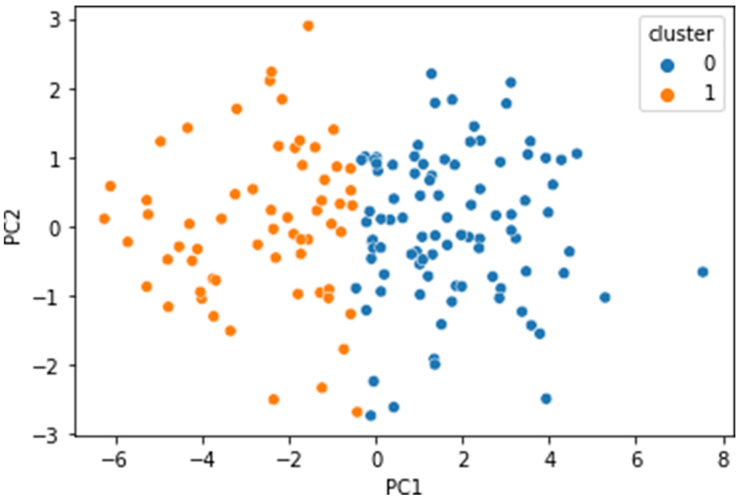
In this paper, our goal is to characterise entrepreneurial intention in terms of behavioural and attitude variables, and which configurations enable entrepreneurial activities. According to configurational thinking, we assume that an outcome will not take place until a certain set of conditions are satisfied, even though any of the given conditions alone will result in the outcome to be realised (Rihoux and Ragin, 2009). Moreover, the main advantage of using the configurational approach is the ability to capture equifinality, where different distinct coexisting explanations exist to understand any complex phenomena. This indicates that, when analysing complex phenomena, we do not assume that there is a unique explanation in terms of some characterising variables that describe why an individual chooses to become an entrepreneur, but distinct and rigour explanations exist that relate to different behaviours and attitudes.

The process of using fsQCA requires several steps, from data calibration to truth table analysis (Rihoux and Ragin, 2009), which we will describe in the next section. In the analysis, we used the QCA library (Dusa, 2018) from the statistical programming language R to run fsQCA and obtain the configurations of conditions.

4. Data analysis results

4.1 Clustering results

As it can be seen in Figure 2, the results of cluster analysis revealed two optimal clusters, which are depicted in two dimensions using the first two components of the results of principal component



Source(s): Authors

Figure 2. Clustering along two main principal components

analysis. The two clusters are clearly separable, almost linearly, without any overlap. To gain an understanding of differences between the two clusters, we have calculated the centroids, i.e. the mean values of the variables for the two clusters as shown in Table 1. In terms of EFCs, i.e. different factors that facilitate the creation of a new business (e.g. government programmes and policies and commercial infrastructure), we can see that cluster 2 (as listed below) includes countries with more entrepreneur-friendly environments. In every single condition, the mean values are higher in cluster 2, and in almost all the cases, the difference is more than one standard deviation. The list of countries in the two clusters are shown below, and they are labelled as cluster one (maturing entrepreneurial economics) and cluster 2 (matured entrepreneurial economics).

As we expected and exemplified before, countries such as Japan, that would be classified as developed in general economic considerations, are not one of the matured economies in terms of the entrepreneurial environment. On the other hand, there are countries, such as Indonesia, which are considered developing economies on the basis of their economic status such as GDP but offer a very matured environment for individuals starting a business. These countries have been grouped in a cluster termed as matured entrepreneurial economies.

Cluster 1 (maturing entrepreneurial economics): Angola, Argentina, Armenia, Belarus, Brazil, Bulgaria, Burkina Faso, Chile, Colombia, Croatia, Cyprus, Dominican Republic, Ecuador, Egypt, Guatemala, Greece, Iran, Italy, Japan, Kazakhstan, Kuwait, Latvia, Lebanon, Madagascar, Mexico, Morocco, Mozambique, North Macedonia, Oman, Pakistan, Panama, Paraguay, Peru, Poland, Portugal, Puerto Rico, Russia, Slovakia, Slovenia, South Africa, Sudan, Sweden, Togo, Turkey and Uruguay.

Cluster 2 (matured entrepreneurial economics): Australia, Austria, Canada, China, France, Germany, India, Indonesia, Ireland, Israel, Jordan, Luxembourg, Netherlands, Norway, Qatar, Saudi Arabia, South Korea, Spain, Switzerland, Taiwan, Thailand, United Arab Emirates, United Kingdom and United States.

In cluster two, there are several countries, including China, India, Indonesia, Israel, Jordan, Qatar, Saudi Arabia, South Korea, Taiwan, Thailand and the United Arab Emirates, which are traditionally classified as developing countries according to the UN list. However, unlike the UN classification, this research proposes a new clustering approach that categorises these countries as matured entrepreneurial economies, based on EFC data.

4.2 FsQCA analysis

In the following, we present the results of the fsQCA analysis. As it was established in the previous section, we can clearly separate economies based on EFCs into two distinct groups.

