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Modeling country entrepreneurial activity to inform entrepreneurial-marketing research

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ABSTRACT

In 2002, Morris, Schindehutte and LaForge published a seminal work on entrepreneurial marketing (EM) that prominently featured external environmental conditions as a primary influence on the firm. Since then, EM researchers have devoted scant attention to these external environmental conditions. Not surprisingly, important explanations for EM have remained underdeveloped, such as EM as a strategic response to environmental change and turbulence. This study applies two approaches in structural equation modeling (component-based PLS-SEM and covariancebased CB-SEM) to the analysis of the 2016 Global Entrepreneurship Monitor data for the purpose of better understanding the external environment for firms' entrepreneurial marketing. The model in the study based on data from 65 countries aggregated at the country level, suggested potential entrepreneurs' perceptions of entrepreneurship influence entrepreneurship activity in societies positively, but are not influenced by constructs of the entrepreneurial ecosystem representing institutions of society, such as government programs and policies.

1. Introduction

Seminal thinking about entrepreneurial marketing (EM) as a unique concept presented the external environment as an antecedent for the internal organizational environment and the resulting organizational approach to marketing taken by firms (Morris, Schindehutte, & LaForge, 2002). These researchers defined EM as the proactive identification and exploitation of opportunities for winning profitable customers through innovative approaches.

Other EM researchers have prominently depicted the external environment in process models of EM (Hills & Hultman, 2013). Without understanding the surrounding environment in which firms are embedded, researchers would be blind to important explanations for phenomena related to entrepreneurial marketing, such as EM as a strategic response to environmental change and turbulence (Miles, Gilmore, Harrigan, Lewis, & Sethna, 2015; Slevin & Covin, 1990).

This study offers researchers an analysis of entrepreneurship phenomena across 65 countries of the world using data aggregated at the country level. Specifically, the study evaluates the role of citizens' perceptions of entrepreneurship as a partial mediator between 1) conditions for entrepreneurship in a country, and 2) total entrepreneurial activity in a country. In this way, the study evaluates the external environment for entrepreneurial activity in countries.

Researchers have asserted that firms are most likely to adopt EM strategies in a high-growth, highly dynamic environment (O'Cass & Morrish, 2016; O'Cass & Weerawardena, 2010). For expert entrepreneurs, market uncertainty triggers effectual or non-predictive logic (Read, Dew, Sarasvathy, Song, & Wiltbank, 2009). But many more questions about the influence of the external environment on EM remain, such as the effect of 1) stages of the business cycle (Deleersnyder, Dekimpe, Steenkamp, & Leeflang, 2009), 2) the firm's network of relationships with external entities, such as other firms and university research centers (Naudé, Zaefarian, Tavani, Neghabi, & Zaefarian, 2014; Whalen & Akaka, 2016), 3) the competitive environment (Covin & Slevin, 1989; Weerawardena, O'Cass, & Julian, 2006), 4) globalization (Hallbäck & Gabrielsson, 2013; Zucchella, Palamara, & Denicolai, 2007), 5) society (Hunt, 1981), and 6) public policy (Castaño, Méndez, & Galindo, 2016).

In societies with higher levels of entrepreneurial activity, firms wanting to increase their entrepreneurial orientation can more readily recruit partners or employees outside their firms with high degrees of entrepreneurial thinking and skills (Eggers, Hansen, & Davis, 2012). Societies and communities with entrepreneurial marketing process (EMP) capabilities can rebound after crisis events, as seen in the aftermath of earthquakes in Christchurch, New Zealand (Miles et al., 2016). Country conditions also affect entrepreneurship in terms of the development of 1) formal institutions (government and schools), 2) informal institutions (cultural perspectives on entrepreneurship), 3)

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infrastructure (transportation and communication), and 4) market conditions (Hörisch, Kollat, & Brieger, 2017; Paswan & Tran, 2012).

Across countries, researchers would expect to find differences in EM depending on country development (Baker, Gedajlovic, & Lubatkin, 2005) and how the entrepreneurial ecosystem (influenced by national policies and societal culture) nurtures and encourages entrepreneurial activity within ventures, as well as in established firms (Acs, Stam, Audretsch, & O'Connor, 2017). Recently, EM researchers have called for investigation of the interplay between EM and society by incorporating perspectives from macromarketing (Hansen & Eggers, 2010). To date, EM studies have not empirically addressed how EM might be contingent on macro-level variables.

To focus needed attention on the external environment for EM, this study uses a highly-regarded source of comparative entrepreneurship data in countries of the world—the Global Entrepreneurship Monitor (GEM) (Lepoutre, Justo, Terjesen, & Bosma, 2013). For eighteen years, the Global Entrepreneurship Consortium (GEC) has produced the GEM which now uses survey methodology and secondary research to compile both micro and macro-level research about the context of entrepreneurship, as well as early-stage entrepreneurial activity (GEM Consortium, 2017).

While researchers have done extensive analyses within individual countries using GEM data to identify important trends (such as a declining rate of entrepreneurship in the US between 2005 and 2009 (Ali et al., 2013)), sophisticated modeling of entrepreneurship phenomena using data aggregated at the country level across countries has been limited. Some studies have pooled individual-respondent data across countries to perform regression analysis (such as Kwon & Arenius, 2010). While such approaches have offered researchers valuable glimpses of how environmental factors and entrepreneurs' social capital might influence the pursuit of entrepreneurship, these studies do not use a truly macro-level perspective on how countries might differ across a set of relationships using the GEM conceptual framework. Additionally, without using a structural equation modeling approach, these regression approaches do not offer insight into the simultaneous assessment of complex multi-step relationships as proposed in the GEM conceptual framework.

No doubt, the relatively small number of participating countries in the GEM has been a principal reason for lack of sophisticated analysis at the country level. (The first GEM report in 1999 featured ten countries, while the one in 2003 featured 32 countries (Bosma, 2013, p. 2). In 2016, 65 countries participated in the GEM (GEM Consortium, 2017)).

In one of the few studies attempting modeling of GEM data at the macro-level, Levie and Autio (2008) regressed twelve variables related to countries' context for entrepreneurship onto entrepreneurial activity for countries and found that only entrepreneurship learning in higher education had an effect on total entrepreneurship activity. This appeared to be due to increasing perceptions of opportunity, rather than to entrepreneurial skill-acquisition. In sum, researchers today need sophisticated modeling like this to better understand macro-level entrepreneurship phenomena across countries of the world.

One research question motivates the current study. This regards the nature of the environmental factors that impact entrepreneurship and EM. What are these environmental factors and to what degree do they influence or not influence entrepreneurship and EM in countries of the world? An important aspect of this is clearing up questions about the directional flow among constructs related to environmental factors and constructs related to entrepreneurship. In other words, is a non-recursive model (in which two-way flows among constructs are absent) superior to a recursive model (in which two-way flows are present). A comparison of these two type of models will be part of assessing this research question.

RQ1: What are the environmental factors that impact entrepreneurial activity and EM?

The rest of the study presents 1) the Global Entrepreneurship Model (GEM), 2) the structural equation modeling (SEM) methods used to analyze data from the 65 countries featured in the 2016 GEM database, 3) the modeling results, and 4) discussion of what the results mean for EM researchers and for those developing the GEM database in the future. The study concludes by asserting the need for more development of macro-level phenomena related to EM.

2. Focus of the current study

2.1. Background

Importantly, the GEM also features its GEM conceptual framework—a proposed arrangement for how the macro-level constructs possibly influence each other. Despite having such a conceptual framework and the empirical rigor offered by the GEM, researchers have not yet used factor analysis or structural equation modeling (SEM) to conduct macro-level analysis of the annual GEM data (Bergmann, Mueller, & Schrettle, 2014). Such methods represent a high degree of analytical rigor and offer the potential to create new knowledge about 1) how well constructs proposed in the conceptual framework of the GEM are actually measured, and 2) what is the actual nature of the structural relationships proposed to exist between these constructs. In their review of data analytic trends in entrepreneurship research, Dean, Shook, and Payne (2007) highlight the indispensability of factor analysis and SEM for the validation of measures and models.

