APPENDIXES

Digital Entrepreneurship Landscapes in Developing Asia: Insights from the Global Index of Digital Entrepreneurship Systems

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Appendix 1: Calculation of the GIDES Scores

In constructing the index we followed eleven steps:

Normalization of indicators: Altogether we have selected 103 indicators. Out of these there are 18 general framework entrepreneurship, 32 systemic framework entrepreneurship, 24 general framework digital and 29 systemic framework digital indicators. First, we normalized all the indicators using the distance methodology:

$$x_{i,k} = \frac{z_{i,j}}{\max z_{i,j}} \qquad (1)$$

for all i= 1….113, the number of countries
j= 1 ... 103, the number of indicators
where $x_{i,j}$ is the normalised indicator score value for country i and indicator j
$z_{i,j}$ is the original indicator value for country i and indicator j

The construction of the variables: We calculate all variables from the indicators by calculating the simple arithmetic averages. Altogether we have 24 variables, 16 entrepreneurship and eight digital variables.

The four general framework entrepreneurship variables are calculated as follows:

$$\mathrm{GFC\_P1}_i = \frac{\sum_1^6 \mathrm{x_{i,j}}}{6} \qquad (2a)$$

$$\mathrm{GFC\_P2}_i = \frac{\sum_7^{11} \mathrm{x_{i,j}}}{7} \qquad (2b)$$

$$\mathrm{GFC\_P3}_i = \frac{\sum_{12}^{16} \mathrm{x_{i,j}}}{7} \qquad (2c)$$

$$\mathrm{GFC\_P4}_i = \frac{\sum_{17}^{18} \mathrm{x_{i,j}}}{3} \qquad (2d)$$

for all countries i
GFC_P1= Culture and Informal Institution entrepreneurship
GFC_P2= Formal Institutions and Regulatory Framework entrepreneurship
GFC_P3= Market Conditions entrepreneurship
GFC_P4= Physical Infrastructure entrepreneurship

The systemic entrepreneurship variables are calculated independently for the three stages.

$$S1\_SEC\_P1_i = \frac{\sum_{19}^{20} x_{i,j}}{2} \quad (2e)$$

$$S2\_SEC\_P1_i = \frac{\sum_{21}^{24} x_{i,j}}{4} \quad (2f)$$

$$S3\_SEC\_P1_i = \frac{\sum_{25}^{27} x_{i,j}}{4} \quad (2g)$$

S1_SEC_P1= Human Capital entrepreneurship Stand-up
S2_SEC_P1= Human Capital entrepreneurship Start-up
S3_SEC_P1= Human Capital entrepreneurship Scale-up

$$S1\_SEC\_P2_i = \frac{\sum_{28}^{30} x_{i,j}}{2} \quad (2h)$$

$$S2\_SEC\_P2_i = \frac{\sum_{31}^{33} x_{i,j}}{2} \quad (2i)$$

$$S3\_SEC\_P2_i = \frac{\sum_{34}^{37} x_{i,j}}{7} \quad (2j)$$

S1_SEC_P2= Knowledge creation, transfer and absorption entrepreneurship Stand-up
S2_SEC_P2= Knowledge creation, transfer and absorption entrepreneurship Start-up
S3_SEC_P2= Knowledge creation, transfer and absorption entrepreneurship Scale-up

$$S1\_SEC\_P3_i = \frac{\sum_{38}^{39} x_{i,j}}{2} \quad (2k)$$

$$S2\_SEC\_P3_i = \frac{\sum_{40}^{42} x_{i,j}}{6} \quad (2l)$$

$$S3\_SEC\_P3_i = \frac{\sum_{43}^{44} x_{i,j}}{4} \quad (2m)$$

S1_SEC_P3= Finance entrepreneurship Stand-up
S2_SEC_P3= Finance entrepreneurship Start-up
S3_SEC_P3= Finance entrepreneurship Scale-up

$$S1\_SEC\_P4_i = \frac{\sum_{45}^{45} x_{i,j}}{1} \quad (2n)$$

$$S2\_SEC\_P4_i = \frac{\sum_{46}^{47} x_{i,j}}{2} \quad (2o)$$

$$\mathrm{S3\_SEC\_P4}_i = \frac{\sum_{48}^{50} \mathrm{x_{i,j}}}{3} \qquad (2p)$$

S1_SEC_P4= Networking and support entrepreneurship Stand-up
S2_SEC_P4= Networking and support entrepreneurship Start-up
S3_SEC_P4= Networking and support entrepreneurship Scale-up

The calculation of the digital variables follows exactly the same logic.

The four general framework digital variables are calculated as follows:

$$\mathrm{DFC\_P1}_i = \frac{\sum_{51}^{54} \mathrm{x_{i,j}}}{4} \qquad (2a)$$

$$\mathrm{DFC\_P2}_i = \frac{\sum_{55}^{60} \mathrm{x_{i,j}}}{6} \qquad (2b)$$

$$\mathrm{DFC\_P3}_i = \frac{\sum_{61}^{66} \mathrm{x_{i,j}}}{7} \qquad (2c)$$

$$\mathrm{DFC\_P4}_i = \frac{\sum_{67}^{74} \mathrm{x_{i,j}}}{9} \qquad (2d)$$

for all countries
DFC_P1= Culture and Informal Institution digital
DFC_P2= Formal Institutions and Regulatory Framework digital
DFC_P3= Market Conditions digital
DFC_P4= Physical Infrastructure digital

The systemic digital variables are also calculated independently for the three stages.

$$\mathrm{S1\_SDC\_P1}_i = \frac{\sum_{75}^{76} \mathrm{x_{i,j}}}{3} \qquad (2e)$$

$$\mathrm{S2\_SDC\_P1}_i = \frac{\sum_{77}^{77} \mathrm{x_{i,j}}}{1} \qquad (2f)$$

$$\mathrm{S3\_SDC\_P1}_i = \frac{\sum_{78}^{78} \mathrm{x_{i,j}}}{2} \qquad (2g)$$

