UOC Universitat Oberta de Catalunya

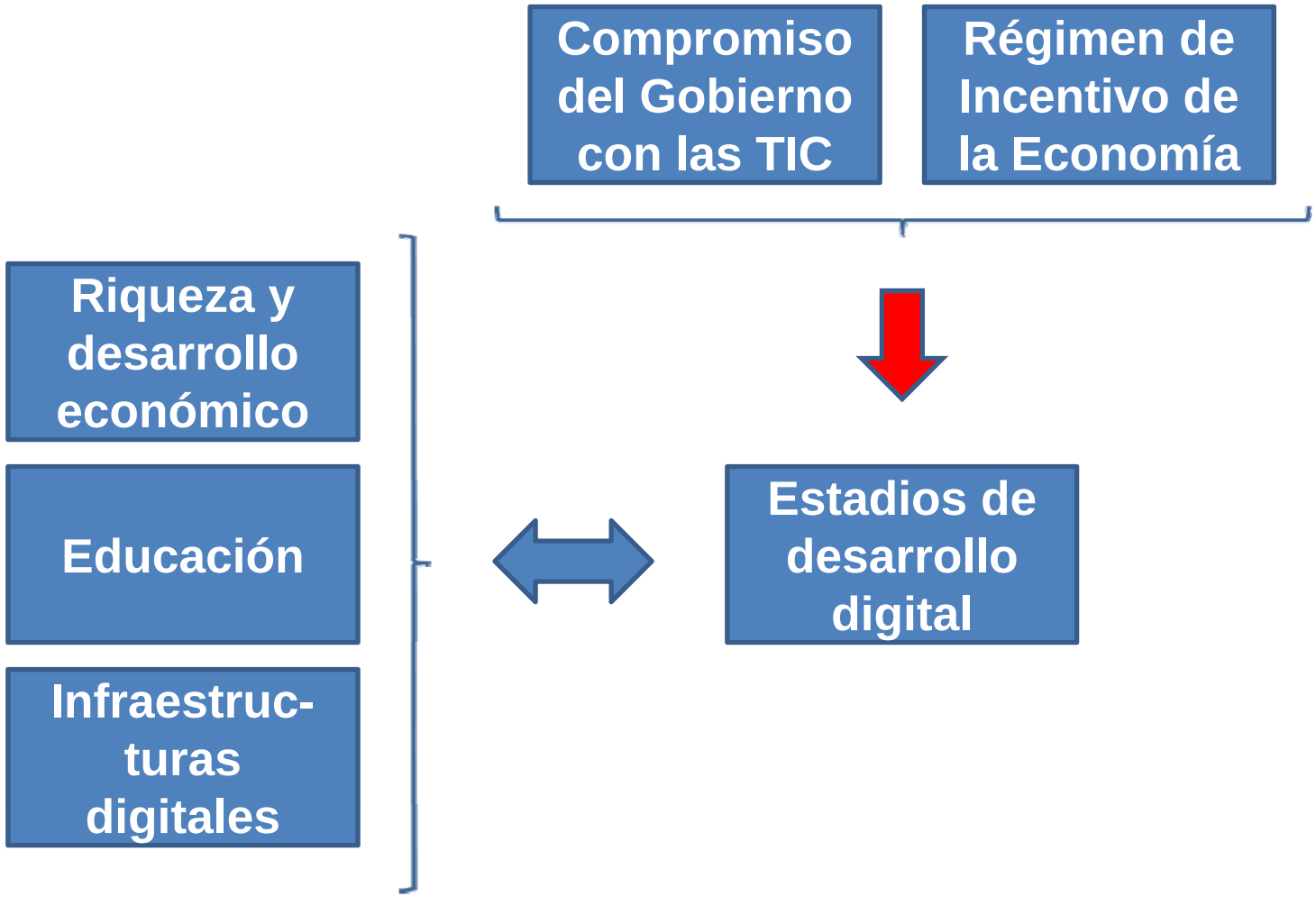
ICTlogy.net

Midiendo el Desarrollo Digital para las Políticas Públicas: el Papel del Gobierno