Table 1. Clustering and GEM entrepreneurial framework conditions

EFCs variables	Cluster 1 Mean	SD	Cluster 2 Mean	SD	Full data Mean	SD
Financing	2.46	0.40	3.11	0.30	2.72	0.48
Government policies	2.39	0.44	3.11	0.42	2.69	0.57
Taxes	2.22	0.40	2.93	0.36	2.51	0.52
Government programmes	2.45	0.38	3.24	0.33	2.77	0.53
Basic education	1.85	0.29	2.53	0.51	2.13	0.51
Post education	2.71	0.37	3.17	0.32	2.90	0.42
R&D transfer	2.23	0.33	2.94	0.31	2.52	0.47
Commercial infrastructure	2.81	0.30	3.31	0.28	3.01	0.38
Market dynamics	3.00	0.45	3.23	0.52	3.10	0.49
Market openness	2.43	0.28	3.02	0.29	2.67	0.41
Services infrastructure	3.54	0.48	3.99	0.34	3.73	0.48
Social norms	2.74	0.44	3.39	0.43	3.00	0.54

Source(s): Authors

The next goal was to identify the differences across economies in these two groups in terms of typical behavioural patterns of entrepreneurs. In the following, we present the results of the configurational analysis separately for the two groups and identify the differences in combinations of entrepreneurial attitude variables that explain entrepreneurial intentions. The data is used from GEM's EBAs indicators, with the definition of variables presented in Appendix 2, with the examples listed below:

Perceived opportunities (OPP): Percentage of 18–64 population who see good opportunities to start a firm in the area where they live.

Perceived capabilities (CAP): Percentage of 18–64 population who believe they have the required skills and knowledge to start a business.

4.3 Calibration

One of the most important steps in fsQCA analysis is transforming the original data into fuzzy sets, a procedure known as data calibration. There are two main approaches for calibration: direct or indirect. According to Pappas and Woodside (2021), while in direct calibration, three breakpoints need to be identified to define the level of membership in the fuzzy set for each case; in the indirect method, data transformation is based on qualitative assessments. In most situations, direct calibration is recommended, as it allows for more rigorous analysis, reproducibility and a validation process. In this study, the thresholds of the direct calibration are determined using statistical measures (Pappas and Woodside, 2021) to establish a transformation of the original data values for a specific variable into fuzzy membership values in the range [0, 1].

To do so, we specified three threshold values: (1) non-membership (transformed value 0), (2) cross-over point (transformed value 0.5) and (3) full membership (transformed value 1). These values express what we would consider as the variable fully absent, ambiguous, or fully present. For example, taking the case of the variable perceived opportunities, if all (none of) the respondents in a country see good opportunities in starting a firm, then this country will be assigned the membership value 1 (0). In this study, we utilised direct calibration and used 5%, 50% and 95% quantiles of the variables from GEM as the threshold values (Pappas and Woodside, 2021). The calibration thresholds for the variables are presented in Table 2. The membership function for the intermediate points is then constructed as an s-shaped (logistic) function using the calibrate () tool from the QCA package in R (Dusa, 2018). We note here that all the variables in the original data represent percentages of the population, and thus, the possible original range is the [0, 100] interval.

4.4 Necessity analysis

The next step of the fsQCA analysis, necessity analysis, was conducted with the goal of identifying any possible necessary conditions that are associated with the presence of the outcome (Schneider and Wagemann, 2012). In this research setting, it implies that we aim to find any entrepreneurial attribute variable that, when held by a large (or small) proportion of

Table 2. Calibration thresholds

Entrepreneurial attitude variables	5%	50%	95%
Perceived opportunities (OPP)	19.29	47.20	75.67
Perceived capabilities (CAP)	29.77	59.40	78.70
Fear of failure (FEAR)	20.57	40.00	54.26
Status (STATUS)	49.02	72.70	86.71
Career choice (CAREER)	30.09	67.00	91.06
Entrepreneurial intention (INT)	4.68	26.10	61.73

Source(s): Authors

the entrepreneurs in an economy, will (almost) always be associated with a high level of entrepreneurial intention. The results of the analysis, the consistency and coverage values, are presented in Table 3. The necessity relation was tested for the presence/high level (INT) and absence/low level (int) of entrepreneurial intention with both the presence and absence of the EBA variables. All values were calculated separately for the two clusters according to our proposed methodology.

Consistency captures the strength of the tested relationship, i.e., the higher the value is (with the maximum being 1), the more a condition (variable) is associated with the presence of an outcome variable. According to the general recommendation provided by Ragin (2009), consistency values higher than 0.9 indicate the presence of a necessary condition. To offer a complementary measure, coverage captures the importance of the relationship; the higher the number of cases that reflect the tested relationship, the higher the corresponding coverage value is.