S1_SDC_P1= Human Capital digital Stand-up
S2_SDC_P1= Human Capital digital Start-up
S3_SDC_P1= Human Capital digital Scale-up

$$\mathrm{S1\_SDC\_P2}_i = \frac{\sum_{79}^{83} \mathrm{x_{i,j}}}{3} \qquad (2h)$$

$$\mathrm{S2\_SDC\_P2}_i = \frac{\sum_{84}^{85} \mathrm{x_{i,j}}}{2} \qquad (2i)$$

$$S3\_SDC\_P2_i = \frac{\sum_{86}^{89} x_{i,j}}{2} \quad (2j)$$

S1_SDC_P2= Knowledge creation, transfer and absorption digital Stand-up
S2_SDC_P2= Knowledge creation, transfer and absorption digital Start-up
S3_SDC_P2= Knowledge creation, transfer and absorption digital Scale-up

$$S1\_SDC\_P3_i = \frac{\sum_{90}^{92} x_{i,j}}{3} \quad (2k)$$

$$S2\_SDC\_P3_i = \frac{\sum_{93}^{93} x_{i,j}}{1} \quad (2l)$$

$$S3\_SDC\_P3_i = \frac{\sum_{94}^{94} x_{i,j}}{1} \quad (2m)$$

S1_SDC_P3= Finance digital Stand-up
S2_SDC_P3= Finance digital Start-up
S3_SDC_P3= Finance digital Scale-up

$$S1\_SDC\_P4_i = \frac{\sum_{95}^{98} x_{i,j}}{2} \quad (2n)$$

$$S2\_SDC\_P4_i = \frac{\sum_{99}^{100} x_{i,j}}{4} \quad (2o)$$

$$S3\_SDC\_P4_i = \frac{\sum_{101}^{103} x_{i,j}}{3} \quad (2p)$$

S1_SDC_P4= Networking and support digital Stand-up
S2_SDC_P4= Networking and support digital Start-up
S3_SDC_P4= Networking and support digital Scale-up

Normalization of the variables: variables are normalised again to a range from 0 to 1:

$$m(norm)_{i,l} = \frac{m_{i,l}}{\max m_{i,l}} \quad (3)$$

for all l= 1 ... 24, the number of variables
where $m(norm)_{i,j}$ is the normalised score value for country i and variable j
$m_{i,l}$ is the original pillar value for country i and variable l
$max\ m_{i,l}$ is the maximum value for variable l

Digital systemic variable calculation: Our original idea was to match the entrepreneurship and the digital variables one by one. Unfortunately some of the digital systemic variables contain on a few or in three cases only one indicator. Therefore their

reliability is not as high as the systemic entrepreneurship component values. So we decided to calculate only one digital component for all four systemic digital variables.

$$\mathrm{SDC\_P1}_i = \frac{\sum_1^3 \mathrm{S(s)\_SDC\_P1}_{\mathrm{i,s}}}{3} \quad (4a)$$

$$\mathrm{SDC\_P2}_i = \frac{\sum_1^3 \mathrm{S(s)\_SDC\_P1}_{\mathrm{i,s}}}{3} \quad (4a)$$

$$\mathrm{SDC\_P3}_i = \frac{\sum_1^3 \mathrm{S(s)\_SDC\_P1}_{\mathrm{i,s}}}{3} \quad (4a)$$

$$\mathrm{SDC\_P4}_i = \frac{\sum_1^3 \mathrm{S(s)\_SDC\_P1}_{\mathrm{i,s}}}{3} \quad (4a)$$

where SDC_P1, SDC_P2, SDC_P3, SDC_P4 are the systemic digital variable for all country i
and the S(s)_SDC_P1; S(s)_SDC_P2; S(s)_SDC_P2; S(s)_SDC_P4 are the systemic digital variables for stages s=1,2,3

Normalization of the digital systemic variables: Similar to the previous cases we calculate the normalized scores for the four digital systemic variables

$$m(norm)_{i,l} = \frac{m_{i,l}}{\max m_{i,l}} \quad (5)$$

for all l= 20 ... 24, the number of variables
where $m(norm)_{i,l}$ is the normalised variable score value for country i and variable l
$m_{i,l}$ is the original digital variable value for country i and variable l
$max\ m_{i,l}$ is the maximum value for variable l

Pillar calculation: There are altogether 16 pillars in the digital entrepreneurial ecosystem index. All 16 pillars are the result of the multiplication of the digital ecosystem variable and the associated digital variable.

For the general framework condition the digital entrepreneurship pillars are the followings:

$$\mathrm{GDFC\_P1}_i = \mathrm{GFC\_P1_i} * \mathrm{DFC\_P1_i} \quad (6a)$$

$$\mathrm{GDFC\_P2}_i = \mathrm{GFC\_P2_i} * \mathrm{DFC\_P2_i} \quad (6b)$$

$$\mathrm{GDFC\_P3}_i = \mathrm{GFC\_P3_i} * \mathrm{DFC\_P3_i} \quad (6c)$$

$$\mathrm{GDFC\_P4}_i = \mathrm{GFC\_P4_i} * \mathrm{DFC\_P4_i} \quad (6d)$$

where:

GDFC_P1= Culture and Informal Institution digital entrepreneurship pillar
GDFC_P2= Formal Institutions and Regulatory Framework digital entrepreneurship pillar
GDFC_P3= Market Conditions digital entrepreneurship pillar
GDFC_P4= Physical Infrastructure digital entrepreneurship pillar

For the systemic framework conditions the digital entrepreneurship pillars are calculated separately for all three stages.

For the Stand-up stage:

$$\mathrm{S1\_SDEC\_P1}_i = \mathrm{S1\_SEC\_P1_i} * \mathrm{SDC\_P1_i} \quad (6e)$$

$$\mathrm{S1\_SDEC\_P2}_i = \mathrm{S1\_SEC\_P2_i} * \mathrm{SDC\_P2_i} \quad (6f)$$

$$\mathrm{S1\_SDEC\_P3}_i = \mathrm{S1\_SEC\_P3_i} * \mathrm{SDC\_P3_i} \quad (6g)$$

$$\mathrm{S1\_SDEC\_P4}_i = \mathrm{S1\_SEC\_P4_i} * \mathrm{SDC\_P4_i} \quad (6h)$$

where:

S1_SDEC_P1= Human capital Stand-up digital entrepreneurship pillar
S1_SDEC_P2= Knowledge creation, transfer and absorption Stand-up digital entrepreneurship pillar
S1_SDEC_P3= Finance Stand-up digital entrepreneurship pillar
S1_SDEC_P4= Networking and support Stand-up digital entrepreneurship pillar

For the Start-up stage:

$$\mathrm{S2\_SDEC\_P1}_i = \mathrm{S2\_SEC\_P1_i} * \mathrm{SDC\_P1_i} \quad (6i)$$

$$\mathrm{S2\_SDEC\_P2}_i = \mathrm{S2\_SEC\_P2_i} * \mathrm{SDC\_P2_i} \quad (6j)$$

$$\mathrm{S2\_SDEC\_P3}_i = \mathrm{S2\_SEC\_P3_i} * \mathrm{SDC\_P3_i} \quad (6k)$$

$$\mathrm{S2\_SDEC\_P4}_i = \mathrm{S2\_SEC\_P4_i} * \mathrm{SDC\_P4_i} \quad (6l)$$

where:

S2_SDEC_P1= Human capital Start-up digital entrepreneurship pillar
S2_SDEC_P2= Knowledge creation, transfer and absorption Start-up digital entrepreneurship pillar
S2_SDEC_P3= Finance Start-up digital entrepreneurship pillar