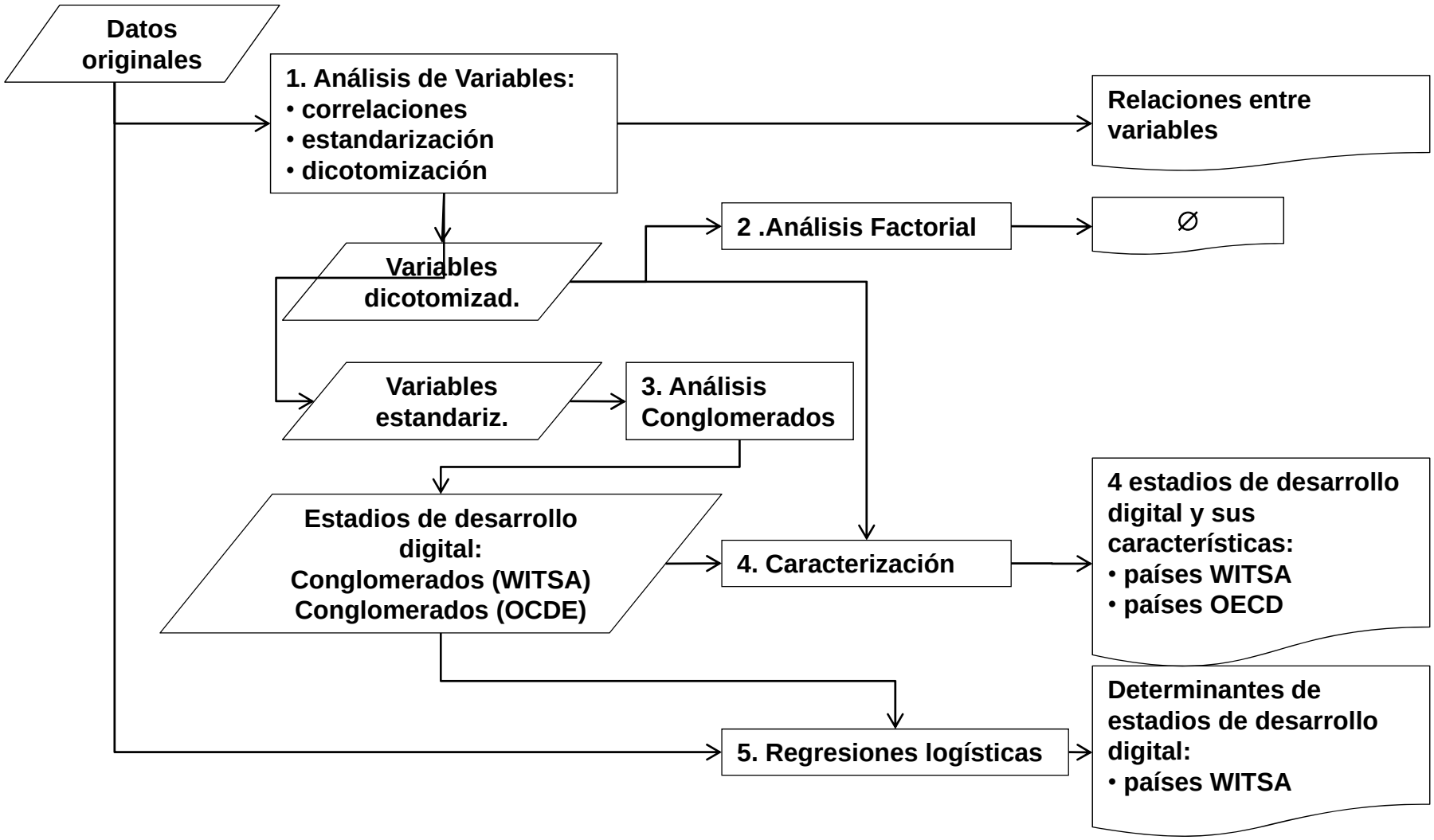
Ismael Peña-López
Universitat Oberta de Catalunya

II Conferencia Internacional sobre Brecha Digital e Inclusión Social
Leganés, 29 de Octubre de 2009