As shown in Table 3, there is no single consistency value above 0.9, indicating that we cannot identify individual conditions that are necessary to achieve high or low levels of entrepreneurial intention in an economy. This is in line with general research into entrepreneurial intention, characterising it as a complex phenomenon that is dependent on various external factors and the individual attitudes and values of entrepreneurs. We can still note that the highest consistency value, 0.84, is observed for the relationship between perceived capabilities and entrepreneurial intention. This indicates that, while the critical threshold is not reached, there is an observable connection, and there are not many countries in which there is a general high level of entrepreneurial intention in the population without a high level of perceived capabilities. As we will see in the next step of the analysis, i.e. sufficiency analysis, this is the only observable common behavioural pattern across economies from the two constructed clusters.

Additionally, we can observe that, except for fear of failure, a higher level of behavioural variables is always associated with a higher level of intention, according to our expectations. In a general summary, while the results show some high consistency values, still below the recommended threshold for necessity relationships, there is no entrepreneurial attitude variable that can be identified as a necessary pre-condition for entrepreneurial intention.

4.5 Sufficiency analysis

The sufficiency analysis is the main step in obtaining the relevant configurations of conditions (pathways to the outcome of interest). According to the proposed research methodology, we perform sufficiency analysis separately for the two previously created clusters. Based on the

Table 3. The results of necessity analysis

	Cluster 1 (maturing)				Cluster 2 (mature)			
	INT		~INT		INT		~INT	
	Cons	Cov	Cons	Cov	Cons	Cov	Cons	Cov
OPP	0.79	0.79	0.55	0.68	0.73	0.76	0.59	0.70
opp	0.52	0.69	0.74	0.83	0.57	0.71	0.71	0.80
CAP	0.84	0.81	0.51	0.64	0.72	0.82	0.49	0.71
cap	0.46	0.67	0.78	0.87	0.56	0.64	0.78	0.79
FEAR	0.60	0.70	0.66	0.75	0.69	0.79	0.58	0.61
fear	0.66	0.74	0.59	0.72	0.62	0.58	0.72	0.76
STATUS	0.75	0.76	0.55	0.67	0.71	0.77	0.57	0.71
status	0.52	0.69	0.70	0.81	0.58	0.69	0.71	0.78
CAREER	0.79	0.76	0.58	0.66	0.74	0.83	0.51	0.71
career	0.51	0.71	0.71	0.84	0.57	0.66	0.78	0.79

Source(s): Authors

foundations of comparative entrepreneurship research and the theoretical lens of institutional theory, we expect there will be possible different configurations of conditions regarding the attitude variables in the two clusters that explain entrepreneurial intention in various economies.

To perform sufficiency analysis, a truth table of the configurations present in the data needs to be created. In this analysis, we had to construct two tables for the two clusters. In sufficiency analysis, configurations that frequently appear in the data may be used.

The frequency threshold in this case is set as 2 for both clusters, which corresponds to a typical threshold for data sets with the current size (less than 100 but more than a few dozen observations with $2^5 = 32$ possible configurations). The selection of a frequency threshold in fsQCA is an important step to ensure the robustness and relevance of the analysis, as it directly influences the inclusion of cases in the truth table. Typically, a frequency threshold is chosen based on both theoretical considerations and empirical characteristics of the dataset, such as the distribution of case frequencies across configurations. The selection of a frequency threshold of 2 in fsQCA was guided by the need to balance empirical rigour and case representativeness. Configurations with a frequency of 1 were excluded to minimise the impact of unique or isolated cases while still capturing meaningful patterns in the dataset. This approach aligns with established practices in fsQCA research (Ragin, 2009; Schneider and Wagemann, 2012) and is appropriate for moderate-sized datasets where a threshold of 1 may overemphasise idiosyncratic cases. Higher thresholds, such as 3 or 4, were also tested, but we found the result to be overly restrictive and excluding theoretically important configurations. Thus, a threshold of 2 ensures robust and reliable findings while maintaining relevance to the study's context.

In the next step, we assign a label to each configuration indicating whether it corresponds to the presence or absence of entrepreneurial intention. This can be done using the measure of consistency (Ragin, 2009) that captures the extent to which entrepreneurial intention is present whenever a specific configuration occurs in a data point. In the current analysis, we set the consistency threshold to 0.75 (Ragin, 2009). Moreover, the choice to use parsimonious solutions in our fsQCA analysis was driven by considerations of methodological concerns and recent critical evaluations of solution types. Recent studies, such as those by Thiem (2022) and Baumgartner and Thiem (2020), have demonstrated that intermediate and complex solutions in fsQCA often fail key methodological tests, particularly regarding consistency and robustness. These findings suggest that such solutions may introduce unwarranted assumptions or dependencies, potentially leading to biased or less reliable results. In contrast, parsimonious solutions are less prone to these issues, as they rely on a more minimal set of causal combinations that meet the necessary criteria for sufficiency and coverage. While we recognise that intermediate and complex solutions are more commonly used in fsQCA research (Bouwman *et al*., 2019; Nikou *et al.*, 2023) because they allow for greater interpretive nuance and incorporate theoretical expectations more explicitly. However, our analysis focuses on methodological correctness and the robustness of findings, which parsimonious solutions are better suited to achieve. Regarding the concern that some solutions include single factors, it is important to note that fsQCA identifies causal configurations that meet the threshold for sufficiency, whether they involve single factors or combinations (Ragin and Fiss, 2008; Schneider and Wagemann, 2012). While single-factor solutions may appear to oversimplify causality, their inclusion indicates their sufficiency in the specific context of our dataset.