Without rigorous analysis of the GEM conceptual framework, improvement on the measurements undertaken in the formidable GEM-field-research efforts across dozens of countries will not happen or will happen in ways that might be done without the proper regard for the conceptual framework already proposed. If this happens, a potentially priceless initiative to develop macro-level theory about entrepreneurship in societies could stall and run out of interest for scholars and sponsors of such research. Currently, the conceptual framework of the GEM appears to be well-grounded and the sampling rigor appears to be well done, but without a rigorous analysis of the proposed theoretical contributions of the GEM, scholars will not understand how to use the results of GEM for their own work. Additionally, policymakers will miss opportunities to design and implement policies that would influence entrepreneurship in their societies, such as tax incentives and efforts to teach entrepreneurship both within and outside of public schools.

2.2. The global entrepreneurship monitor (GEM)

2.2.1. Overview

Today, the GEM reports on 65 countries ranging from factor-driven economies of the developing world to efficiency economies of emerging markets to innovation-drive economies of the developed world (GEM Consortium, 2017). GEM countries account for more than 69% of the world's population and 85% of the world's GDP. One important outcome of the GEM's annual reporting would be that policymakers and researchers would gain knowledge about the important phenomenon of entrepreneurship formation in countries of the world.

Sponsors of the GEM number more than 150 around the world (GEM Consortium, 2017). The leading academic sponsors listed in the GEM Global Report 2016/2017 include 1) Babson College in Wellesley, Massachusetts, 2) Universidad del Desarrollo in Chile, 3) Unitversiti Tun Abdul Razak in Malaysia, and 4) Tecnológico de Monterrey in Mexico. Most of the other sponsors include other universities, government institutes, and business schools.

From the beginning of the GEM project, researchers embraced policy research as a primary focus of the project (Bosma, 2013). In this regard, GEM has achieved influence among policymakers seeking to understand how the institutions and the environment in which entrepreneurs operate can influence entrepreneurship activity. However, such a focus has emphasized descriptive results about entrepreneurship activity in countries rather than the testing of theoretical concepts.

As the GEM developed over the years, three main objectives came

into focus for the GEM regarding entrepreneurial activity: 1) measuring differences between countries, 2) uncovering influencing factors, and 3) identifying enhancing policies. Much remains to be learned about why entrepreneurship activity differs among countries at the same stages of economic development, as well as what types of entrepreneurship affect economic growth (Bosma, 2013, p. 2).

In attempting to capture the heterogeneity across different levels of economic development for entrepreneurial activity, the 2016/2017 GEM annual report includes a series of graphs and figures depicting three levels of economies the GEM terms as 1) factor-driven, 2) efficiency driven, and 3) innovation driven. These three levels correspond generally to low, medium and high economic-development. Aside from the visual presentation of the effects of economic development, the 2016/2017 GEM annual report includes no statistical analysis.

Other researchers have subjected the GEM data to statistical analysis. For macro-level analysis, regression analysis and correlation analysis comprise the bulk of the studies that researchers have conducted (Bergmann et al., 2014). Researchers have applied factor analysis to only one macro-level GEM study (and that with GDP as a focus of the study), while researchers have not yet applied SEM to macro-level GEM study.

2.2.2. Conceptual model of the GEM

Fig. 1 depicts the GEM conceptual framework (GEM Consortium, 2017). (The circled parts of the framework indicate what parts of the framework proved to have sufficient measurement quality in unidimensionality analysis in this study to form factors that could then be brought into SEM analysis.) The upper-right part of the conceptual framework depicts Entrepreneurial Output (new jobs and new value added) along with Outcome (socio-economic development). These outputs and outcomes are the prize for policymakers. However, these constructs were not included in the GEM 2016 data, so they did not enter the current study.

The left-side of the framework represents the context for entrepreneurship in a country. The national framework conditions will be represented in the modeling of this study by a dichotomous variable representing economic development. The entrepreneurial framework conditions will be represented in the modeling of this study by items representing the perceived quality of the entrepreneurial ecosystem in a country. These items come from the National Expert Survey in which 36 designated experts in each country offer their perceptions for nine components of the entrepreneurial ecosystem in their country.

The middle part of the framework represents two constructs, 1) social values about entrepreneurship (Items for this construct did not form a usable factor in unidimensionality analysis and therefore did not enter later modeling.), and 2) individual attributes of potential entrepreneurs (Perceptions of potential entrepreneurs aggregated for each country and reported as a percentage of 18–64 year-olds in each country), as well as reports from potential entrepreneurs on their entrepreneurial activity. As can be seen in Fig. 1, such perceptions of entrepreneurship partially mediate the relationship between constructs of the left-side of the framework with constructs of the right-side (reports of entrepreneurial activity).

Notably, each linkage between constructs of the left-side, partial mediating constructs in the middle, and the constructs of the right-side representing entrepreneurial activity have proposed linkages that are both positive and negative. Additionally, these double-signed linkages also have two-way directional arrows. While not usually seen in theory development work, such double-signed linkages and double-headed arrows represent the current state of macro-level theory development in entrepreneurship. In other words, the GEM conceptual framework posits that these constructs exist and could be related (somehow).

Prior to 2014, all but one of the directional relationships in the GEM conceptual framework were one-directional and flowed from the left of the figure to the right (Singer, Amorós, & Moska, 2015, p. 20). The exception was a two-headed arrow between established firms (specifically, employee entrepreneurial activity at these firms) and the entrepreneurship profile for a country composed of 1) social values, 2) individual attributes, and 3) entrepreneurial activity. In the revised version of the 2014 framework, eight double-headed arrows appeared for the first time. The authors offered no explanation for the appearance of so many double-headed arrows across the framework, other than asserting that the elements of the entrepreneurship profile of a country were always assumed to mutually influence each other. It appears double-headed arrows offered the authors a way to present a more nuanced view of what might happen over time with societal forces

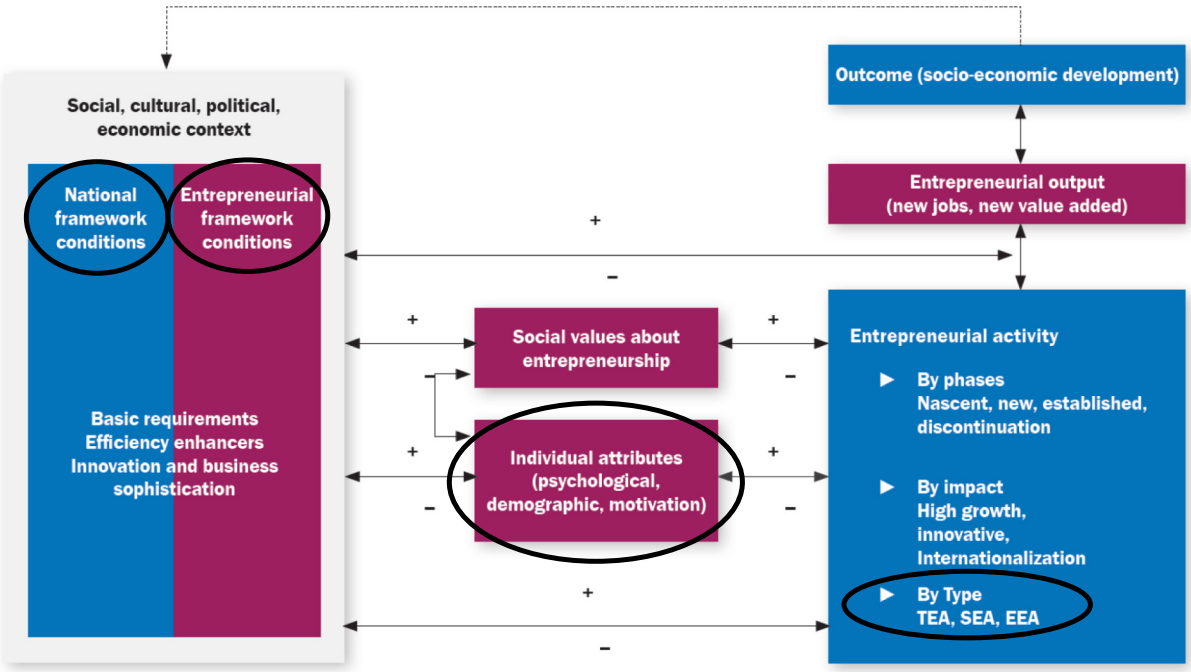

Fig. 1. Focal constructs for the study (circled) in the GEM Conceptual framework.