S2_SDEC_P4= Networking and support Start-up digital entrepreneurship pillar

For the Scale-up stage:

$$\mathrm{S3\_SDEC\_P1}_i = \mathrm{S3\_SEC\_P1_i} * \mathrm{SDC\_P1_i} \quad (6m)$$

$$\mathrm{S3\_SDEC\_P2}_i = \mathrm{S3\_SEC\_P2_i} * \mathrm{SDC\_P2_i} \quad (6n)$$

$$\mathrm{S3\_SDEC\_P3}_i = \mathrm{S3\_SEC\_P3_i} * \mathrm{SDC\_P3_i} \quad (6o)$$

$$\mathrm{S3\_SDEC\_P4}_i = \mathrm{S3\_SEC\_P4_i} * \mathrm{SDC\_P4_i} \quad (6p)$$

where:

S3_SDEC_P1= Human capital Scale-up digital entrepreneurship pillar
S3_SDEC_P2= Knowledge creation, transfer and absorption Scale-up digital entrepreneurship pillar
S3_SDEC_P3= Finance Scale-up digital entrepreneurship pillar
S3_SDEC_P4= Networking and support Scale-up digital entrepreneurship pillar

Normalization of the pillars: Similar to the previous cases we calculate the normalised scores for all the 16 pillars

$$p(norm)_{i,k} = \frac{p_{i,k}}{\max p_{i,k}} \quad (7)$$

for all k= 1 ... 16, the number of pillars
where $p(norm)_{i,k}$ is the normalised score value for country i and pillar k
$p_{i,k}$ is the original digital pillar value for country i and pillar k
$max\ p_{i,k}$ is the maximum value for pillar k

Average pillar adjustment: The different averages of the normalised values of the pillars imply that reaching the same indicator values requires different effort and resources. Since we want to apply the EIDES for public policy purposes, the additional resources for the same marginal improvement of the pillar values should be the same for all pillars. Therefore, we need a transformation to equalize the average values of the pillar components. Equation 8 shows the calculation of the average value of the k pillar:

$$\overline{p(norm)}_{\mathrm{k}} = \frac{\sum_{\mathrm{i=1}}^{\mathrm{n}} \mathrm{p(norm)_{i,k}}}{\mathrm{n}} \qquad \text{for all k} \quad (8a)$$

where $\overline{\mathrm{p(norm)}}_{\mathrm{k}}$ is the average value of all k=16 normalised pillars

We want to transform the $\mathrm{p(norm)}_{\mathrm{i,k}}$ values such that the potential values to be in the [0, 1] range.

$$y_{i,k} = p(norm)_{i,k}^{t} \qquad (8b)$$

where t is the "strength of adjustment", the t-th moment of $p(norm)_k$ is exactly the needed average, $\bar{y}_j$

We have to find the root of the following equation for k:

$$\sum_{i=1}^{n} p(norm)_{i,k}^{t} - n\bar{y}_j = 0 \qquad (8c)$$

It is easy to see based on previous conditions and derivatives that the function is decreasing and convex which means it can be quickly solved using the well-known Newton-Raphson method with an initial guess of 0. After obtaining k, the computations are straightforward.

Penalizing: After these transformations, the Penalty for Bottleneck (PFB) methodology was used to create pillar-adjusted PFB values. We define our penalty function following as:

$$h_{(i),k} = min\, y_{(i),k} + (1 - e^{-(y_{(i)k} - min\, y_{(i),k})}) \qquad (9)$$

where $h_{i,k}$ is the modified, post-penalty value of pillar k in country i

$y_{i,j}$ is the normalised value of index component k in country i

y_{min} is the lowest value of $y_{i,k}$ for country i.

i = 1, 2,……28 = the number of countries

k= 1, 2,…….16= the number of pillars

Sub-index calculation: The value of a sub-index for any country was then calculated as the arithmetic average of its PFB-adjusted pillars for that sub-index multiplied by 100 to get a 100 point scale. Note that the general framework conditions pillars are the same for all stages

$$DE\_Stand\_up_i = \frac{100}{8}\left(\sum_{k=1}^{4} GDFC_{P_{i,k}} + \sum_{k=5}^{8} S1\_SDEC\_P_{i,k}\right) \qquad (10a)$$

$$DE\_Start\_up_i = \frac{100}{8}\left(\sum_{k=1}^{4} GDFC_{P_{i,k}} + \sum_{k=5}^{8} S2\_SDEC\_P_{i,k}\right) \qquad (10b)$$

$$DE\_Scale\_up_i = \frac{100}{8}\left(\sum_{k=1}^{4} GDFC_{P_{i,k}} + \sum_{k=5}^{8} S3\_SDEC\_P_{i,k}\right) \qquad (10c)$$

where

DE_Stand_up= Digital Entrepreneurship Stand-up sub-index

DE_Start_up= Digital Entrepreneurship Start-up sub-index

DE_Scale_up= Digital Entrepreneurship Scale-up sub-index

GIDES point calculation: Finally, the scores are calculated as simple arithmetic averages of the three sub-indices.

$$GIDES_i = \frac{1}{3}(DE\_Stand\_up_i + DE\_Start\_up_i + DE\_Scale\_up_i) \quad (11)$$

Appendix 2: Structure and Description of GIDES Components

GENERAL FRAMEWORK CONDITIONS (GFC)			
Indicators	**Code**	**Dataset**	**Sources**
CULTURE, INFORMAL INSTITUTIONS (GFC_P1)			
Efficiency of legal framework in setting disputes	GFC_P1_I1	WEF, The Competitiveness Index 4.0 2019 Dataset	http://www3.weforum.org/docs/WEF_TheGlobalCompetitivenessReport2019.pdf (12/08/2021)
Corruption Perception Index	GFC_P1_I2	Transparency International	https://www.transparency.org/en/cpi/2020/index/nzl (12/08/2021)
Corporate governance	GFC_P1_I3	WEF, The Competitiveness Index 4.0 2019 Dataset	http://www3.weforum.org/docs/WEF_TheGlobalCompetitivenessReport2019.pdf (12/08/2021)
Attitudes towards entrepreneurial risk	GFC_P1_I4	WEF, The Competitiveness Index 4.0 2019 Dataset	http://www3.weforum.org/docs/WEF_TheGlobalCompetitivenessReport2019.pdf (12/08/2021)
Reliance on professional management	GFC_P1_I5	WEF, The Competitiveness Index 4.0 2019 Dataset	http://www3.weforum.org/docs/WEF_TheGlobalCompetitivenessReport2019.pdf (12/08/2021)
Willingness to delegate authority	GFC_P1_I6	WEF, The Competitiveness Index 4.0 2019 Dataset	http://www3.weforum.org/docs/WEF_TheGlobalCompetitivenessReport2019.pdf (12/08/2021)
FORMAL INSTITUTIONS, REGULATION, TAXATION (GFC_P2)			
Rule of law (Property rights)	GFC_P2_I1	Heritage Foundation	https://www.heritage.org/index/explore (12/08/2021)
Rule of law (Judicial Effectiveness)	GFC_P2_I2	Heritage Foundation	https://www.heritage.org/index/explore (12/08/2021)
Distortive effect of taxes and subsidies on competition	GFC_P2_I3	WEF, The Competitiveness Index 4.0 2019 Dataset	http://www3.weforum.org/docs/WEF_TheGlobalCompetitivenessReport2019.pdf (12/08/2021)
Total tax rate (reciprocal)	GFC_P2_I4	World Bank, Doing Business project	https://data.worldbank.org/indicator/IC.TAX.TOTL.CP.ZS (12/08/2021)
Efficiency of legal framework in challenging regulations	GFC_P2_I5	WEF, The Competitiveness Index 4.0 2019 Dataset	http://www3.weforum.org/docs/WEF_TheGlobalCompetitivenessReport2019.pdf (12/08/2021)
MARKET CONDITIONS (GFC_P3)			
Domestic market size	GFC_P3_I1	WEF, The Competitiveness Index 4.0 2019 Dataset	http://www3.weforum.org/docs/WEF_TheGlobalCompetitivenessReport2019.pdf (12/08/2021)
Urbanisation	GFC_P3_I2	United Nations	https://data.worldbank.org/indicator/SP.URB.TOTL.IN.ZS (12/08/2021)
Extent of market dominance	GFC_P3_I3	WEF, The Competitiveness Index 4.0 2019 Dataset	http://www3.weforum.org/docs/WEF_TheGlobalCompetitivenessReport2019.pdf (12/08/2021)