In Table 4, (●) and (○) stand for the presence and absence of a condition in a configuration. As can be observed in Table 4, the analysis resulted in four and three sufficient configurations in the two clusters, respectively. This shows that there is a diverse set of reasons, as captured in terms of behavioural attributes, that explain why individuals show high intention to become entrepreneurs. Moreover, most of the configurations are different when the two clusters, matured and maturing economies, are considered, which justifies the choice of considering these two sets of economies separately for added insights. By looking at the configurations, we

Table 4. The results of sufficiency analysis

Conditions	Cluster 1 (Maturing)				Cluster 2 (Matured)		
	S1	S2	S3	S4	S1	S2	S3
Perceived opportunity		●					
Perceived capability	●				●		
Fear of failure			○	○		●	
Perceived status		●	●			●	
Career choice				●			●
Consistency	0.79	0.80	0.78	0.81	0.75	0.77	0.81
Coverage	0.84	0.63	0.53	0.55	0.72	0.74	0.55

Source(s): Authors

can observe some interesting patterns that connect pairs of configurations from the two solution sets.

First, Solution 1, the only common solution for the two clusters, indicates that the presence of perceived capabilities leads to a high level of entrepreneurial intention (Tsai *et al.*, 2016; von Arnim and Mrozewski, 2020) in matured as well as maturing entrepreneurial economies. This is something that was expected based on the results of the necessity analysis. Nevertheless, this finding highlights the observation that individuals who believe that they have the required skills to start a business will have high entrepreneurial intention irrespective of the external environment in the economy they operate in. The second solution in cluster 1 highlights the important role of individuals' perception of starting a business as a good opportunity (Dehghanpour Farashah, 2013; Teixeira *et al.*, 2018). In maturing entrepreneurial economies, opportunity alone is not sufficient unless individuals perceive that success as entrepreneurs will also bring high status. Further, in maturing economies, not all entrepreneurship is opportunity-driven, it may be driven by the lack of no other possibility for employment. In matured economies, a corresponding configuration was identified, recognising that perceived opportunity alone is sufficient to achieve a high level of entrepreneurial intention. However, as the result of low consistency value (0.7), this configuration was omitted from further analysis and discussion.

Perceived status plays a significant role in Solution 3 for cluster 1 and Solution 2 for cluster 2 when combined with the variable of fear of failure (Cacciotti *et al.*, 2016). It is intuitively understandable that in maturing economies, the perception of high status among entrepreneurs is sufficient when entrepreneurs have no fear of failing (absence of this condition) in their businesses. Interestingly, in mature economies, it is precisely the high level of fear (presence of this condition) among individuals that leads to a significant number of them becoming entrepreneurs. A plausible explanation for this configuration could be related to gender roles and interactions. Traditionally, females tend to have higher levels of fear of failure, particularly in developed countries (Duong and Vu, 2024). Finally, Solution 4 in cluster 1 and Solution 3 in cluster 2 highlight the important role of individuals feeling that starting a business is a desirable career choice (Pihie and Akmaliah, 2009). While it is sufficient to achieve a high level of intention in mature entrepreneurial economies, in maturing economies, it needs to be combined with individuals who do not have a fear of failure.

As recommended, especially in recent studies (Pappas and Woodside, 2021), we also performed a sensitivity analysis with possible consistency threshold values. In the sensitivity analysis, we focused on testing the consistency value by examining changes within a ± 0.05 range. Our findings showed that the configuration involving perceived capabilities (S1) consistently remained part of the solution, regardless of threshold adjustments, highlighting its strength. In Cluster 1, the combination of lack of fear of failure and career choice (S3) held stable across most of the range (0.72–0.79); at higher thresholds, perceived status was added, creating a solution that blended elements of S3 and S4. For Cluster 2, lower consistency values

allowed individual variables to suffice in achieving the outcome, whereas for higher values consistently, the configuration of fear of failure and perceived status (S2) remained a solution across all tested thresholds.

5. Discussion

This study investigates the impact of contextual factors on entrepreneurial activity, drawing on GEM's data about CIEs, institutional theory and entrepreneurial intention research. It critiques country comparisons based solely on economic outcomes, arguing for the importance of contextual influences. Using GEM data from 2018 to 2020, the study introduces a two-stage method: cluster analysis identifies two groups of economies (matured and maturing), and a configurational approach (fsQCA) explores the combinations of factors that foster entrepreneurial intention in these contexts. The findings show that matured economies have higher government support and entrepreneurial infrastructure, while maturing economies exhibit higher entrepreneurial intention despite lower GDP.

In the following, we will discuss how the proposed methodology presented in Figure 1, combining the clustering of economies with fsQCA, can help in discovering novel insights.