eventually proving to have reflexivity or circular relationships of cause and effect. (More will be said about this in the results section of this article.)

Because societal systems (comprised of government regulation, markets and individual action) have regularities, they are stable enough to allow for analyses using methods of social science and economics (Beinhocker, 2014). While stable, changes are occurring slowly. However, the time required for the proposed reflexivity in the recent GEM conceptual framework to become manifest would be expected to be on the order of decades. For this reason, this study takes the position that the directional relationships in the model flow from left to right in Fig. 1 as in the earlier version of the GEM conceptual framework. Here, individual attributes of entrepreneurs (aggregated perceptions of potential entrepreneurs) partially mediate the relationship between the context of entrepreneurship (left-side) and entrepreneurial activity (right-side).

2.2.3. Method of data collection

Since its launch in 1999, GEM data has annually come from more than eighty countries (Minniti, 2011). Survey firms conduct the annual survey during May and August translating the items of the survey into host languages for countries. The Adult Population Survey (APS) of the GEM captures items related to constructs in the middle and the right-side of the GEM conceptual framework depicted in Fig. 1. Sample sizes for the APS in each country are at least 2000 respondents and can go up to 45,000 respondents in Spain. (GEM project teams in each country develop sample sizes according to their own priorities, as well as the funding that these teams generate.) While no data collection is perfect, the effort and rigor of the data collection for GEM that has occurred each year make this data collection effort one that has received a high degree of respect across the social sciences. More on the data collection effort can be accessed at www.gemconsortium.org (GEM Consortium, 2017).

3. Method

The purpose of this study is to provide a rigorous macro-level analysis to better understand the role environmental factors play in entrepreneurial activity across countries of the world. Specifically, this study will focus on the 2016/2017 GEM annual report and will 1) evaluate the proposed constructs of the GEM conceptual framework, and 2) evaluate a model suggested by the GEM conceptual framework. This modeling will be accomplished using 1) partial least squares structural equation modeling (PLS-SEM) (Hair Jr., Hult, Ringle, & Sarstedt, 2016), and 2) covariance-based structural equation modeling path analysis (CB-SEM) using summated item-parcels in AMOS (Blunch, 2017). In this way, the study will use one SEM approach similar to principal components analysis (PLS-SEM), and another based on a common-factor analysis approach (CB-SEM).

Use of both SEM methods provides more rigor to the analysis and the potential for identifying paths appearing in both modeling analyses, as well as for comparing the size of the standardized path coefficients in both modeling analyses. Because researchers to date have not employed SEM in analyzing GEM data, this tandem use of PLS-SEM and CB-SEM offers researchers a view of important constructs proposed in the GEM conceptual framework, as well as their relationships (or lack of relationships) with each other. In this way, macro-level theory development for entrepreneurship can advance more rapidly.

PLS-SEM offers a unique approach to modeling by incorporating resampling in its estimation of model parameters and fitting of a model (Hair, Black, Babin, Anderson, & Tatham, 2010). This approach does not have problems with convergence that can sometimes affect covariance-based structural equation modeling (CB-SEM) (Henseler et al., 2014). Accordingly, PLS-SEM can be applied in many instances of small samples when other methods fail.

While PLS-SEM runs a series of correlations (in Mode A) or regressions (in Mode B) to identify weights for the items specified as contributing to the formation of a construct, CB-SEM using sum scores assumes equal weighting for the items composing a construct (Hair Jr., Sarstedt, Ringle, & Mena, 2012). Because PLS-SEM does not estimate all model relationships simultaneously, complex models can be estimated with small sample sizes. While use of extremely small sample sizes relative to the underlying population can be abused by researchers, the current macro-level study takes countries as the unit of analysis. Accordingly, this study features 65 countries of the 193 sovereign states which have membership in the United Nations—or one third of the population of interest.

Because PLS-SEM focuses on prediction, such as the prediction or identification of key target constructs, it can be valuable when research is exploratory or extending existing structural theory (Hair Jr., Ringle, & Sarstedt, 2011). By comparison, CB-SEM focuses on explanatory modeling for the testing of causal relationships. Together, the two structural equation modeling approaches can be valuable complements to each other with PLS-SEM useful in theory building and CB-SEM in theory testing (Hair, Hult, Ringle, Sarstedt, & Thiele, 2017). In the case of measurement models having six or more variables and a sample size less than 100, the recommended composite-based SEM method would be sum score regression. This is accomplished in the final CB-SEM modeling of the study with summated item-parcels using AMOS.

The application of SEM to evaluate part of the GEM conceptual framework appears attractive because of 1) the theoretical work already done to develop the GEM conceptual framework by scholars, and 2) the rigorous sampling effort already directed to field research of the GEM. In other words, such an application of SEM would be guided by theory and would use data resulting from high-quality field research methods that researchers have developed and refined in many replications of the GEM over eighteen years. PLS-SEM will allow assessment of multiple-measurement constructs, while CB-SEM using summated item-parcels will allow assessment of path relationships between constructs informed by path relationships observed in PLS-SEM modeling.

Fig. 2 depicts the sequence of steps in the current study. After obtaining the 2016 GEM data, the study included descriptive statistics and correlation analysis. The study then executed unidimensionality analysis and correlation analysis among the summated item-parcels of the constructs that performed well in the unidimensionality analysis. By identifying the statistically significant correlations at $p = .05$, the most viable relationships could be taken into subsequent structural equation modeling in the form of PLS-SEM and then CB-SEM with summated item-parcels representing the focal constructs of the study.

4. Results

4.1. Descriptive statistics and correlations

Table 1 presents the descriptive statistics for 65 countries in the 2016 GEM database on the focal 16 items selected for modeling important relationships in the GEM conceptual framework. These statistics include values for each item's minimum, maximum, mean and standard deviation. The variables named “Govt1” through “SoftInf1”, as well as “Enter1” through “Enter3” come from the National Expert Survey. These are focused on the perceived quality of the entrepreneurial ecosystem. The values on these variables represent the average value of experts' perceptions using a Likert scale of 1 (highly insufficient) and 9 (highly sufficient). The “Developed” variable represents economic development with developing countries receiving a value of “0” and developed countries receiving a value of “1”.