GENERAL FRAMEWORK CONDITIONS (GFC)			
Indicators	**Code**	**Dataset**	**Sources**
Economic complexity (re-scaled)	GFC_P3_I4	Observatory of Economic Complexity	http://atlas.media.mit.edu/en/rankings/country/eci/ (12/08/2021)
Prevalence of non-tariff barriers	GFC_P3_I5	WEF, The Competitiveness Index 4.0 2019 Dataset	http://www3.weforum.org/docs/WEF_TheGlobalCompetitivenessReport2019.pdf (12/08/2021)
PHYSICAL INFRASTRUCTURE (GFC_P4)			
Electricity infrastructure	GFC_P4_I1	WEF, The Competitiveness Index 4.0 2019 Dataset	http://www3.weforum.org/docs/WEF_TheGlobalCompetitivenessReport2019.pdf (12/08/2021)
Transportation infrastructure	GFC_P4_I2	WEF, The Competitiveness Index 4.0 2019 Dataset	http://www3.weforum.org/docs/WEF_TheGlobalCompetitivenessReport2019.pdf (12/08/2021)

SYSTEMIC FRAMEWORK CONDITIONS (SFC)			
STAND-UP (S1)			
HUMAN CAPITAL (S1_SEC_P1)			
Quality of education	S1_SEC_P1_I1	WEF, Global Information Technology Report	https://tcdata360.worldbank.org/indicators/entrp.ed.qual?country=BRA&indicator=3415&viz=line_chart&years=2012,2016 (12/08/2021)
Future workforce	S1_SEC_P1_I2	WEF, The Competitiveness Index 4.0 2019 Dataset	http://www3.weforum.org/docs/WEF_TheGlobalCompetitivenessReport2019.pdf (12/08/2021)
KNOWLEDGE CREATION AND DISSEMINATION (S1_SEC_P2)			
Skillset of graduates	S1_SEC_P2_I1	WEF, The Competitiveness Index 4.0 2019 Dataset	http://www3.weforum.org/docs/WEF_TheGlobalCompetitivenessReport2019.pdf (12/08/2021)
Professionals & researchers	S1_SEC_P2_I2	Global Talent Competitiveness Index	https://www.insead.edu/global-indices (12/08/2021)
Attracting and retraining talents	S1_SEC_P2_I3	WEF, The Competitiveness Index 4.0 2019 Dataset	http://www3.weforum.org/docs/WEF_TheGlobalCompetitivenessReport2019.pdf (12/08/2021)
FINANCE (S1_SEC_P3)			
Domestic credit to private sector	S1_SEC_P3_I1	International Monetary Fund, International Financial Statistics and data files, and World Bank and OECD GDP estimates.	https://data.worldbank.org/indicator/FS.AST.PRVT.GD.ZS (12/08/2021)
Financing SMEs	S1_SEC_P3_I2	WEF, The Competitiveness Index 4.0 2019 Dataset	http://www3.weforum.org/docs/WEF_TheGlobalCompetitivenessReport2019.pdf (12/08/2021)
NETWORKING AND SUPPORT (S1_SEC_P4)			
Social capital	S1_SEC_P4_I1	WEF, The Competitiveness Index 4.0 2019 Dataset	http://www3.weforum.org/docs/WEF_TheGlobalCompetitivenessReport2019.pdf (12/08/2021)

GENERAL FRAMEWORK CONDITIONS (GFC)			
Indicators	**Code**	**Dataset**	**Sources**
START-UP (S2)			
HUMAN CAPITAL (S2_SEC_P1)			
Tertiary education enrollment	S2_SEC_P1 _I1	UIS. Stat	http://data.uis.unesco.org/ (14/08/2021)
Percentage of universities in top ranking	S2_SEC_P1 _I2	Webometrics Ranking of World Universities, CSIC	http://www.webometrics.info/en/node/54 (14/08/2021)
STEM education	S2_SEC_P1 _I3	UIS. Stat	http://data.uis.unesco.org/?queryid=74# (17/08/2021)
Researchers in R&D (per million people)	S2_SEC_P1 _I4	UNESCO Institute for Statistics	https://tcdata360.worldbank.org/indicators/SP.POP.SCIE.RD.P6?country=BRA&indicator=2014&viz=line_chart&years=1996,2014 (17/08/2021)
KNOWLEDGE CREATION AND DISSEMINATION (S2_SEC_P2)			
Quality of research institutions	S2_SEC_P2 _I1	WEF, The Competitiveness Index 4.0 2019 Dataset new name: Research institutions prominence	http://www3.weforum.org/docs/WEF_TheGlobalCompetitivenessReport2019.pdf (12/08/2021)
Technicians and associate professionals	S2_SEC_P2 _I2	International Labour Organisation (ILO)	https://www.ilo.org/shinyapps/bulkexplorer11/?lang=en&segment=indicator&id=EMP_2EMP_SEX_OCU_NB_A (12/08/2021)
Quality of math and science in education	S2_SEC_P2 _I3	WEF, Global Information Technology Report	https://tcdata360.worldbank.org/indicators/entrp.ed.qual?country=BRA&indicator=3415&viz=line_chart&years=2012,2016 (12/08/2021)
FINANCE (S2_SEC_P3)			
Venture capital availability	S2_SEC_P3 _I1	WEF, The Competitiveness Index 4.0 2019	http://www3.weforum.org/docs/WEF_TheGlobalCompetitivenessReport2019.pdf (12/08/2021)
Venture capital funding	S2_SEC_P3 _I2	Dealroom	https://app.dealroom.co/markets/countries/overview (12/08/2012)
Number of VC investors	S2_SEC_P3 _I3	Dealroom	https://app.dealroom.co/markets/countries/overview (12/08/2012)
NETWORKING AND SUPPORT (S2_SEC_P4)			
International co-inventions	S2_SEC_P4 _I1	WEF, The Competitiveness Index 4.0 2019	http://www3.weforum.org/docs/WEF_TheGlobalCompetitivenessReport2019.pdf (14/08/2021)
Joint venture/strategic alliance deals	S2_SEC_P4 _I2	The Global Innovation Index	https://tcdata360.worldbank.org/indicators/3aa2eb70?country=BRA&indicator=40712&viz=line_chart&years=2013,2020 (014/08/2021)
SCALE-UP (S3)			
HUMAN CAPITAL (S3_SEC_P1)			
Extent of staff training	S3_SEC_P1 _I1	WEF, The Competitiveness Index 4.0 2019	http://www3.weforum.org/docs/WEF_TheGlobalComp