5.1 Segmentation of countries based on the entrepreneurial framework conditions

Grounded in the principles of CIE, we argue that segmenting economies based on EFCs can provide more nuanced insights into entrepreneurial activities within a group of economies. While there are contributions following this line of thinking, they typically utilise a segmentation that is based on some general economic indicators, which are often outcomes of economic development (Linardi and Costa, 2022). For example, the United Nations (UN) classifies countries based on their development and advancement from various aspects (Nielsen, 2011). The UN classification method uses the HDI statistics to rank countries based on their development, and those that have advanced in terms of economic development and having, e.g. high standard of living, high Gross Domestic Product (GDP), high child welfare, advanced healthcare systems and high industrialisation are considered as developed countries (Nielsen, 2013). For example, Australia, Canada, France, Germany, Italy, Japan, Norway, Sweden, Switzerland and the United States are known as developed countries. Developing countries are countries that are still in the early stages of economic development and have a low per-capita GDP. A low HDI indicates that a country has a low GDP, a high illiteracy rate and unequal income distribution (Acs *et al.*, 2008). For example, according to the UN classification, Colombia, India, Kenya, Pakistan, Sri Lanka, Thailand and Turkey are classified as developing countries.

However, as demonstrated in this paper, a more insightful and relevant understanding can be achieved by utilising various indicator measures, such as GEM's classification indicators based on EFCs. These indicators focus on environmental conditions that directly influence EBAs, leading to a different segmentation of economies. For example, Japan is classified as a developed country according to the UN, but our clustering results showed that it can be classified as a maturing entrepreneurial economy based on, e.g. low rate of governmental support and policies as well as internal market openness. Similarly, while India is classified based on the UN indicator as a developing economy, clustering results showed that the label matured economy is more fitting when the context with respect to entrepreneurship is considered (Abhyankar, 2014).

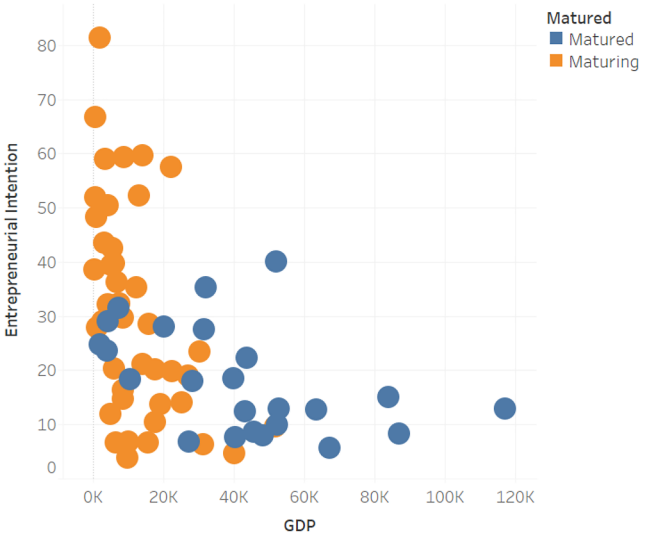
As the comparison of the resulting clusters showed, we can clearly differentiate economies and segment them into two groups such that economies in the same group offer a similar environment for (prospective) entrepreneurs. The centroids of the clusters showed clear differences in terms of all the environmental conditions, governmental and social equally, indicating a potentially useful segmentation approach. These results are supported when we consider the actual total early-stage entrepreneurial activity in these two countries from the

recent GEM report; Japan's TEA rate is just over 5%, while India's is over 12% (Hill *et al.*, 2023).

Based on the clustering results presented, one can suggest that entrepreneurship researchers should concentrate on a wide variety of factors in understanding what influences entrepreneurial activities and how they differ across economies instead of relying mainly on economic indicators, such as the ones included in the UN's HDI indicators. In Japan, for example, entrepreneurial conditions, particularly those that promote and stimulate the formation of new businesses (e.g. government supports and policies or fundamental entrepreneurial education and training), play a minor or insignificant role. Okamuro *et al.* (2019) observed that the Japanese government plays a limited role in terms of total RD expenditures and public subsidies for business RD. This is mainly because most Japanese companies fund the majority of their RD activities themselves. This situation applies to many countries classified as maturing entrepreneurial economies. As the results of the subsequent configurational analysis have shown, these differences in the environment clearly result in different motivations on why individuals plan to become entrepreneurs.

A noteworthy trend is depicted in Figure 3. We compared the results based on the entrepreneurial intention vs. GDP for maturing and matured entrepreneurial economies. The results show that the relationship between a country's GDP per capita and the intention to become an entrepreneur is inversely proportional; as the GDP per capita decreases, the entrepreneurial intention tends to increase. Conversely, countries with high entrepreneurial intentions are more likely to be in a maturing stage, while those with high GDP tend to be matured. The classification becomes more nuanced when both entrepreneurial intention and GDP fall below average.