The rest of the variables in Table 1 are percentages computed from the Adult Population Survey. The “Percept1” through “Percept4” variables represent aggregated perceptions of entrepreneurship from potential entrepreneurs. The “TEA1” through “EEA2” variables represent entrepreneurial activity indicators – Total Early-stage Entrepreneurial

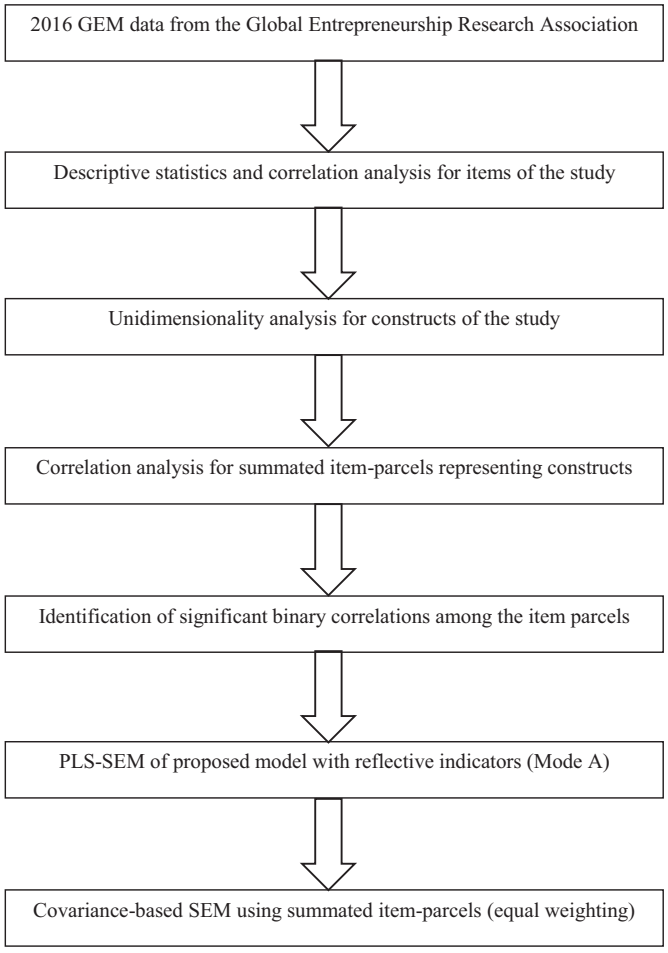

Fig. 2. Methods of the study.

Activity (TEA) and Entrepreneurial Employee Activity (EEA).

Although the 2016/2017 GEM annual report noted the inclusion of Senegal as a factor-driven country (and was included in the NES), the 2016 GEM data did not include Senegal because the Adult Population Survey did not include this country. Because the 2016 GEM data included only six factor-driven countries, this study combined the factor-driven countries and the efficiency-driven countries of the GEM into a less-developed category comprised of 38 countries. Twenty-seven innovation-driven countries comprised the developed category for the resulting economic development variable in this study for a total of 65 countries.

4.2. Construct unidimensionality analysis

This study followed the paradigm for scale development proposed by Gerbing and Anderson (1988) in which a composite score calculated as the unweighted sum would provide an estimate of the underlying construct. Such a composite score has value only to the extent each of the measures is acceptably unidimensional—pointing to the existence of a single trait or construct underlying a set of measures. A combination of exploratory factor analysis and confirmatory factor analysis was employed to refine the set of items proposed as constructs in this paradigm until satisfactory levels of unidimensionality emerged after successive item pruning steps.

In this series of analyses, some items proposed by the GEM conceptual framework or implied by the presentation of items in groups (such as societal values and perceptions) did not prove to share enough communality with the factors being extracted (using the Maximum Likelihood technique of common factor analysis) to be retained in the study for later modeling. Table 2 presents the results of these tests for unidimensionality.

Each construct was evaluated for unidimensionality individually with its own factor analysis. According to Hair et al. (2010), an acceptable sample size for a factor analysis would be one no less than 50 and with a 10:1 ratio of respondents/objects to variables being analyzed. The factor analyses conducted exceeded these threshold levels for sample size.

Item pruning resulted in multi-item constructs with three or more items in Table 2 posting average-variance-extracted (AVE) percentages

Table 1
Descriptive statistics for GEM items.

Variable	Representation of Variable	Min.	Max.	Mean	Std. Dev.
Govt1	The extent to which public policies support entrepreneurship - entrepreneurship as a relevant economic issue	1.67	3.57	2.54	0.52
Govt2	The extent to which public policies support entrepreneurship - taxes or regulations are either size-neutral or encourage new and SMEs	1.34	4.18	2.41	0.61
Govt3	The presence and quality of programs directly assisting SMEs at all levels of government (national, regional, municipal)	1.36	3.75	2.61	0.53
Govt4	The extent to which national research and development will lead to new commercial opportunities and is available to SMEs	1.43	3.42	2.33	0.41
SoftInr1	The presence of property rights, commercial, accounting and other legal and assessment services and institutions that support or promote SMEs	1.85	3.68	2.94	0.35
Developed	Developed countries = 1, Developing countries = 0.	0	1	0.40	0.49
Enter1	The availability of financial resources equity and debt for small and medium enterprises (SMEs) (including grants and subsidies)	1.70	3.43	2.54	0.44
Enter2	The extent to which new firms are free to enter existing markets	1.63	3.67	2.54	0.39
Enter3	Ease of access to physical resources, communication, utilities, transportation, land or space at a price that does not discriminate against SMEs 2.24		4.80	3.85	0.49
Percep1	Percentage of 18–64 population who see good opportunities to start a firm in the area where they live	12.95	81.53	42.17	14.31
Percep2	Percentage of 18–64 population who believe they have the required skills and knowledge to start a business	25.24	84.65	50.17	13.34
Percep4	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	2.12	63.76	22.15	14.45
TEA1	Percentage of 18–64 population who are either a nascent entrepreneur or owner-manager of a new business	4.42	33.53	12.29	6.90
TEA2	Percentage of 18–64 population who are currently an owner-manager of an established business, i.e., owning and managing a running business that has paid salaries, wages, or any other payments to the owners for more than 42 months	1.60	28.00	8.05	5.10
EEA1	Rate of involvement of employees in entrepreneurial activities, such as developing or launching new goods or services, or setting up a new business unit, a new establishment or subsidiary	0.20	9.00	3.37	2.46
EEA2	Percentage of those involved in TEA that are improvement-driven opportunity motivated, divided by the percentage of TEA that is necessity-motivated	0.70	11.80	2.87	2.10

Table 2
Measures of internal consistency and correlations among summated item-parcels for constructs in the model.

	AVE	α	Pearson correlation[a]	Institutional Support	Developed	Ease of entry	Perceptions of entrepreneurship	Total entrepreneurship activity
Institutional support	0.544	0.84						
Developed				0.47				
Ease of entry	0.519	0.69		0.72	0.40			
Perceptions of entrepreneurship	0.566	0.76		−0.09	−0.12	−0.14		
Total entrepreneurship activity		0.69	0.55	−0.18	−0.37	−0.33	0.50	
Employee entrepreneurship activity		0.68	0.68	0.43	0.57	0.48	0.27	−0.17

[a] Pearson correlation coefficients 0.27 or above are statistically significant at the 0.05 level (2-tailed).

of more than 50%. The corresponding Cronbach-alphas proved to be healthy, too. The TEA and EEA constructs had two items each and could not be factor analyzed. However, the Cronbach-alphas and the binary correlations indicated adequate reliability for subsequent modeling.

When deriving the factor representing “perceptions of entrepreneurship”, the “fear of failure rate” proved not to have enough communality with the three other items and was dropped from the analysis. The lower communality for “fear of failure rate” suggests that this item needs improvement in future studies or developed as its own construct with other similar items in the survey. Here, there is not enough agreement about fear of failure preventing those perceiving good opportunity from setting up a business.

This unidimensionality analysis identified five items forming a factor representing “institutional support” from the variables “Govt1” through “SoftInfr1” as can be seen in Table 1. Similarly, a factor representing “perceptions of entrepreneurship” formed from “Percept1” through “Percept4” in Table 1.