GENERAL FRAMEWORK CONDITIONS (GFC)			
Indicators	**Code**	**Dataset**	**Sources**
			etitivenessReport2019.pdf (12/08/2021)
Skilled labour	S3_SEC_P1_I2	WEF, The Competitiveness Index 4.0 2019	http://www3.weforum.org/docs/WEF_TheGlobalCompetitivenessReport2019.pdf (12/08/2021)
Labour freedom	S3_SEC_P1_I3	Heritage Foundation	https://www.heritage.org/index/explore (12/08/2021)
KNOWLEDGE CREATION AND DISSEMINATION (S3_SEC_P2)			
Gross domestic expenditure on R&D (GERD)	S3_SEC_P2_I1	The Global Innovation Index	https://www.globalinnovationindex.org/analysis-indicator (12/08/2021)
PCT patent applications	S3_SEC_P2_I2	WEF, The Competitiveness Index 4.0 2019	http://www3.weforum.org/docs/WEF_TheGlobalCompetitivenessReport2019.pdf (12/08/2021)
Knowledge absorption	S3_SEC_P2_I3	The Global Innovation Index	https://www.globalinnovationindex.org/analysis-indicator (12/08/2021)
University-industry collaboration in R&D	S3_SEC_P2_I4	WEF, The Competitiveness Index 4.0 2019	http://www3.weforum.org/docs/WEF_TheGlobalCompetitivenessReport2019.pdf (12/08/2021)
FINANCE (S3_SEC_P3)			
Market capitalization	S3_SEC_P3_I1	WEF, The Competitiveness Index 4.0 2019	http://www3.weforum.org/docs/WEF_TheGlobalCompetitivenessReport2019.pdf (12/08/2021)
Financing through local equity market	S3_SEC_P3_I2	WEF, The Competitiveness Index, 2017-2018	http://www3.weforum.org/docs/GCR2017-2018/05FullReport/TheGlobalCompetitivenessReport2017%E2%80%932018.pdf (12/08/2021)
NETWORKING AND SUPPORT (S3_SEC_P4)			
State of cluster development	S3_SEC_P4_I1	WEF, The Competitiveness Index 4.0 2019	http://www3.weforum.org/docs/WEF_TheGlobalCompetitivenessReport2019.pdf (12/08/2021)
Multi-stakeholder collaboration	S3_SEC_P4_I2	WEF, The Competitiveness Index 4.0 2019	http://www3.weforum.org/docs/WEF_TheGlobalCompetitivenessReport2019.pdf (12/08/2021)
Logistic index	S3_SEC_P4_I3	World bank	https://lpi.worldbank.org/international/aggregated-ranking (12/08/2021)

DIGITAL FRAMEWORK CONDITIONS (DFC)			
Indicator	**Code**	**Dataset**	**Sources**
CULTURE, INFORMAL INSTITUTIONS (DFC_P1)			
Households with a computer at home	DFC_P1_I1	ITU World Telecommunication, ICT Indicators Database	https://tcdata360.worldbank.org/sources (09/08/2021)
Households with Internet access	DFC_P1_I2	ITU World Telecommunication, ICT Indicators Database	https://tcdata360.worldbank.org/sources (09/08/2021)

GENERAL FRAMEWORK CONDITIONS (GFC)			
Indicators	**Code**	**Dataset**	**Sources**
Individuals using Internet	DFC_P1_I3	ITU World Telecommunication, ICT Indicators Database	https://tcdata360.worldbank.org/sources (09/08/2021)
Percent of firms having its own website	DFC_P1_I4	WBG Enterprise survey	https://govdata360.worldbank.org/indicators/inn.pct.site?country=BRA&indicator=271&viz=bar_chart&years=2009 (09/08/2021)
FORMAL INSTITUTIONS, REGULATION, TAXATION (DFC_P2)			
Future orientation of government	DFC_P2_I1	The Global Competitiveness Index 4.0 2019 Dataset	https://govdata360.worldbank.org/indicators/inn.pct.site?country=BRA&indicator=271&viz=bar_chart&years=2009 (09/08/2021)
Percentage of network attacks by Kaspersky (reciprocal)	DFC_P2_I2	Securelist	https://statistics.securelist.com/intrusion-detection-scan/month (09/08/2021)
Percentage of WEB treats (reciprocal)	DFC_P2_I3	Securelist	https://statistics.securelist.com/web-anti-virus/month (09/08/2021)
Software piracy rate (reciprocal)	DFC_P2_I4	WEF, Global Information Technology Report	https://tcdata360.worldbank.org/indicators/entrp.piracy?country=BRA&indicator=3377&viz=line_chart&years=2012,2016 (09/08/2021)
Competition in network services	DFC_P2_I5	The Global Competitiveness Index 4.0 2019 Dataset	http://www3.weforum.org/docs/WEF_TheGlobalCompetitivenessReport2019.pdf (09/08/2021)
E-government	DFC_P2_I6	United Nations	https://publicadministration.un.org/egovkb/Data-Center (09/08/2021)
MARKET CONDITIONS (DFC_P3)			
Used the internet to pay bills or to buy something online in the past year (% age 15+)	DFC_P3_I1	The Global Findex Database, WBG	https://tcdata360.worldbank.org/indicators/hdec76eb6?country=BRA&indicator=3364&viz=line_chart&years=2014,2017 (09/08/2021)
Used the internet to buy something online in the past year(% age 15+)	DFC_P3_I2	The Global Findex Database, WBG	https://globalfindex.worldbank.org/ ((09/08/2021)
Internet shopping	DFC_P3_I3	Network Readiness Index (The Global Findex Database)	https://networkreadinessindex.org/ (09/08/2021)
% of firms using email to interact with clients/suppliers	DFC_P3_I4	WBG, Enterprise Survey	https://tcdata360.worldbank.org/indicators/pct.email?country=BRA&indicator=272&viz=bar_chart&years=2009 (09/08/2021)
B2C E-commerce Index	DFC_P3_I5	UNCTAD	https://knoema.com/UNCTADBECI2019/unctad-b2c-e-commerce-index (09/08/2021)
T-index	DFC_P3_I6	Translate.net	https://www.translated.net/en/languages-that-matter (09/08/2021)
PHYSICAL INFRASTRUCTURE (DFC_P4)			