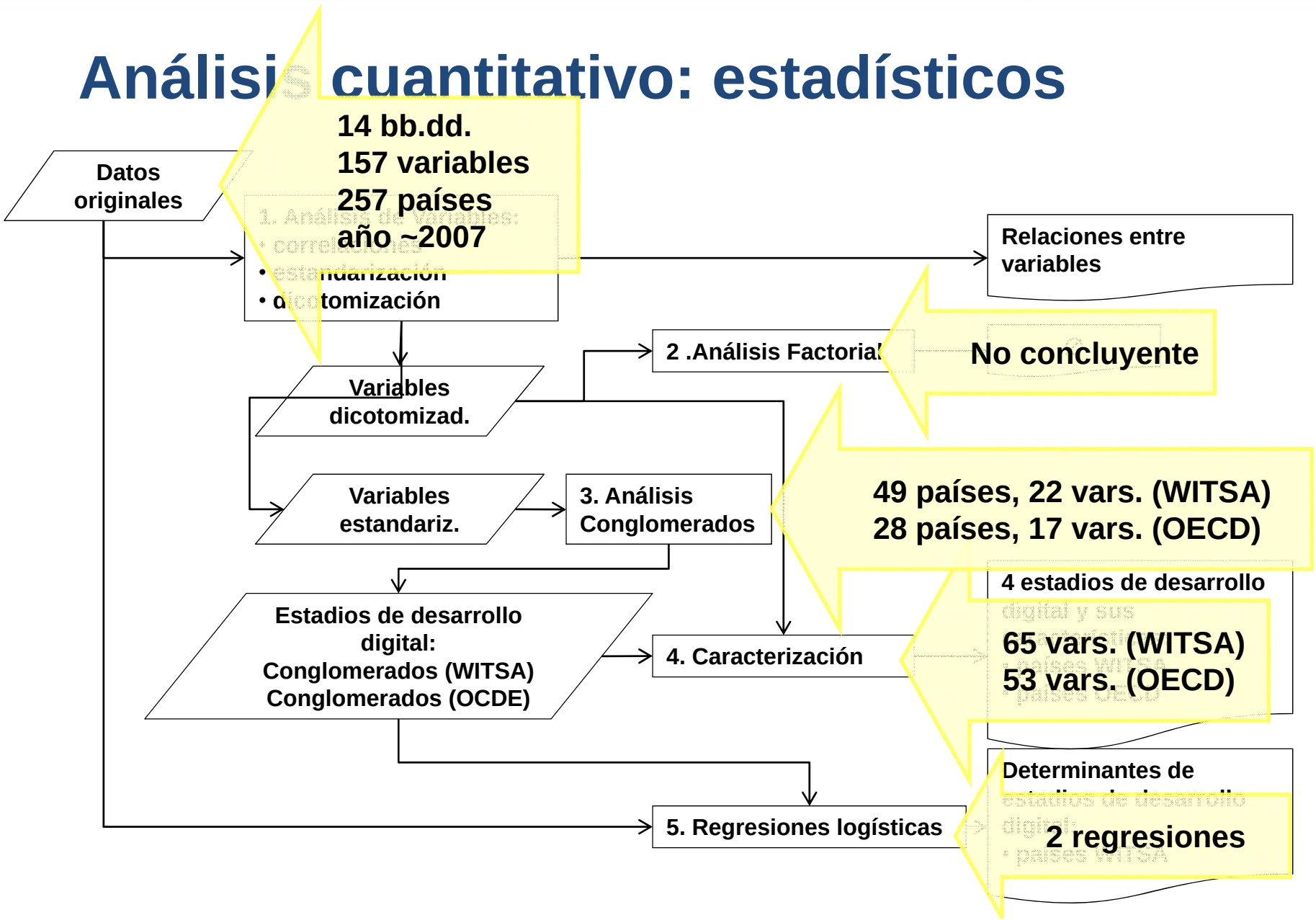
Hipótesis


Compromiso del Gobierno con las TIC
Régimen de Incentivo de la Economía
Riqueza y desarrollo económico
Educación
Infraestruc-turas digitales
Estadios de desarrollo digital