For TEA, two items had a sufficiently high enough correlation to form a dyad of items representing total early-stage entrepreneurial activity. Two other proposed items for entrepreneurial activity (established business ownership rate and business discontinuation rate) did not return sufficiently high communality to be retained in the study. Likewise, two items had a sufficiently high enough correlation to form a dyad of items representing entrepreneurial employee activity (EEA). One other proposed item for entrepreneurial activity (social entrepreneurial activity) did not return sufficiently high communality to be retained in the study.

As a precursor to structural equation modeling, examination of the binary correlation coefficients among the summated item-parcels became important. Only the possible structural paths that posted statistically significant binary correlations at $p = .05$ would be included in the structural equation modeling. By identifying only those binary relationships that carried enough strength in simple correlation analysis, the study would focus only on relationships that could be proved to exist outside of a multivariate modeling environment. Doing this would also move the models away from overfitting conditions with too many paths included.

Table 2 presents internal consistency measures as well as the binary correlations between the summated item-parcels representing the constructs of the study. Here, the Pearson correlation coefficients at 0.27 or above can be seen to be statistically significant at the 0.05 level in 2-tailed tests. Ten of the fifteen binary correlation coefficients presented in Table 2 moved into the modeling phase of the study.

These ten binary relationships achieving statistical significance in correlation analysis served as the focus of subsequent structural equation modeling. Fig. 3 depicts these proposed structural paths from the GEM conceptual framework.

4.3. Partial least squares structural equation modeling (PLS-SEM)

The statistical power offered by PLS-SEM is an advantage for this technique. In a recent *Journal of Business Research* article, researchers used PLS-SEM to analyze a dataset of 13 European Union countries (Castaño et al., 2016). In this study, the GEM 2016 data included 65 countries and received standardization prior to conducting PLS-SEM (Rigdon, 2013). The current study's analysis featured reflective indicators for the multi-item constructs which leads the PLS software (SmartPLS, in this study) to use Mode A based on binary correlations to model the latent construct as a composite of linear combinations (Hair Jr, Sarstedt, Ringle, & Gudergan, 2017). Because Mode A uses correlation weights, better prediction is obtained for out-of-sample data (data not used in estimating model parameters) (Rigdon, 2012). Before running PLS-SEM, relationships that proved to have statistically significant binary-correlations at $p = .05$ were chosen for inclusion in this modeling as depicted in Fig. 3. Fig. 4 depicts the results of PLS-SEM modeling. Table 3 presents the results of PLS-SEM for construct internal consistency measures.

Overall, a respectable model resulted from the analysis using PLS-SEM. In evaluating the outer model (or measurement model), evidence for a functioning model in this exploratory phase of analysis can be seen in 1) the relatively high-levels for the weights of items defining constructs that ranged from 0.69 to 0.96, 2) the internal consistency with Cronbach alphas above 0.68, and 3) average variance extracted for constructs above 0.61. Additionally, the model meets the Fornell-Larcker criterion for discriminant validity as all square roots of the AVEs for constructs exceed binary correlations for these constructs.

The R-square values for endogenous constructs on the right-side of the model were 0.511 for TEA and 0.464 for EEA. These R-square values are inside the ovals of Fig. 4 and suggest that the PLS-SEM returned meaningful results for these endogenous constructs—although development of the model might well likely prove to account for more of the variance of these endogenous constructs.

The weights for the items defining the constructs (the outer model) had acceptable values ranging from 0.687 to 0.956. The relationships among the constructs representing the entrepreneurial ecosystem (left-side of Fig. 4) are not depicted, but these replicated the correlations among these constructs in Table 2. The linkages for Institutional Support with EEA, and Ease of Entry with TEA had low standardized path coefficients of −0.037 and 0.012, respectively. The other standardized path coefficients were in the same direction and generally, corresponded with binary correlations already computed between the constructs as presented in Table 2. In sum, the composite based PLS-SEM model offers value by providing researchers a look at a model with five multi-item constructs along with the path coefficients linking constructs in such a modeling environment.

4.4. Covariance-based SEM path analysis using summated item-parcels

Following PLS-SEM, the study focused on CB-SEM for the same 2016 GEM data. Fig. 5 depicts the final results of CB-SEM using summated item parcels to represent the promising paths in the model identified in PLS-SEM analysis. Notably, the first attempt at modeling using CB-SEM in AMOS with the constructs and paths used in the previous PLS-SEM modeling returned a model with inadequate fit statistics. After

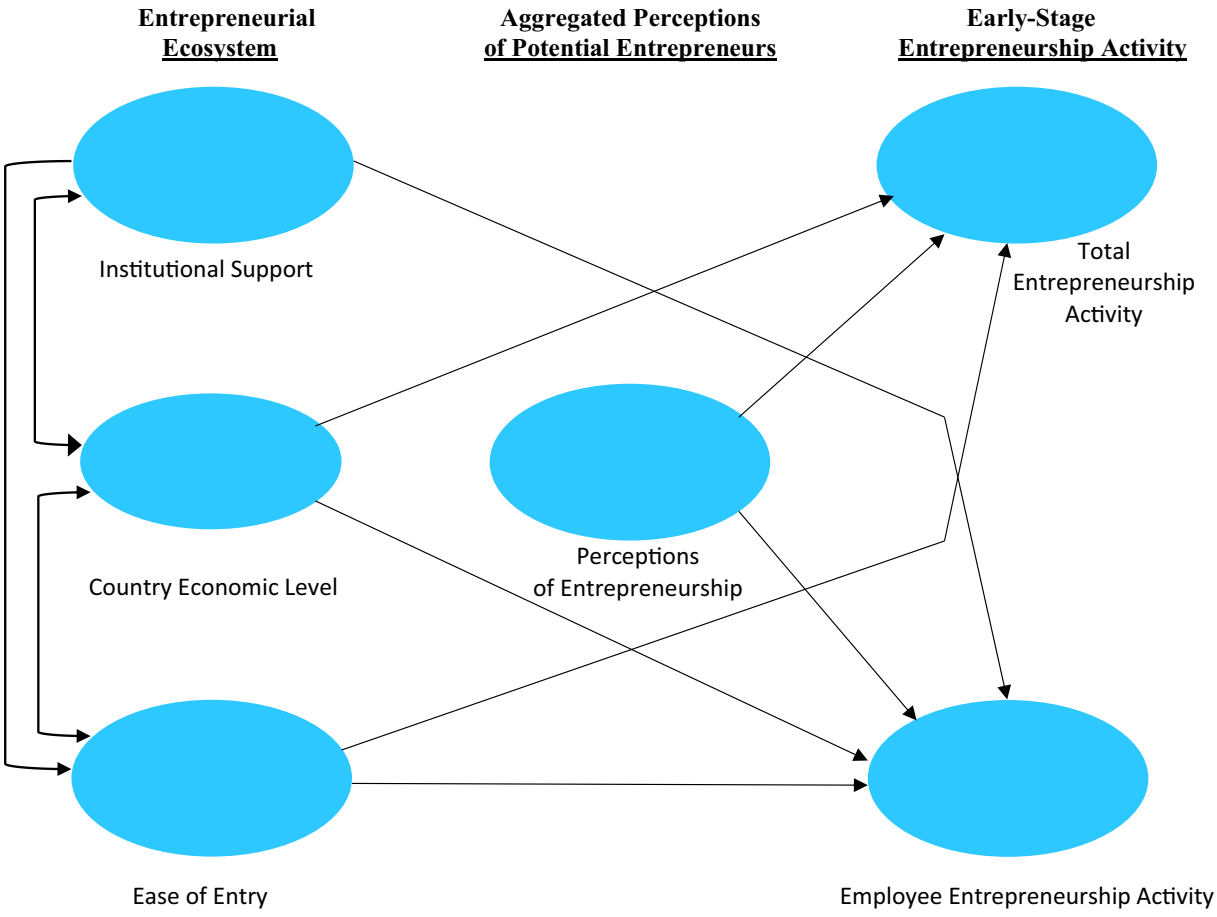

Fig. 3. Proposed model to be evaluated in the study from the GEM conceptual framework.

returning to the PLS-SEM results and dropping the linkages with weak standardized path coefficients (Institutional Support with EEA, and Ease of Entry with TEA), a model with acceptable fit emerged. This final model (Fig. 5) posted a chi-square value of 7.19 (p = .422) with 7 dfs. The CFI was 0.999, the TLI was 0.999 and the RMSEA was 0.012.