GENERAL FRAMEWORK CONDITIONS (GFC)			
Indicators	**Code**	**Dataset**	**Sources**
Prepaid mobile cellular tariffs	DFC_P4_I1	WEF - Global Information Technology Report	https://tcdata360.worldbank.org/indicators/entrp.mob.prepaid?country=BRA&indicator=3409&viz=line_chart&years=2012,2016 (09/08/2021)
Data-only mobile-broadband basket (1.5 GB and above)	DFC_P4_I2	ITU, ICT Price baskets 2018-2020	https://www.itu.int/en/ITU-D/Statistics/Dashboards/Pages/IPB.aspx (09/08/2021)
Fixed broadband Internet tariffs	DFC_P4_I3	WEF - Global Information Technology Report	https://tcdata360.worldbank.org/indicators/etrade.entrp.broadband.tar?country=BRA&indicator=3411&viz=line_chart&years=2012,2016 (09/08/2021)
Fixed broadband 5GB	DFC_P4_I4	ITU, ICT Price baskets 2018-2020	https://www.itu.int/en/ITU-D/Statistics/Dashboards/Pages/IPB.aspx (09/08/2021)
Median Download speed	DFC_P4_I5	Fastmetrix	https://www.fastmetrics.com/internet-connection-speed-by-country.php#median-internet-speeds-2020 (09/08/2021)
Median Upload speed	DFC_P4_I6	Fastmetirx	http://testmy.net/country
Mobile network coverage	DFC_P4_I7	WEF - Global Information Technology Report	https://tcdata360.worldbank.org/indicators/entrp.mob.cov?country=BRA&indicator=3403&viz=line_chart&years=2012,2016 (09/08/2021)
Secure Internet servers	DFC_P4_I8	Netcraft (netcraft.com) and World Bank population estimates.	https://data.worldbank.org/indicator/IT.NET.SECR.P6 (09/08/2021)

SYSTEMIC DIGITAL CONDITIONS (SDC)			
STAND-UP (S1)			
HUMAN CAPITAL (S1_SDC_P1)			
Internet access in schools	S1_SDC_P1_I1	WEF - Global Information Technology Report	https://tcdata360.worldbank.org/indicators/entrp.inet.school?country=USA&indicator=3465&countries=BRA&viz=line_chart&years=2012,2016
Digital Skills Among Population	S1_SDC_P1_I2	The Global Competitiveness Index 4.0 2019 Dataset	https://tcdata360.worldbank.org/indicators/h945a9708?country=BRA&indicator=41400&viz=line_chart&years=2017,2019 (10/08/2021)
KNOWLEDGE CREATION AND DISSEMINATION (S1_SDC_P2)			
Number of OA journals by country DOAJ	S1_SDC_P2_I1	Morrison, Heather, *et al.*, 2019, "OA APC longitudinal study dataset 2019"	https://sustainingknowledgecommons.org/2019/11/20/oa-main-2019-dataset-documentation-and-open-peer-review-invitation/ (10/08/2021)

GENERAL FRAMEWORK CONDITIONS (GFC)			
Indicators	**Code**	**Dataset**	**Sources**
Scientific and technical journal articles	S1_SDC_P2_I2	National Science Foundation, Science and Engineering Indicator	https://data.worldbank.org/indicator/IP.JRN.ARTC.SC (10/08/2021)
Wikipedia yearly edits	S1_SDC_P2_I3	The Global Innovation Index	https://tcdata360.worldbank.org/indicators/21355dd9?country=BRA&indicator=40704&viz=line_chart&years=2017,2020
YouTube video uploads	S1_SDC_P2_I4	The Global Innovation Index	https://tcdata360.worldbank.org/indicators/8211d3c5?country=BRA&indicator=40709&viz=line_chart&years=2013,2017 (10/08/2021)
Mobile app creation	S1_SDC_P2_I5	Network Readiness Index, GSM Association, The GSMA Mobile Connectivity Index 2019	https://networkreadinessindex.org/ (10/08/2021)
FINANCE (S1_SDC_P3)			
Made or received digital payments in the past year	S1_SDC_P3_I1	Global Findex Database, WGB	https://globalfindex.worldbank.org/
Used a mobile phone or the internet to access a financial institution account in the past year (% age 15+)	S1_SDC_P3_I2	Global Findex Database, WGB	https://globalfindex.worldbank.org/
Used a mobile phone or the internet to check account balance in the past year (% age 15+)	S1_SDC_P3_I3	Global Findex Database, WGB	https://globalfindex.worldbank.org/
NETWORKING AND SUPPORT (S1_SDC_P4)			
Generic top-level domains (gTLDs)	S1_SDC_P4_I1	Global Innovation Index 2019	https://tcdata360.worldbank.org/indicators/f3754ef0?country=BRA&indicator=40694&viz=line_chart&years=2013,2020 (10/08/2021)
Use of virtual social networks	S1_SDC_P4_I2	WEF - Global Information Technology Report	https://tcdata360.worldbank.org/indicators/entrp.soc.network?country=BRA&indicator=3435&viz=line_chart&years=2012,2016 (10/08/2021)
Use of virtual social networks	S1_SDC_P4_I3	We Are Social and Hootsuite	https://wearesocial.com/digital-2020 (10/08/2021)
Use of virtual professional networks	S1_SDC_P4_I4	Global Talent Competitiveness Index, 2020	https://knowledge.insead.edu/talent-management/global-talent-competitiveness-index-2932 (10/08/2021)

START-UP (S2)			
HUMAN CAPITAL (S2_SDC_P1)			
Employees by occupationsInformat	S2_SDC_P1_I1	ILO statistics	https://www.ilo.org/shinyapps/bulkexplorer49/?lang=e