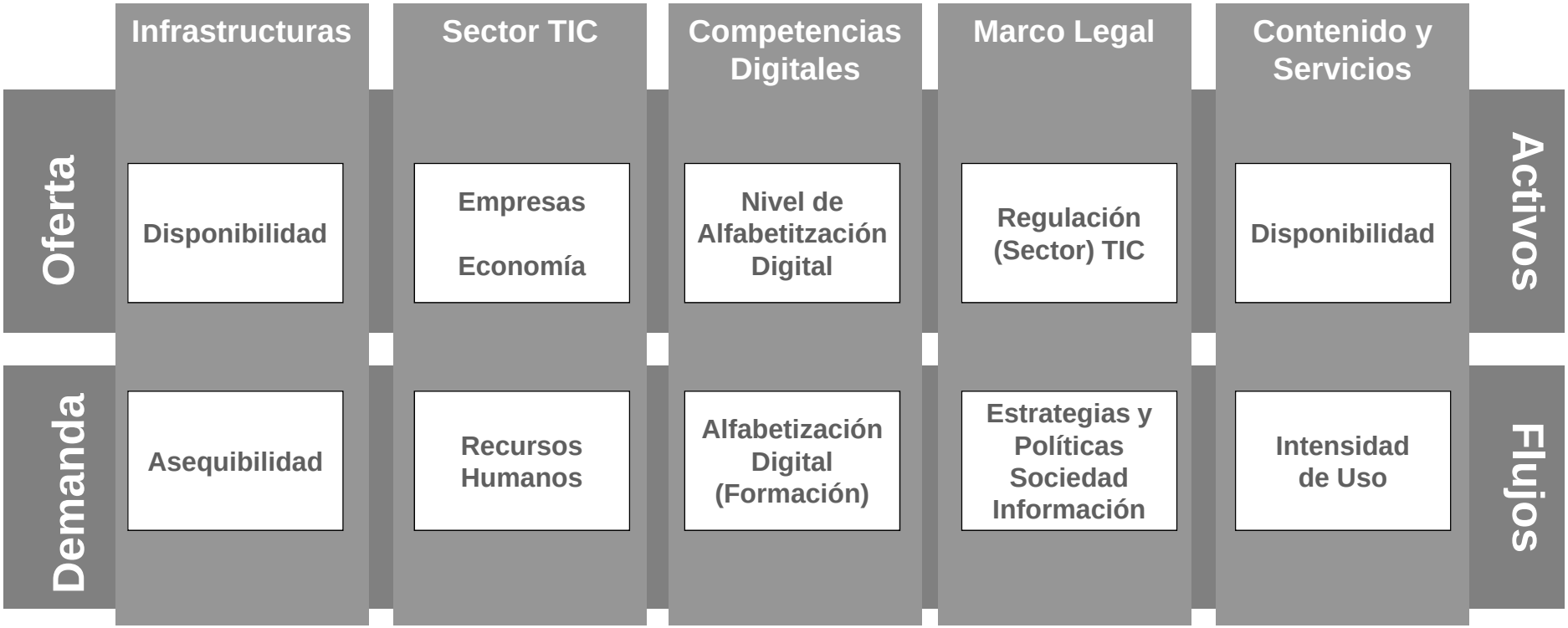
Análisis cuantitativo: estadísticos



Análisis cuantitativo: estadísticos



Modelo: *360º Digital Framework*



Fuente: autor

De la teoría a la práctica

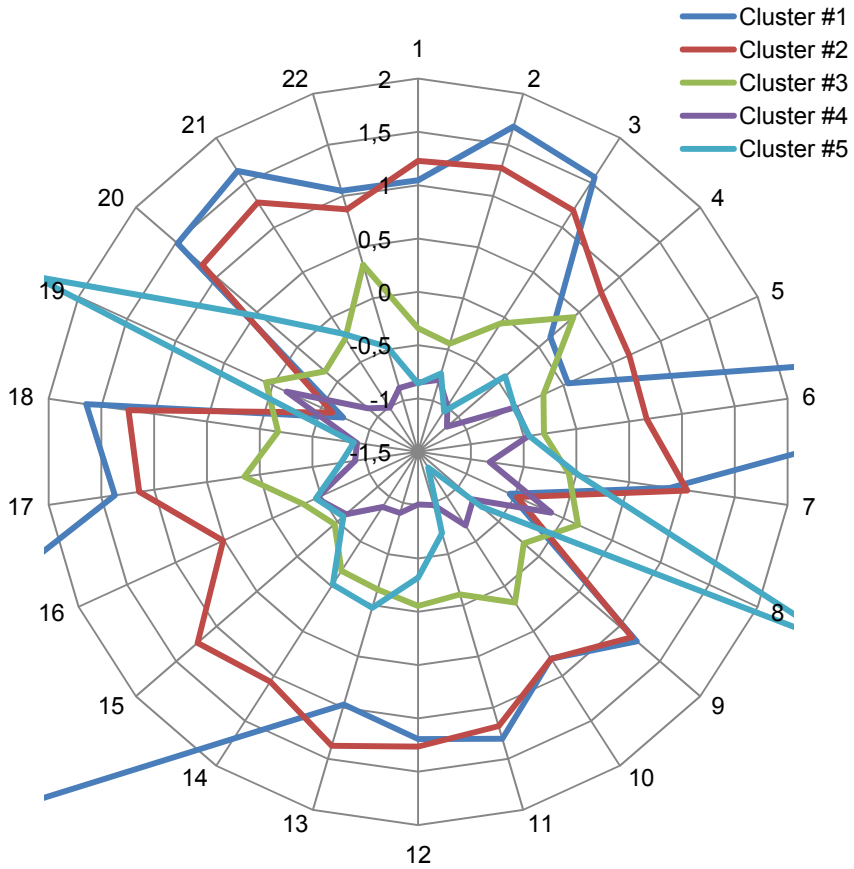
	Infrastructuras	Sector TIC	Alfabetización Digital	Marco político y regulatorio	Contenidos y Servicios
Oferta/Activos	6	1	1	2	3
Demanda/Flujos	1	1	1	1	5

Indicadores (luego variables) utilizadas para los conglomerados(WITSA)

	Infrastruct.	Sector TIC	Alfabetiz. Digital	Marco político y regulatorio	Contenidos y Servicios	No digital
Oferta/Activos	8	2	2	3	5	27
Demanda/Flujos	5	4	1	2	6	

Indicadores (vars.) utilizadas para la caracterización de los estadios de desarrollo digital (WITSA)

Centros de conglomerados (WITSA)



Análisis de conglomerados no jerárquicos de K-medias. Significatividad de la F en la ANOVA para *todas* las variables: p<0.001

1 - Broadband subscribers (per 100 people)
2 - Personal computers (per 100 people)
3 - Telephone mainlines (per 100 people)
4 - Mobile phone subscribers (per 100 people)
5 - International Internet bandwidth (bits per person)
6 - Internet Hosts (per 10000 people)
7 - Price basket for residential fixed line (US$ per month)
8 - Telecommunications revenue (% GDP)
9 - GDP per Telecom Employee (US Dollars)
10 - Human Capital
11 - Internet Access in Schools
12 - Laws relating to ICT
13 - Intellectual property protection
14 - Gov't procurement of advanced tech products
15 - Secure Internet servers (per 1 million people)
16 - Total Domains (per 100 people)
17 - Availability of government online services
18 - Internet users (per 100 people)
19 - Total ICT Spending, Consumer (% of GDP)
20 - Firm-level technology absorption
21 - Extent of business Internet use
22 - ICT use and government efficiency

Stages of digital development (WITSA)

- **Digital leaders (conglomerados #1 & #2; n = 1+14):**

  Alemania, Australia, Austria, Finlandia, Francia, EEUU, Irlanda, Japón, Rep. de Corea, Nueva Zelanda, Noruega, Reino Unido, Singapur, Suecia, Suiza

- **Digital strivers (conglomerado #3; n = 17):**

  Arabia Saudí, Brasil, Bulgaria, Chile, Emiratos Árabes Unidos, España, Grecia, Hungría, Italia, Jamaica, México, Panamá, Portugal, Rumanía, Tailandia, Túnez, Uruguay

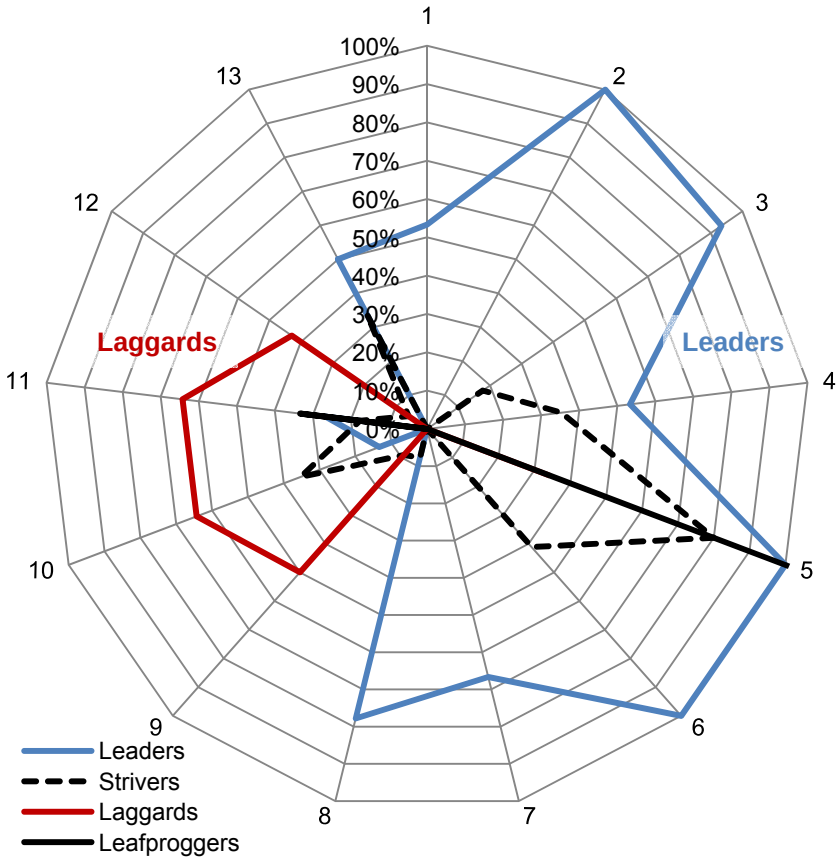
- **Digital laggards (conglomerado #4; n = 14):**