As can be seen in Fig. 5, the three constructs representing the entrepreneurial ecosystem have standardized path coefficients among them that replicate the correlations among these constructs that can be seen in Table 2. The dichotomous variable representing economic development (Developed) can be seen to influence TEA in a negative way (−0.32), while influencing EEA in a positive way (0.45). Because no binary correlation from Table 2 between the constructs representing the national entrepreneurial ecosystem (left-side of Fig. 1) and aggregated perceptions about entrepreneurship (middle of Fig. 1) posted a statistically significant relationship at p = .05, the study did not include these linkages in the structural equation modeling. One can see that Ease of Entry has a positive influence on EEA (0.33), while the perceptions of entrepreneurship also influences EEA in a positive way (0.36). Perceptions of entrepreneurship also influences TEA similarly (0.47).

In sum, the results of CB-SEM echo the results of PLS-SEM in this study. The moderately-sized standardized path coefficients in both models are comparable. Because an overall test of model fit can be obtained in CB-SEM, researchers can impart some confidence in the results of CB-SEM that may not be there for the PLS-SEM results. Importantly, the two structural equation modeling approaches returned similar results. In this way, both models can work in tandem in informing researchers about the validity and reliability of measurements for constructs, as well as the pattern of relationships seen and not seen in the models.

4.5. Evaluation of a recursive model

The study evaluated the possible two-way directional flow among constructs related to environmental factors and constructs related to entrepreneurship. This was done by using the CB-SEM model of Fig. 5 and then adding two arrows going from TEA and EEA to perceptions of entrepreneurship, and one arrow from perceptions of entrepreneurship to each of the three constructs of the entrepreneurial framework conditions (institutional support, economic development, and ease of entry). In this way, this phase of analysis featured a recursive model (in which two-way flows were present) corresponding to what can be seen in Fig. 1.

This modeling resulted in a model with four degrees of freedom and a chi-square statistic of 5.1. Importantly, none of the newly added linkages proved to be statistically significant at p = .05. In sum, it appears that the non-recursive model featured in Fig. 5 with only one-directional linkages between constructs is the superior model. This is another valuable contribution of this study that helps to clarify the nature of the influences of environmental conditions on entrepreneurship and EM—the major focus of this study.

5. Discussion

5.1. Overview

Researchers have called for broadening the focus of EM to include concepts from macromarketing (Hansen & Eggers, 2010). Morris and Lewis (1991) proposed that entrepreneurship could be regarded as a societal variable determined by environmental conditions at a given point in time. As the degree of entrepreneurial activity in a society

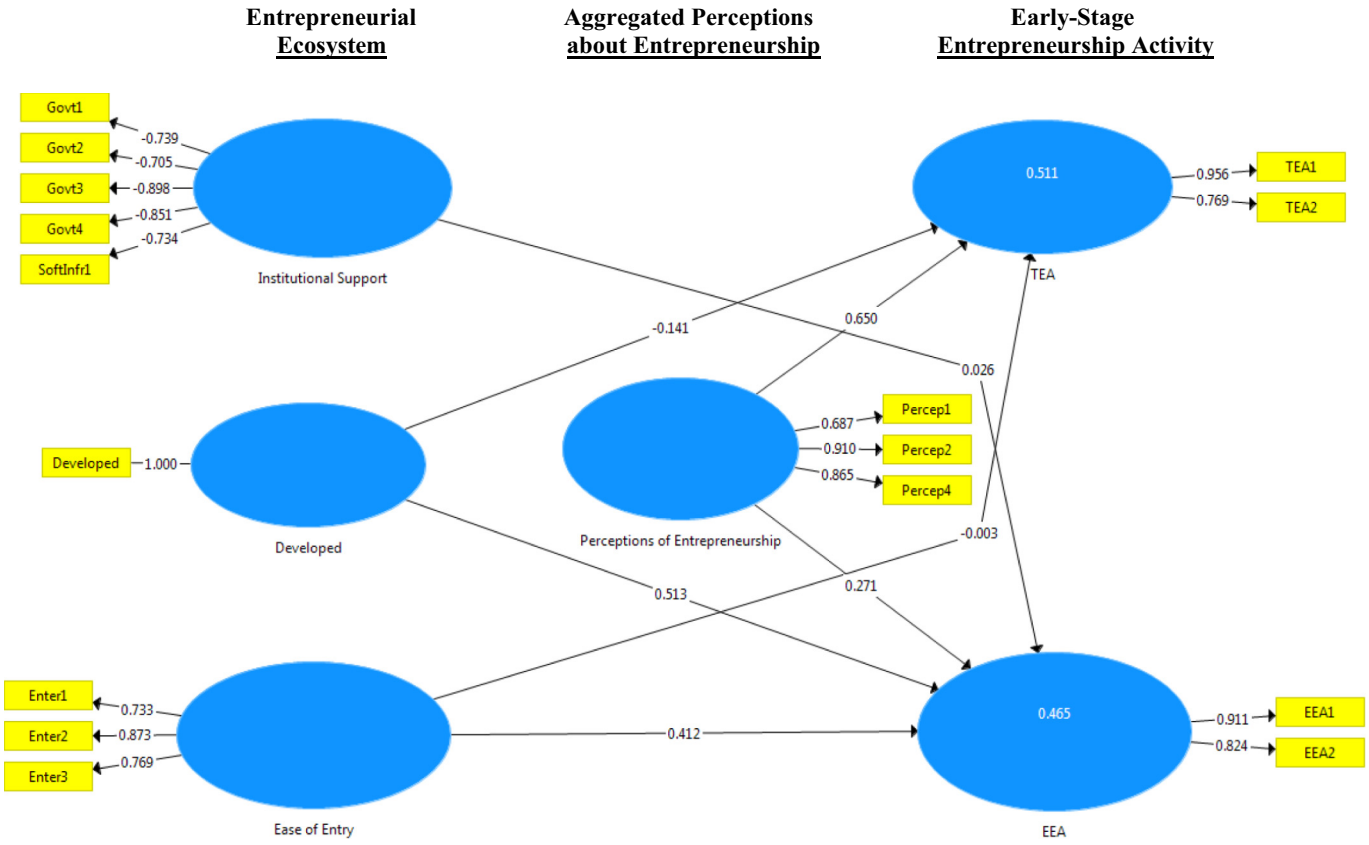

Fig. 4. Initial modeling results using PLS-SEM (R-squared values are inside construct ovals for endogenous constructs).

varies, so too does quality of life in a society. Sarasvathy and Venkataraman (2011) proposed that entrepreneurship is a societal force like democracy. Further conceptualizing about macro-level EM-related phenomena is in order now, but along with such conceptualizing must come rigorous analysis.

The current study used the 65 countries of the 2017 GEM to evaluate the proposed constructs and a model from the GEM conceptual framework represents the kind of rigorous analysis needed to advance knowledge in the field of EM. The five multi-item constructs of the GEM in this study posted adequate measurement through unidimensionality analysis (Tables 2 and 3) and the outer loadings observed in PLS-SEM modeling. The results suggest that the fit for the path analytical model in Fig. 5 was excellent with a CFI of 0.999 and a RMSEA of 0.012.