This observable inverse relationship between GDP per capita and entrepreneurial intentions can be connected to the idea of necessity versus opportunity-driven entrepreneurship (Fairlie and Fossen, 2020). In economies with lower GDP per capita, individuals often face limited employment opportunities. As a result, entrepreneurship may be seen more as a necessity to generate income and sustain livelihoods. In these contexts, people may pursue entrepreneurship not because of favourable market conditions or extensive



Source(s): United Nations

Figure 3. Entrepreneurial intention vs GDP for maturing and matured economies

support structures but as a means of economic survival and self-reliance. This contrasts with opportunity-driven entrepreneurship typically observed in wealthier economies, where higher GDP per capita is often associated with stronger infrastructure, better access to capital, and more robust employment options. Consequently, in lower-GDP economies, entrepreneurial intentions rise as individuals are compelled to create their own economic opportunities, aligning with the necessity-driven entrepreneurship model.

5.2 Entrepreneurial intention: matured vs maturing entrepreneurial economies

For both matured and maturing entrepreneurial economics, the fsQCA analysis revealed that perceived capability is a sufficient condition leading to the creation of new business (see solution one in Table 4). In other words, it can be argued that entrepreneurial experiences, education, and training can facilitate the development of self-confidence and, consequently, entrepreneurial capability. In maturing entrepreneurial economics, the fsQCA analysis showed that recognising opportunities for starting a new firm has an impact on the intention to pursue an entrepreneurship career. It is reasonable to assume that possessing the necessary knowledge, information, education and skills for entrepreneurship will lead to more people taking advantage of existing entrepreneurial opportunities in this cluster. As there is limited or maybe insufficient state support for entrepreneurial activity in countries in cluster one, entrepreneurship status may influence individuals' occupational preferences and, consequently, their entrepreneurial behaviour (Parker and Van Praag, 2010).

Furthermore, as presented in Table 4, the fsQCA results revealed that distinct factors lead to entrepreneurial intention. For example, for cluster one (maturing entrepreneurial economics), the presence of positive attitudes about entrepreneurial career status and the absence of fear of failure determine the outcome, while career choice, which is related to contextual factors, is the only condition for stimulating entrepreneurial intention in countries grouped in cluster two (matured entrepreneurial economics). In other words, career choice as a contextual factor has a direct impact on how people analyse and perceive the environment's opportunities, resources, and barriers. Based on the last configuration, the presence of a career choice and the absence of fear are conditions contributing to entrepreneurial intention in countries in cluster one. However, entrepreneurial intention is triggered by positive attitudes towards entrepreneurial career status alone for countries in cluster two.

The proposed classification framework offers a new perspective for analysing and grouping economies, thereby advancing knowledge in the field. Furthermore, the configurations identified in the analysis validate the inclusion of GEM variables and support earlier findings. For example, similarly to Tsai *et al.* (2016), our results indicate that perceived capabilities are linked to high entrepreneurial intentions. While their study focuses only on two countries classified as matured in our study (China and Taiwan), we identified support for this relationship in a larger sample, and both for maturing and matured economies. Our results related to perceived opportunity are similar to the findings by Duong *et al.* (2024). Based on data from university students in Vietnam (a country not included in our study), they find that perceived opportunity does not directly influence entrepreneurial intention, but its influence on intention was mediated by self-efficacy and career interest. Our analysis confirms a very weak connection in matured economies and a strong relationship in maturing countries when perceived opportunity is combined with perceived status.

5.3 Limitations

The results of this study are subject to several limitations. First, the dataset constrains the study's generalisability. Our dataset is comprised of information about 69 economies collected from 2018 to 2020 from the GEM data. For this reason, we cannot claim the results of the analysis to be applicable to other economies or that the results will hold if longer timeframes are considered. The evolving participation of countries in the GEM study further suggests that differing groupings might yield varied results. However, the proposed methodological

approach is not constrained by the size of data or timeframe as the steps of the analysis as depicted in Figure 1.

Second, regarding the specific methodology applied, the choice of clustering technique poses a methodological limitation. For different datasets, clustering may result in a higher number of groups. There are numerous alternative methods that can be used for this purpose, such as the traditional k-means clustering or more advanced methods such as Density-Based Spatial Clustering of Applications with Noise (DBSCAN). Making use of a different technique in clustering may result in a different division of economies in clusters, but the analysis would still progress accordingly by performing fsQCA for the resulting clusters.

Third, the scope of the study is also shaped by the selected GEM variables. While the set of variables capturing external factors for starting a business in GEM is established based on thorough research, there is always a possibility that other factors need to be considered to obtain a more refined view of entrepreneurship-related policies, education and social norms in different economies. Finally, there are numerous other dimensions of behavioural attributes that could be considered as a possible antecedent condition of entrepreneurial intention, such as innovativeness, motivation or gender, that could be considered in future research.

6. Conclusions

Drawing from the premises of CIE, institutional theory and research on entrepreneurial intentions, we argue that country comparisons are most often based on outcome measures such as income and level of economic development. As a result, the ability to compare the relative influence of contextual factors on entrepreneurial activity is limited.

The paper makes significant contributions by introducing an innovative methodological framework that merges clustering with fsQCA to classify economies based on EFCs. This approach moves beyond conventional GDP or income-based classifications, aligning with CIE theory. The paper enhances understanding by showing how contextual factors like government policies and entrepreneurial education shape entrepreneurial behaviour across different economic contexts. The theoretical aspect lies in its application of configurational thinking, emphasising equifinality and complex causation, which provides deeper insights into how various combinations of entrepreneurial attributes interact to foster entrepreneurial intentions in distinct economic environments.