  Algeria, Argentina, Bolivia, Camerún, Ecuador, Egipto, Filipinas, India, Indonesia, Pakistán, Perú, Sri Lanka, Vietnam, Zimbabue

- **Digital leapfroggers (conglomerado #5; n = 3):**

  Jordania, Sudáfrica, Senegal

Infraestructuras



1 - Broadband subscribers (per 100 people) (*)

2 - Personal computers (per 100 people) (*)

3 - Telephone mainlines (per 100 people) (*)

4 - Mobile phone subscribers (per 100 people) (*)

5 - Population covered by mobile telephony (%) (*)

6 - International Internet bandwidth (bits per person) (*)

7 - Internet Hosts (per 10000 people) (*)

8 - Internet subscribers (per 100 inhabitants) (*)

9 - Residential monthly telephone subscription (US$) (**)

10 - Price basket for Internet (US$ per month) (**)

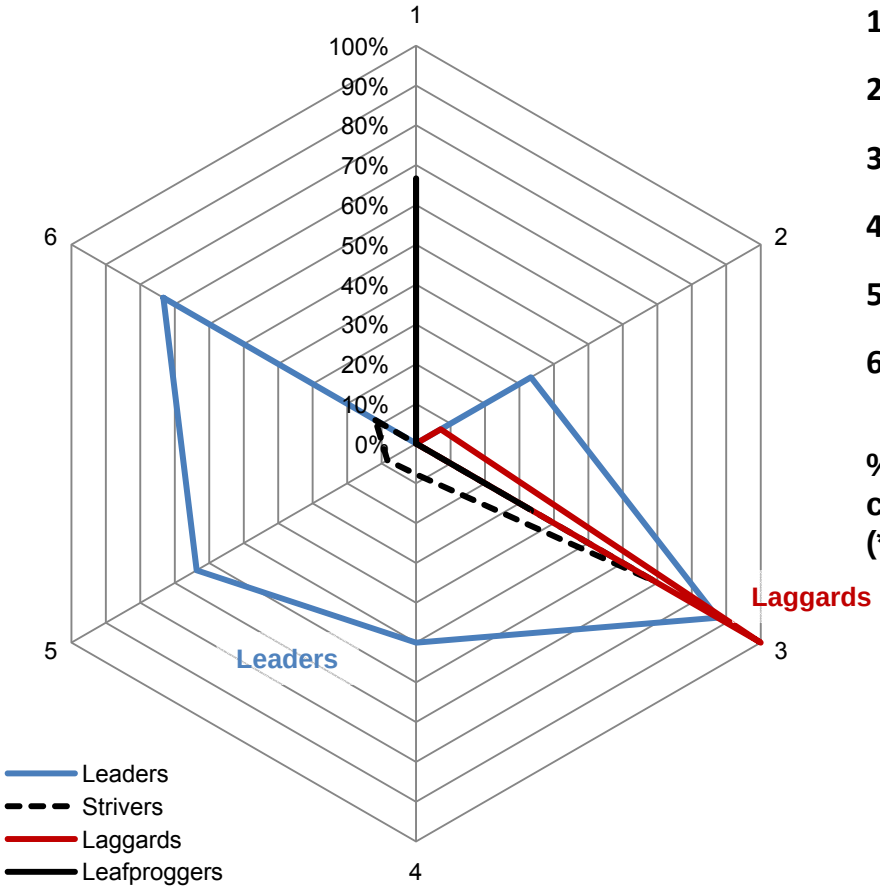
11 - Price basket for mobile (US$ per month) (**)

12 - Price basket for residential fixed line (US$ per month) (*)

13 - Telephone average cost of call to US (US$ per three minutes) (***)

% de países que puntuaron “alto” en el indicador por conglomerado
(*): p<0.01 (**): p<0.05 (***): p<0.1

Sector TIC



1 - Telecommunications revenue (% GDP) (*)

2 - High-technology exports (% of manufactured exports) (**)

3 - Telephone subscribers per employee (***)