5.2. Effects of entrepreneurial framework conditions on entrepreneurial activity

5.2.1. Ease of entry

In this study, the GEM conceptual framework performed well in terms of model fit and the theoretical contributions. The research question guiding the study focused on what factors influence entrepreneurial activity and EM across countries. Surprisingly, institutional support for entrepreneurship in countries had only a slight influence on EEA in the PLS-SEM modeling and no influence any other construct in the CB-SEM modeling. By comparison ease of entry had a direct and positive influence on EEA (standardized path coefficient of.33). This suggests that the more (less) freedom is attributed to the way firms can enter markets (because of abundant funding, as well as access to infrastructure and reasonably-priced inputs), the higher (lower) will be levels of EEA. In essence, it appears that ease of market entry is part of the system of formal institutions in countries that encourages many individuals to apply EM in their work lives. Such ease of entry correlates positively with the other two entrepreneurial framework constructs (economic development 0.40, and institutional support 0.72).

5.2.2. Economic development

The results suggest that the economic development of countries has a negative influence on TEA (standardized path coefficient of −0.32), but a positive influence on EEA (standardized path coefficient of 0.45). This means that developing countries tend to have higher levels of TEA than developed countries, but lower levels of EEA than developed countries. This is partly explained by the more abundant economic opportunities (jobs) in developed countries. Without such economic development, developing country entrepreneurs tend to pursue necessity-based entrepreneurship more often. With more jobs and training

Table 3
Results of construct unidimensionality analysis as an outcome of multi-step-modeling using PLS-SEM.

Construct	Composite reliability	Cronbach's alpha	Avg. var. extracted (AVE)
Institutional support	0.89	0.85	0.61
Ease of entry	0.84	0.70	0.63
Perceptions of entrepreneurship	0.86	0.77	0.67
Total entrepreneurship activity	0.86	0.71	0.75
Employee entrepreneurship activity	0.86	0.68	0.76

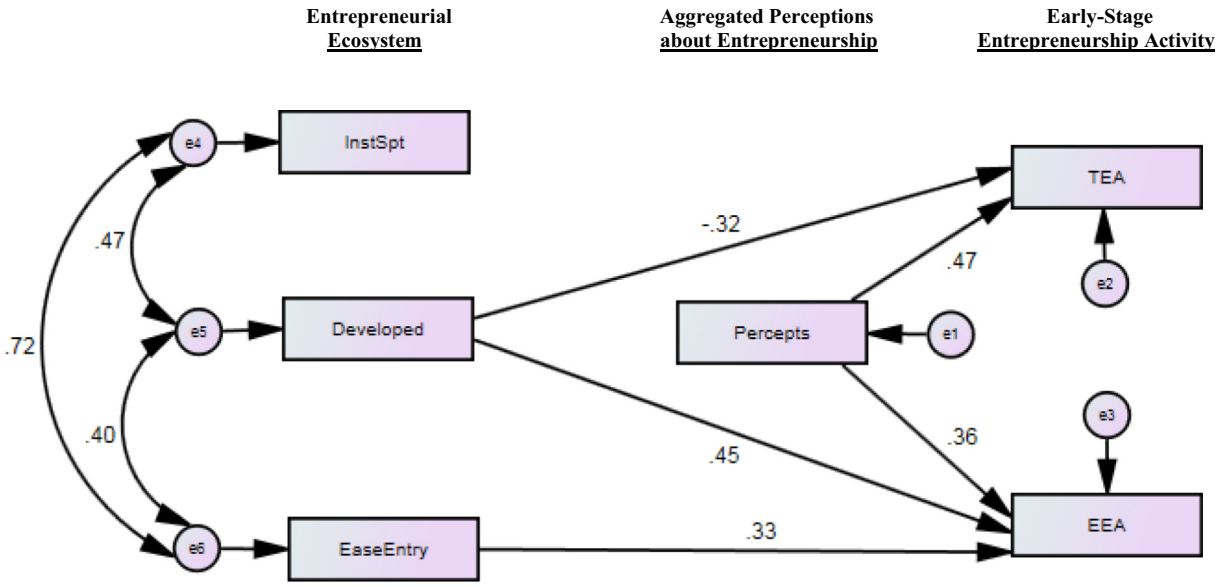

Fig. 5. Final modeling results using summated item-parcels and CB-SEM.

that comes with these jobs in developed countries, employees display more entrepreneurial behaviors, such as 1) developing or launching new goods or services, or 2) setting up a new business unit, a new establishment or subsidiary.

In considering how economic development affects entrepreneurial activity across countries, researchers can gain valuable insights about EM. With lower levels of EEA, developing-country entrepreneurs will be more likely to operate alone and with more reliance on EM to further their entrepreneurial endeavors. With higher levels of EEA, developed-country entrepreneurs would not have to rely so much on EM—because employees are available and are ready to apply EM themselves. This suggests that entrepreneurship in developed countries will be more likely to be accomplished by teams or ensembles in firms, while entrepreneurship in developing countries will be more likely to be accomplished by individual entrepreneurs.

5.3. The role of perceptions of entrepreneurship on entrepreneurial activity

Perceptions of entrepreneurship do have a direct and positive influence on TEA (standardized path coefficient of 0.47), and EEA (standardized path coefficient of 0.36). Such perceptions include 1) seeing good opportunities to start a firm where one lives, 2) belief that one has the skills and knowledge to start a business, and 3) intentions to start a firm in the next three years. Importantly, economic development does not influence these perceptions in the model—meaning perceptions of entrepreneurship positively influence entrepreneurial activity regardless of the economic development of countries.

An important theoretical contribution is the finding that citizens' perceptions of entrepreneurship do not serve as a partial mediator between conditions for entrepreneurship in a country and total entrepreneurial activity in a country. While citizen perceptions of entrepreneurship do directly have a positive influence on entrepreneurial activity, the constructs of the national entrepreneurial ecosystem do not directly influence these citizen perceptions. This raises the question about possible influences on perceptions of entrepreneurship that are not depicted in the model of this study. From where do these perceptions of entrepreneurship come? Possible sources not addressed in this study might include 1) family influences, 2) local economic conditions, or 3) how individuals develop their knowledge of entrepreneurship.

One finding that should give policymakers pause for reflection is the lack of causal influence of institutional support for any downstream constructs. This could be due to combining developing and developed countries in the analyses of this study. However, more research should be focused on this question in the future. The current set of questions used to operationalize institutional support is focused on high-level infrastructure or government-funded support for entrepreneurship (such as, taxes or regulations, national research and development programs, or property rights). Having questions related to participating in government-sponsored entrepreneurship programs, or the degree of corruption a future entrepreneur would expect to encounter could offer researchers new dimensions of the entrepreneurial framework conditions that would possibly influence perceptions of entrepreneurship in future studies. Such questions could also offer insights into the origins of EM as perceptions of entrepreneurship reflect a readiness to pursue entrepreneurship which seems to be very much aligned with EM.

5.4. Measurement improvements

In general, measurement works—but refinements are in order. First, measurement of the GEM's constructs and the GEM conceptual framework need some refinement. However, given the paucity of field research using surveys and secondary data on the topic of entrepreneurship in societies around the world, the GEM data delivers valuable measurement about 1) entrepreneurial ecosystems, 2) perceptions about entrepreneurship, and 3) early-stage entrepreneurial activity.

While the constructs included in the final modeling of the study appear to be measured well, there were constructs that did not enter the models because of their lack of unidimensionality with the constructs identified using factor analysis. Table 4 presents these. Questions that were intended to address the construct Institutional Support that did not make it into the model included social and cultural norms, education, and market dynamics.