Moreover, we argue that there is a clear connection between the level of support for starting a business in a country and what (configurations of) attributes will contribute to individuals willing to start a new business. To address this complex issue, we used data from the GEM studies from 2018 to 2020 and developed a novel methodological approach that shed light on these complex relationships in a two-stage process.

In the first stage, we utilised information from the EFCs in a cluster analysis and found that there are two distinct (i.e. matured and maturing) groups of economies when the level of support for entrepreneurial activities is considered. In matured entrepreneurial economies, there is a higher level of governmental support, entrepreneurial education, related infrastructure, and more encouraging cultural norms in contrast to maturing entrepreneurial economies.

In the second stage, we applied a configurational approach, i.e. fsQCA, and showed that our proposed approach for the division of economies can help us to identify what combinations of entrepreneurial attributes will lead to high levels of entrepreneurial intention in more or less supportive environments. As a result, we have answered the research questions, by showing that we can classify economies based on variables that shape the entrepreneurial environment (RQ1), and this division of countries is meaningful in the sense that there is a distinction across the resulting groups of economies in how entrepreneurial attributes work together to achieve high level of intention to start a business (RQ2).

We position our paper within the emerging field of CIE, which is a critical area of study in entrepreneurship and international business. Research in CIE explores the similarities and

differences in entrepreneurial activity across countries to better understand how entrepreneurial activity contributes to economic development and prosperity. Studies in CIE examine various factors that affect entrepreneurship in different countries, including culture, institutional environment and economic policies. As such, contributions to this field help to develop better theories that explain the conditions that help or hinder entrepreneurial activity in different countries.

This paper contributes to the literature by introducing a novel approach that improves traditional methods for categorising countries, which primarily rely on outcome measures such as GDP per capita and the HDI. While GDP per capita and HDI are widely used to classify economies, they fail to measure the structure of the economy and account for government support and policies for entrepreneurship activities in each country. As such, the clustering performed in this paper fundamentally differs from and improves the traditional approaches by considering entrepreneurial attitude variables such as government support and policies for entrepreneurship activities.

The clustering method and further analysis using the configurational thinking method (i.e. fsQCA) enabled us to identify fundamental differences in entrepreneurial activity across countries and cluster them based on their level of economic development as matured or maturing. Our approach contributes to the field by providing a more comprehensive understanding of the similarities and differences in entrepreneurial activity across countries. This result can help scholars develop better theories to explain the conditions that help or hinder entrepreneurship. Furthermore, cross-country studies can identify government policies and programmes that best support entrepreneurial efforts and desired outcomes in terms of innovation and growth in different national contexts.

6.1 Theoretical contributions

Theoretically, the findings of this research contribute to creating new knowledge by expanding the application of configurational thinking within CIE. By integrating clustering with fsQCA, the research shifts the focus from traditional linear and net-effects models to a more holistic view that embraces equifinality and complex causation. This approach allows for a deeper examination of how various EFCs and individual attitudes interact to influence entrepreneurial intentions across different economic contexts. The study challenges conventional GDP-based classifications and enriches the current theoretical understanding by demonstrating that entrepreneurial behaviour results from multiple, distinct configurations of conditions rather than isolated factors. This contribution supports a more comprehensive understanding of entrepreneurship that acknowledges the dynamic interplay of contextual and individual elements, advancing the theoretical framework within the field.

Moreover, by distinguishing between matured and maturing entrepreneurial economies, the study presents a novel framework for understanding how entrepreneurial motivations differ across economic environments. By making use of information about various contextual factors, such as policies related to entrepreneurship, education and social norms among others, we find two distinct groups of economies with clear differences in the factors hindering or encouraging entrepreneurial activities across these groups. The proposed classification approach represents a superior methodological framework for investigating entrepreneurial behaviour and intention within individual countries. By incorporating contextual factors such as governmental support, policy landscape, entrepreneurial education and training, it offers a more nuanced and in-depth comprehension of the challenges and opportunities confronting entrepreneurs across diverse economies. Furthermore, we established an inverse relationship between a country's GDP per capita and the intention to become an entrepreneur (see Figure 3). As we reasoned, this confirms the idea of differentiating countries based on necessity versus opportunity-driven entrepreneurship.

Policymakers and researchers can tailor their interventions and recommendations to cater to the unique needs and attributes of each economy instead of relying on a uniform approach.

Furthermore, the inclusion of information regarding entrepreneurship-related policies, education initiatives and social norms within this classification approach yields a comprehensive understanding of the multifaceted determinants influencing entrepreneurial activity. As a result, policymakers and researchers are empowered to devise interventions that address multiple facets of the entrepreneurial ecosystem, leading to more effective and sustainable outcomes.

In summary, the classification approach presented in this study serves as a valuable instrument for the examination of entrepreneurship, affording a more thorough and holistic understanding of the entrepreneurial ecosystem within various economies. Ultimately, it contributes to enhanced policy formulation and research outcomes in this domain.