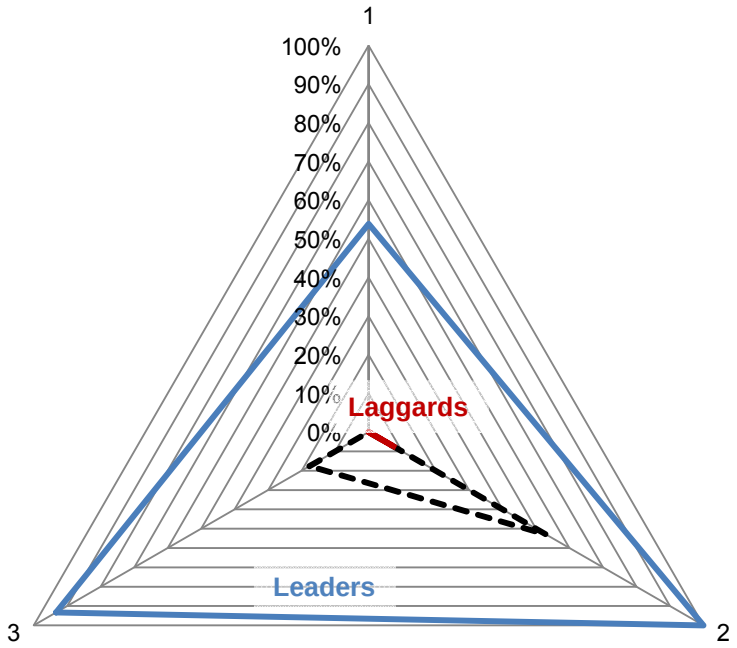
4 - Telephone employees (per 100 people) (**)

5 - Total full-time telecommunications staff (per 100 people) (*)

6 - GDP per Telecom Employee (US Dollars) (*)

% de países que puntuaron “alto” en el indicador por conglomerado
(*): p<0.01 (**): p<0.05 (***): p<0.1

Alfabetización Digital



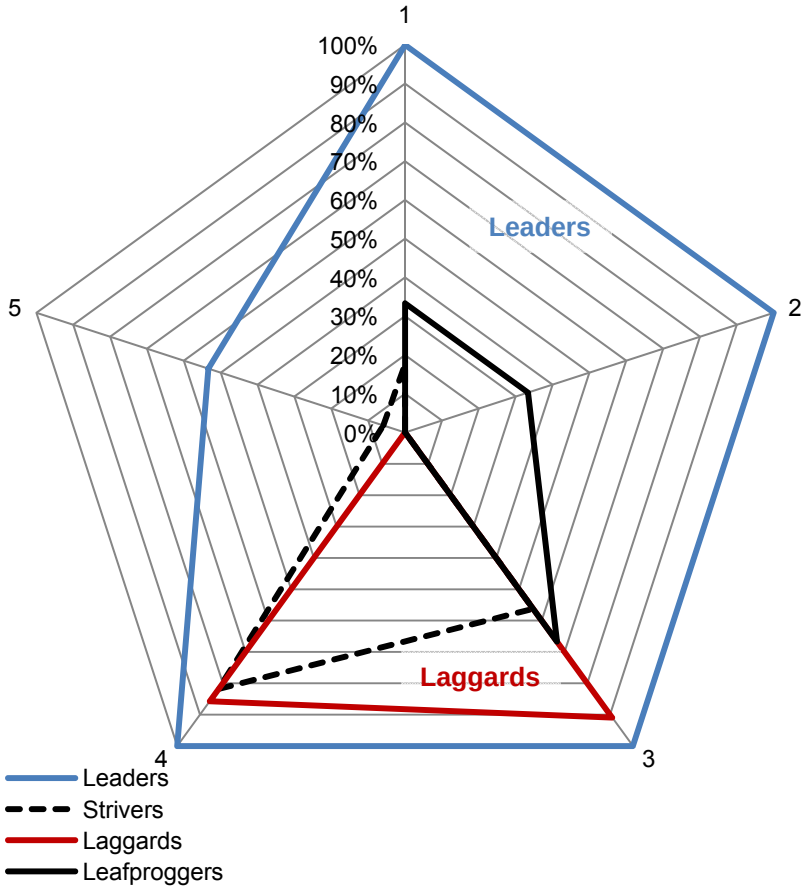
1 - Enrolment in science. Tertiary. (per 100 people) (*)

2 - Human Capital (*)

3 - Internet Access in Schools (*)

% de países que puntuaron "alto" en el indicador por conglomerado
(*): p<0.01 (**): p<0.05 (***): p<0.1

Marco político y regulatorio



1 - Laws relating to ICT (*)

2 - Intellectual property protection (*)

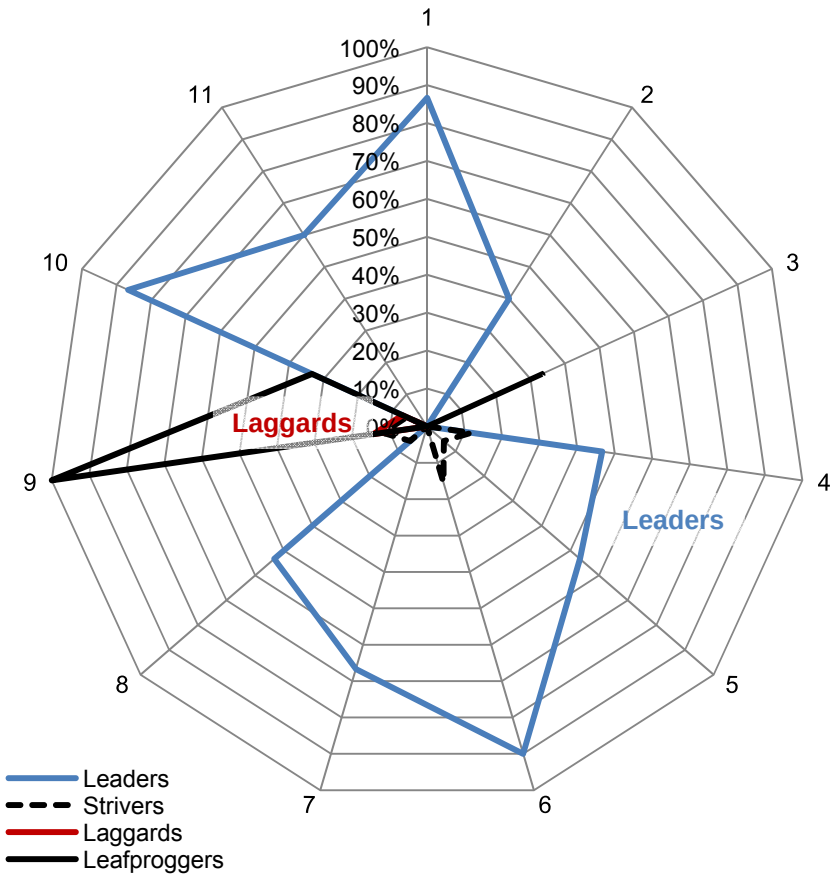
3 - Level of competition - DSL (**)