GENERAL FRAMEWORK CONDITIONS (GFC)			
Indicators	**Code**	**Dataset**	**Sources**
ion and communications technicians			n&segment=indicator&id=EAP_2WAP_SEX_AGE_RT_A (17/08/2021)
KNOWLEDGE CREATION AND DISSEMINATION (S2_SDC_P2)			
Employment in knowledge intensive	S2_SDC_P2_I1	The Global Innovation Index	https://tcdata360.worldbank.org/indicators/97be8845?country=BRA&indicator=40465&viz=line_chart&years=2013,2020 (10/08/2021)
Software developers	S2_SDC_P2_I2	Developer survey	https://insights.stackoverflow.com/survey (10/08/2021)
FINANCE (S2_SDC_P3)			
Market Volumes of Alternative Finance Transactions	S2_SDC_P3_I1	The Global Alternative Finance Market Benchmarking Report 2020 (Cambridge)	https://www.jbs.cam.ac.uk/faculty-research/centres/alternative-finance/ (10/08/2021)
NETWORKING AND SUPPORT (S2_SDC_P4)			
Availability of local content	S2_SDC_P4_I1	The Network Readiness Index,	https://networkreadinessindex.org/ (11/08/2021)
SR score	S2_SDC_P4_I2	Startupranking.com	https://www.startupranking.com/countries (11/08/2021)

SCALE-UP (S3)			
HUMAN CAPITAL (S3_SDC_P1)			
Technology Adaptation	S3_SDC_P1_I1	Cisco Readiness Index	https://www.cisco.com/c/m/en_us/about/corporate-social-responsibility/research-resources/digital-readiness-index.html#/ (11/08/2021)
KNOWLEDGE CREATION AND DISSEMINATION (S3_SDC_P2)			
Total computer software spending	S3_SDC_P2_I1	The Global Innovation Index	https://tcdata360.worldbank.org/indicators/hbf029e29?country=BRA&indicator=40707&viz=line_chart&years=2018,2019 (11/08/2021)
Impact of ICTs on business models, 1-7 (best)	S3_SDC_P2_I2	WEF - Global Information Technology Report	https://tcdata360.worldbank.org/indicators/entrp.ict.biz.model?country=BRA&indicator=3455&viz=line_chart&years=2012,2016 (11/08/2021)
Impact of ICTs on new organizational models, 1-7 (best)	S3_SDC_P2_I3	WEF - Global Information Technology Report	https://tcdata360.worldbank.org/indicators/entrp.ict.org.mdl?country=BRA&indicator=3459&viz=line_chart&years=2012,2016 (11/08/2021)
ICT PCT patents, applications/million pop.	S3_SDC_P2_I4	WEF - Global Information Technology Report	https://tcdata360.worldbank.org/indicators/entrp.ict.patents?country=BRA&indicator=3457&viz=line_chart&years=2012,2016 (11/08/2021)

GENERAL FRAMEWORK CONDITIONS (GFC)			
Indicators	**Code**	**Dataset**	**Sources**
FINANCE (S3_SDC_P3)			
Fintech	S3_SDC_P3_I1	dealroom.co	https://app.dealroom.co/companies/f/industries/fintech/locations/Europe
NETWORKING AND SUPPORT (S3_SDC_P4)			
ICT use for business-to-business transactions, 1-7 (best)	S3_SDC_P4_I1	WEF - Global Information Technology Report	https://tcdata360.worldbank.org/indicators/hf0d27aa9?country=DZA&indicator=3443&countries=BRA&viz=line_chart&years=2013,2016 (11/08/2021)
Business-to-consumer Internet use	S3_SDC_P4_I2	WEF - Global Information Technology Report	https://tcdata360.worldbank.org/indicators/hf0d27aa9?country=DZA&indicator=3443&countries=BRA&viz=line_chart&years=2013,2016 (11/08/2021)
Business use of digital tools	S3_SDC_P4_I3	Network Readiness Index	https://networkreadinessindex.org/ (11/08/2021)

Appendix 3: The Global Index of Digital Entrepreneurship Systems 2021 Rankings

Country	Stand-up System		Start-up System		Scale-up System		GIDES	
	Score	Rank	Score	Rank	Score	Rank	Score	Rank
Singapore	**79.8**	**2**	**83.6**	**1**	**80.4**	**1**	**81.3**	**1**
United States	79.9	1	79.3	4	79.7	2	79.7	2
Sweden	78.3	4	82.3	2	78.2	3	79.6	3
Denmark	79.4	3	79.6	3	77.5	4	78.8	4
Switzerland	77.1	5	77.0	6	76.7	5	76.9	5
Netherlands	76.3	6	75.0	7	75.3	6	75.6	6
Finland	72.1	7	77.2	5	70.6	7	73.3	7
Norway	71.7	8	70.8	9	67.1	10	69.9	8
Luxembourg	69.1	10	71.8	8	67.8	9	69.6	9
United Kingdom	70.0	9	68.8	10	68.1	8	69.0	10
New Zealand	67.9	11	65.1	12	63.1	12	65.3	11
Germany	63.1	13	67.3	11	63.6	11	64.7	12
Canada	63.4	12	63.6	13	61.2	13	62.7	13
Australia	63.0	14	61.7	15	59.3	15	61.3	14
Austria	59.2	15	62.6	14	59.8	14	60.5	15
Leaders	71.4		72.4		69.9		71.2	
Israel	55.4	19	60.6	16	58.3	17	58.1	16
Ireland	57.7	16	59.5	18	56.1	19	57.8	17
Belgium	55.8	18	57.8	19	56.2	18	56.6	18
Estonia	56.2	17	59.6	17	52.4	22	56.1	19
Japan	53.2	21	54.8	21	59.0	16	55.7	20
United Arab Emirates	54.9	20	52.3	23	55.7	21	54.3	21
Korea, Rep. of	**51.6**	**22**	**54.9**	**20**	**55.9**	**20**	**54.1**	**22**
France	48.3	24	53.2	22	49.4	23	50.3	23
Malta	50.0	23	51.4	24	45.3	24	48.9	24
Spain	46.0	25	47.2	25	44.0	27	45.7	25
Followers	52.9		55.1		53.2		53.8	
Czech Republic	44.0	27	46.1	26	44.4	25	44.8	26
Malaysia	**43.1**	**28**	**41.7**	**29**	**44.3**	**26**	**43.1**	**27**
Slovenia	41.1	29	44.1	27	39.8	30	41.7	28
Bahrain	44.2	26	39.1	34	41.1	29	41.5	29
Saudi Arabia	41.0	30	39.7	32	41.3	28	40.7	30
Lithuania	39.6	32	42.0	28	39.6	31	40.4	31
Italy	39.0	33	41.5	30	38.6	32	39.7	32
Cyprus	39.6	31	41.3	31	36.5	36	39.2	33
Latvia	37.9	35	39.7	33	37.7	33	38.4	34