Reviewing these questions, it appears more specificity is needed. For example, social and cultural norms leading to increased business wealth might better be stated as “does your local culture encourage entrepreneurship?” The two education questions need more specificity in the term of the instruction offered in entrepreneurship. For example, as currently stated, the nature of the training in creating or managing SMEs is not clear—it could be one day or a one-year course. “Students receive at least one full week of training in how to start and manage a business” could be one way to improve these questions.

The question on Perception of Entrepreneurship regarding fear of failure as a reason for preventing them from setting up a business might be improved by specifying the nascent entrepreneurship dimension

Table 4
GEM items NOT included in the SEM analysis of the study.

Possible construct	Variable	Representation of variable
Institutional support		
	SoftInfr2	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
	Ed1	Extent to which training in creating or managing SMEs is incorporated within the education and training system at primary and secondary levels
	Ed2	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.
	MkDyn1	The level of change in markets from year to year
Perception of entrepreneurship		
	Percep3	Percentage of 18–64 population perceiving good opportunities to start a business who indicate that fear of failure would prevent them from setting up a business
Societal values & perceptions		
	HighStatus	Percentage of 18–64 population who agree with the statement that in their country, successful entrepreneurs receive high status
	GoodCareer	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

more explicitly, rather than all of the steps to set up a business. For example, “fear of failure would prevent me from taking the first steps to start a business”.

Finally, the questions for Societal Values and Perceptions could be refined. The one about successful entrepreneurs receiving “high status” might offer more definition, such as “high status in the form of respect or admiration in public”. The question about a “desired career” might be reworded as “most people consider starting a business as a worthwhile career choice”. In this way, the question would emphasize the value of entrepreneurship as a career choice as opposed to an ideal choice.

5.5. Framework improvements

Second, the GEM conceptual framework works in proposing possible relationships between constructs. However, based on the empirical results of this study, updates are in order. For example, there is no statistically significant causal path between Institutional Support and downstream constructs in Fig. 5–the final modeling of this study. This suggests that government actions or legal rights promoting SMEs do not influence perceptions of entrepreneurship or total entrepreneurial activity in a country. This finding should give pause to policymakers and authors of the GEM study. Recently, researchers have presented results from using PLS-SEM in analyzing a small set of 13 EU countries and found a positive influence on total entrepreneurial activity (TEA) for government funding of R&D, as well as higher education (Castaño et al., 2016). Do such policies work in developed countries, but not in developing countries? More research is needed now to understand this surprising finding.

Past studies have asserted that economic development has a negative relationship with entrepreneurship after for controlling for a number of other factors (Acs, Desai, & Hessels, 2008). The current study offers more texture to this assertion by suggesting that one of GEM's national framework conditions in Fig. 1—economic development—negatively influences TEA, while positively influencing EEA. While Leibenstein (1968) took the view that institutions, as distinct from opportunities, have little impact on entrepreneurship levels, the current study suggests that one of the entrepreneurial framework conditions—ease of entry—has a positive influence on EEA. In this way, the results of this study again offer more texture to knowledge about macro-level entrepreneurship.

Supporting Leibenstein's view about the importance of opportunities to entrepreneurship levels in societies, opportunities (or specifically, the perceptions of opportunities) did have a positive influence on both types of entrepreneurial activity in this study. But the sources of influence on perceptions of opportunity did not manifest themselves in this study (in either the binary correlations or the models of this study), as these perceptions did not partially mediate the relationship between entrepreneurial-ecosystem constructs and entrepreneurship activity as proposed in the GEM conceptual framework. In offering a micro-level, contingency framework of entrepreneurial marketing, Whalen et al. (2016) propose that the entrepreneurial process begins with opportunity identification. The current study actually offers evidence supporting this assertion as perceptions about entrepreneurship were not influenced by any other construct in the models of Figs. 4 and 5.

In sum, the statistically significant links of Fig. 5 offer researchers guidance on the future development of the GEM model in terms of the linkages found and the valence of these linkages. Fig. 5 does not depict partial mediation in the model, but rather three exogenous constructs (Developed, EaseEntry, and Percepts) can be seen to influence two forms of entrepreneurial activity (TEA and EEA).

5.6. Improved understanding needed for opportunity

The question now arises as to what actually are the sources of potential entrepreneurs' perceptions about opportunity. While this is beyond the scope of the current study, it deserves concerted attention by entrepreneurship and marketing scholars—especially researchers in the GEM research effort of macro-level phenomena. A few thoughts about opportunity follow.

The GEM conceptual framework proposes that perceptions of entrepreneurship in countries partially mediates the relationship between constructs of the entrepreneurial ecosystem and early-stage entrepreneurial activity (See Fig. 1). But many questions remain to be answered about entrepreneurial ecosystems in the conceptual, theoretical and empirical realms (Acs et al., 2017; Dimov, 2011). For example, what are the nature of such entrepreneurial ecosystems? (To what degree are they business ecosystems anchored by firms? To what degree are they industry-specific? To what degree are they national in character?)

Researchers have recently asked about how new markets form and have been reminded of the complexity in market genesis (Dew, Read, Sarasvathy, & Wiltbank, 2011; Layton, 2015). Part of this complexity is due to the subjective process of entrepreneurial opportunity identification (Cohen & Winn, 2007; Shane & Venkataraman, 2000). Part is due to the still mysterious nature of opportunities—are they discovered or are they developed? (Whalen et al., 2016). Part is due to the differing forms of networks and the variety of ways opportunity co-creation can occur (Martin & Schouten, 2013; Whalen & Akaka, 2016). Part is due to the differing societal contexts in which opportunity recognition and development occur (Baker et al., 2005; Morris & Lewis, 1991). (Fig. 1 depicts the social, cultural, political and economic context as surrounding the national framework conditions and entrepreneurial dimensions.)

The recent rise of interest in entrepreneurship and marketing (Whalen & Akaka, 2016; Whalen et al., 2016) proves encouraging in light of the need to better understand opportunity and its interplay with society (Acs, Audretsch, Lehmann, & Licht, 2016). The current study points to macromarketing as a valuable source of theory related to market dynamics as a societal force (Sarasvathy & Venkataraman, 2011) and its interplay with society (Bartels & Jenkins, 1977; Lusch, 2017; Peterson, 2016).

6. Conclusion

One research question motivated this study: What are the environmental factors that impact entrepreneurial activity and EM? Perceptions of entrepreneurship positively influence entrepreneurial activity (TEA and EEA) in countries of the study. Economic development of countries proved to be inversely influence TEA, but positively influence EEA. Finally, ease of entry for entrepreneurial firms in countries positively influenced EEA. Importantly, the study provided evidence for a one-directional flow of influence across the constructs of the model—not a two-directional flow.

In general, there is much to appreciate and salute in the GEM effort to date that informs understanding for the context of EM. Constructs and items for these constructs can be seen to allow important relationships to be identified now at the macro-level for entrepreneurship. Such knowledge stands to boost the efforts of researchers of EM-related phenomena, so that the external environment will be better represented in future work. As EM researchers have noted, entrepreneurial strategies do not come “out of nowhere” (Eggers et al., 2012, p. 220). These come from an entrepreneurially-led firm perceiving opportunity and then aligning internal and external resources to attract customers (Gross, Carson & Jones, 2014, p. 108). With higher levels of total entrepreneurial activity and employee entrepreneurial activity, more successful entrepreneurial strategies will be able to be deployed in societies—for the betterment of society.

In sum, the results of this study suggest that more conceptual development for macro-level entrepreneurship is needed. The outcome of such development would be recognized in new constructs (and measures) to explain entrepreneurial activity, as well as improved measures for existing constructs (Bergmann et al., 2014). Additionally, as new countries come into the GEM database, more statistical power will accrue for future modeling efforts.

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