4 - Level of competition – Cable modem (**)

5 - Gov't procurement of advanced tech products (*)

% de países que puntuaron "alto" en el indicador por conglomerado
(*): p<0.01 (**): p<0.05 (***): p<0.1

Uso



1 - Secure Internet servers (per 1 million people) (*)

2 - Total Domains (per 100 people) (*)

3 - Total ICT Spending, Retail Trade (% of GDP) (*)

4 - Web Measure (*)

5 - Availability of government online services (*)

6 - International outgoing telephone traffic (minutes) (per 100 people) (*)

7 - Internet users (per 100 people) (*)

8 - E-Participation (*)

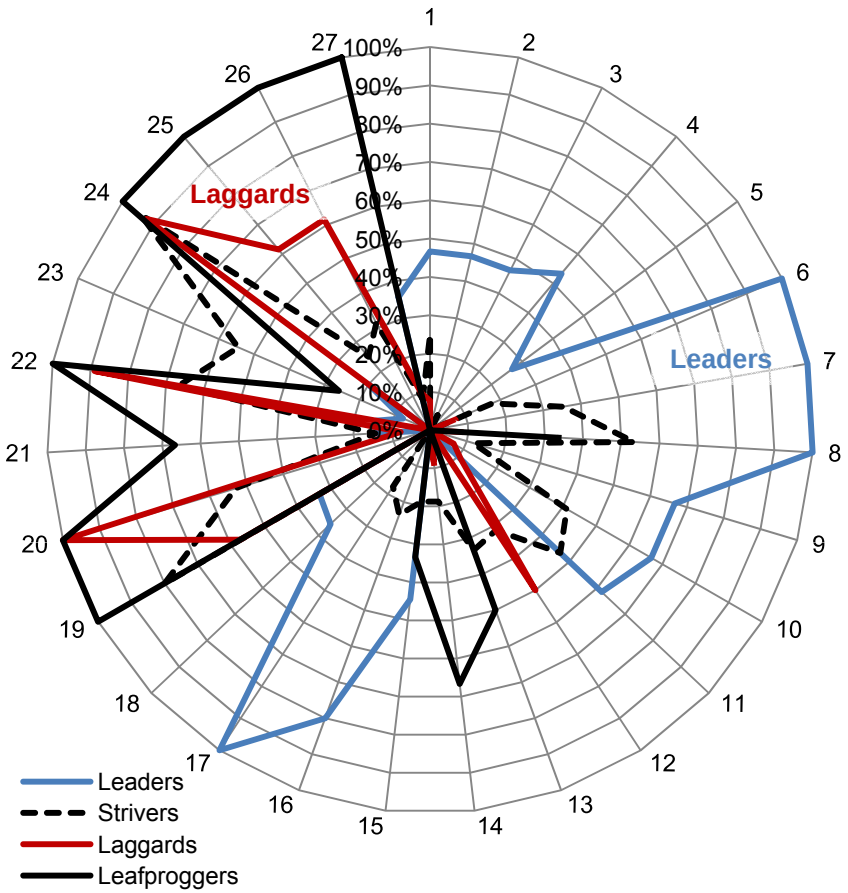
9 - Total ICT Spending, Consumer (% of GDP) (*)

10 - Firm-level technology absorption (*)

11 - Extent of business Internet use (*)

% de países que puntuaron “alto” en el indicador por conglomerado
(*): p<0.01 (**): p<0.05 (***): p<0.1

Indic. Analógicos



% de países que puntuaron "alto" en el indicador por conglomerado
(*): p<0.01 (**): p<0.05 (***): p<0.1

1 - GDP (***)
2 - GDP Capita (*)
3 - GDP per capita, PPP (current international $) (*)
4 - GNI per capita, Atlas method (current US$) (*)
5 - GNI per capita, PPP (current international $) (**)
6 - HDI (*)
7 - Life expectancy at birth, total (years) (*)
8 - Improved water source (% of population with access) (*)
9 - Health Public Expenditure (% of govt. expenditure) (*)
10 - Health Public Expenditure (% of total Health expend.) (*)
11 - School enrollment, primary (% net) (***)
12 - School enrollment, primary (% gross) (**)
13 - Education Public Expenditure (% of govt. expenditure) (***)
14 - Gross National Expenditure (% of GDP) (**)
15 - General Govt. final consumption expend. (% of GDP) (***)
16 - Economic Incentive Regime (*)
17 - Innovation (*)
18 - Population in urban agglom. > 1 million (% of total pop.) (*)
19 - Inequality-10 (**)
20 - Mortality rate, infant (per 1,000 live births) (*)
21 - Population growth (annual %) (***)
22 - Interest payments (% of GDP) (*)
23 - Present value of debt (% of GNI) (**)
24 - GDP deflator (base year varies by country) (*)
25 - Inflation, consumer prices (annual %) (*)
26 - Inflation, GDP deflator (annual %) (*)
27 - Tax revenue (% of GDP) (**)

Determinantes: líderes digitales

$$\text{logit}(ZCLUSTER54\_CB) = \beta 1 \bullet GEN30 + \beta 2 \bullet GEN05 + \beta 3 \bullet GEN07 + \beta 4 \bullet GEN08 + \beta 5 \bullet LEGAL\_D\_04 + \varepsilon$$

Regresión logística binaria para los digital leaders (1 es un digital leader, 0 no es un digital leader) como variable dependiente.