Second, by looking at entrepreneurial characteristics within the derived groups, we identified common attitudes and behavioural patterns that, when present along with the environment that is unique to the groups, will result in a high level of entrepreneurial intention. The findings support previous research (e.g. Fernández *et al.*, 2009; Liñán *et al.*, 2011; Liñán *et al.*, 2013; Souitaris *et al.*, 2007) and provide new knowledge to the field of entrepreneurship research. The analysis of prevalent attitudes and behavioural patterns exhibited by entrepreneurs within the identified clusters yields invaluable insights into the determinants of entrepreneurial intention. By examining these attitudes and patterns alongside the distinctive contextual factors' characteristic of each cluster, scholars and policymakers can acquire a more sophisticated understanding of the intricate interplay that propels entrepreneurial activity. Consequently, this enhanced understanding can inform the development of more efficacious policies aimed at fostering entrepreneurship. Furthermore, this research offers a fresh perspective on the distinguishing characteristics of successful entrepreneurs through the identification of these patterns and attitudes. Such insights can guide the design of educational and training programmes aimed at nurturing these traits, thereby augmenting the prospects of entrepreneurial achievement.

6.2 Practical implications

The results contribute practically to creating new knowledge in the field of entrepreneurship by presenting a novel methodological framework. This new approach enriches the literature by offering a more nuanced understanding of how contextual factors impact entrepreneurial behaviour and intentions. It provides practical insights for policymakers by identifying the different combinations of conditions that lead to entrepreneurial success in distinct economic settings. This tailored analysis allows for the development of targeted strategies that better support entrepreneurs based on their specific economic environment, addressing gaps in existing literature that often overlook the joint influence of multiple factors on entrepreneurship.

Specifically, building on RQ1, the results of the research suggest that characterising entrepreneurial performance through the lens of maturity in framework conditions offers a practical roadmap for policymakers. Tailoring support mechanisms based on a country's entrepreneurial maturity level can allow policymakers to address the specific barriers or enablers relevant to each cluster. In response to RQ2, the study reveals that distinct configurations of entrepreneurial attitudes, such as the impact of perceived capabilities and fear of failure, drive intentions differently across clusters. This insight suggests that intervention strategies should be attuned to these nuanced configurations. For example, initiatives that mitigate the fear of failure could be more effective in matured economies, while enhancing perceived status and career desirability may better encourage entrepreneurial activity in maturing economies. Such differentiated approaches ensure that policies are both aligned with the developmental context and in line with the specific psychological drivers that foster entrepreneurial intentions across varied economies.

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Appendix 1

Entrepreneurial framework conditions (EFCs): definition of variables used in the study

Financing for entrepreneurs: The availability of financial resources, equity and debt for small and medium enterprises (SMEs) (including grants and subsidies).

Governmental support and policies: The extent to which public policies support entrepreneurship – entrepreneurship as a relevant economic issue.

Taxes and bureaucracy: The extent to which public policies support entrepreneurship – taxes or regulations are either size-neutral or encourage new and SMEs.

Governmental programmes: The presence and quality of programs directly assisting SMEs at all levels of government (national, regional and municipal).

Basic school entrepreneurial education and training: The extent to which training in creating or managing SMEs is incorporated within the education and training system at primary and secondary levels.

Post-school entrepreneurial education and training: The extent to which training in creating or managing SMEs is incorporated within the education and training system in higher education such as vocational, college, business schools, etc.

R&D transfer: The extent to which national research and development will lead to new commercial opportunities and is available to SMEs.

Commercial and professional infrastructure: The presence of property rights, commercial, accounting, and other legal and assessment services and institutions that support or promote SMEs.

Internal market dynamics: The level of change in markets from year to year.

Internal market openness: The extent to which new firms are free to enter existing markets.

Physical and services infrastructure: Ease of access to physical resources, communication, utilities, transportation, land or space, at a price that does not discriminate against SMEs.

Cultural and social norms: The extent to which social and cultural norms encourage or allow actions leading to new business methods or activities that can potentially increase personal wealth and income.

Appendix 2

Entrepreneurial attitude variables

Perceived opportunities (OPP): Percentage of 18–64 population who see good opportunities to start a firm in the area where they live.

Perceived capabilities (CAP): Percentage of 18–64 population who believe they have the required skills and knowledge to start a business.

Fear of failure (FEAR): Percentage of the 18–64 population who agree that they see good opportunities but would not start a business for fear it might fail. NOTE: This is a percentage of those seeing good opportunities, and not the total adult population.

Status (STATUS): Percentage of 18–64 population who agree with the statement that in their country, successful entrepreneurs receive high status.

Career choice (CAREER): Percentage of 18–64 population who agree with the statement that in their country, most people consider starting a business as a desirable career choice.

Entrepreneurial intentions rate (INT): Percentage of 18–64 population (individuals involved in any stage of entrepreneurial activity excluded) who are latent entrepreneurs and who intend to start a business within three years.

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