Country	Stand-up System		Start-up System		Scale-up System		GIDES	
	Score	Rank	Score	Rank	Score	Rank	Score	Rank
Portugal	38.0	34	38.3	35	35.8	38	37.4	35
Qatar	37.9	36	34.1	41	37.6	34	36.5	36
Slovak Republic	36.5	37	37.4	37	35.6	40	36.5	37
Poland	35.4	39	37.6	36	35.8	39	36.2	38
China, People's Republic of	**34.8**	**40**	**34.1**	**40**	**37.1**	**35**	**35.3**	**39**
Chile	36.5	38	33.4	42	36.0	37	35.3	40
Catchers-up	39.2		39.4		38.7		39.1	
Russian Federation	32.3	43	34.5	39	33.3	42	33.4	41
Hungary	31.9	44	35.5	38	32.6	43	33.3	42
Kuwait	34.3	41	30.4	44	34.1	41	33.0	43
Costa Rica	32.8	42	27.8	50	30.7	44	30.4	44
Croatia	29.1	47	32.6	43	28.4	48	30.0	45
Bulgaria	28.6	49	29.8	45	29.3	45	29.2	46
Mauritius	30.1	45	27.5	52	28.8	46	28.8	47
Uruguay	29.6	46	27.7	51	28.1	50	28.5	48
Romania	27.4	52	29.4	47	28.2	49	28.3	49
Georgia	28.7	48	28.8	48	27.6	52	28.3	50
Oman	28.0	50	27.4	53	28.5	47	28.0	51
Kazakhstan	**27.6**	**51**	**26.6**	**58**	**28.0**	**51**	**27.4**	**52**
Greece	26.6	54	29.8	46	25.6	60	27.3	53
Türkiye	26.8	53	26.6	56	27.4	53	26.9	54
Ukraine	25.9	57	27.3	54	25.8	58	26.3	55
Montenegro	25.7	58	26.9	55	26.2	57	26.3	56
Serbia	24.9	60	28.1	49	25.2	61	26.1	57
Armenia	**25.6**	**59**	**26.6**	**57**	**25.8**	**59**	**26.0**	**58**
Thailand	**25.9**	**55**	**24.4**	**59**	**27.3**	**54**	**25.9**	**59**
Azerbaijan	**25.9**	**56**	**23.5**	**60**	**27.0**	**55**	**25.5**	**60**
South Africa	24.3	62	22.4	62	26.8	56	24.5	61
North Macedonia	24.8	61	23.3	61	24.6	62	24.2	62
Viet Nam	**22.9**	**63**	**21.8**	**65**	**24.5**	**63**	**23.1**	**63**
Brazil	22.6	64	21.7	66	23.6	64	22.7	64
Jordan	22.2	67	22.1	63	22.9	65	22.4	65
Argentina	22.3	66	22.0	64	22.1	67	22.2	66
Colombia	22.2	68	20.9	68	22.8	66	21.9	67
Moldova	21.5	70	21.5	67	20.5	72	21.2	68
Mexico	20.2	72	20.4	69	21.8	70	20.8	69
Panama	21.5	69	19.5	73	20.2	74	20.4	70
Indonesia	**22.4**	**65**	**16.8**	**82**	**22.0**	**69**	**20.4**	**71**

Country	Stand-up System		Start-up System		Scale-up System		GIDES	
	Score	Rank	Score	Rank	Score	Rank	Score	Rank
Namibia	20.4	71	18.5	76	21.3	71	20.1	72
Laggards	26.1		25.7		26.3		26.0	
Egypt, Arab Rep.	19.4	76	18.0	78	22.1	68	19.8	73
Morocco	19.7	73	19.0	75	20.3	73	19.7	74
India	**19.0**	**78**	**19.7**	**71**	**20.2**	**75**	**19.6**	**75**
Lebanon	19.4	75	19.9	70	19.3	78	19.5	76
Tunisia	19.2	77	19.6	72	19.5	77	19.4	77
Bosnia and Herzegovina	19.5	74	19.3	74	19.0	79	19.3	78
Philippines	**18.5**	**79**	**16.9**	**81**	**20.1**	**76**	**18.5**	**79**
Peru	17.9	83	17.7	79	17.8	83	17.8	80
Dominican Republic	17.9	81	16.2	85	18.7	81	17.6	81
Sri Lanka	**17.9**	**80**	**16.7**	**83**	**17.9**	**82**	**17.5**	**82**
Kenya	17.9	82	15.5	86	18.8	80	17.4	83
Mongolia	**17.1**	**85**	**18.2**	**77**	**16.4**	**86**	**17.2**	**84**
Botswana	17.0	87	16.4	84	17.5	84	17.0	85
Albania	17.1	84	17.0	80	16.0	88	16.7	86
Ecuador	17.0	86	14.8	90	16.7	85	16.2	87
Kyrgyz Republic	**15.1**	**90**	**15.0**	**87**	**15.5**	**90**	**15.2**	**88**
Rwanda	14.8	91	14.9	88	15.9	89	15.2	89
Paraguay	15.5	88	13.9	91	15.2	91	14.9	90
Ghana	15.2	89	13.4	92	16.0	87	14.9	91
Algeria	14.2	93	14.8	89	15.1	92	14.7	92
Honduras	14.5	92	13.2	93	13.9	94	13.8	93
Guatemala	13.8	94	10.9	100	13.9	93	12.9	94
Tajikistan	**13.2**	**95**	**12.4**	**95**	**12.8**	**99**	**12.8**	**95**
Bangladesh	**12.4**	**98**	**11.9**	**96**	**13.3**	**95**	**12.5**	**96**
Pakistan	**12.0**	**100**	**11.7**	**97**	**13.3**	**96**	**12.3**	**97**
Senegal	12.9	96	10.4	105	13.1	97	12.2	98
Bolivia	12.6	97	11.5	99	12.1	105	12.1	99
El Salvador	12.4	99	10.7	102	13.0	98	12.1	100
Cambodia	**11.9**	**101**	**11.7**	**98**	**12.3**	**103**	**12.0**	**101**
Nigeria	11.3	103	10.9	101	12.5	101	11.6	102
Zimbabwe	10.7	108	12.6	94	11.5	109	11.6	103
Nepal	**11.8**	**102**	**10.4**	**104**	**12.2**	**104**	**11.5**	**104**
Benin	10.7	107	10.6	103	12.3	102	11.2	105
Tanzania	10.7	106	9.4	107	12.6	100	10.9	106
Uganda	11.0	105	9.7	106	11.8	106	10.8	107
Zambia	11.3	104	9.2	108	11.6	107	10.7	108

Country	Stand-up System		Start-up System		Scale-up System		GIDES	
	Score	Rank	Score	Rank	Score	Rank	Score	Rank
Cameroon	10.3	109	8.8	109	11.4	110	10.2	109
Mali	10.0	110	7.9	112	11.5	108	9.8	110
Madagascar	8.3	112	7.8	113	9.5	111	8.5	111
Burkina Faso	8.8	111	8.7	110	7.6	113	8.4	112
Mozambique	7.8	113	8.1	111	8.1	112	8.0	113
Tailenders	14.3		13.6		14.8		14.2	
Average	32.0		31.9		32.0		31.9	

Note: The countries in bold are the twenty-one developing Asian countries.
Source: Authors' calculations.