	B	S.E.	Wald	df	Sig.	Exp(B)
Life expectancy at birth, total (GEN30)	-.399	.208	3.664	1	.056	.671
Inequality-20 (GEN05)	-1.066	.578	3.403	1	.065	.344
Urban Population (%) (GEN07)	.138	.079	3.030	1	.082	1.148
Economic Incentive Regime (GEN08)	1.671	.877	3.628	1	.057	5.317
Government prioritization of ICT (LEGAL_D_04)	2.869	1.737	2.727	1	.099	17.611

N	46		
Correctly predicted cases	95.7%	96.8% (leaders)	93.3% (resto)
-2 Log likelihood	15.970		
Cox & Snell R-square	.646		
Nagelkerke R-square	.862		
Chi-Square (sig)	47.799	(.000)	
Hosmer and Lemeshow Test Chi-Square (sig)	1.546	(.981)	

Determinantes: rezagados digitales

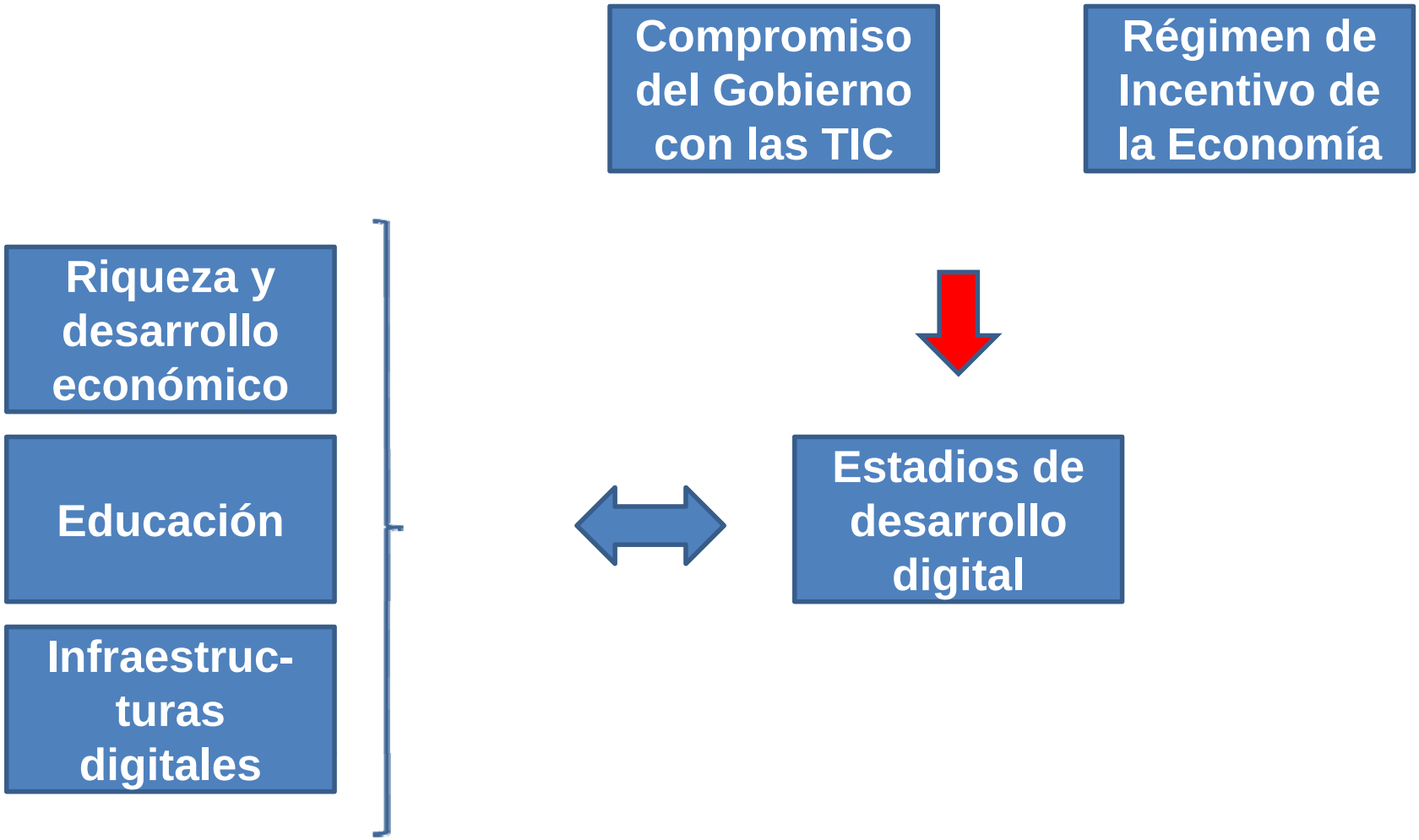
$$\text{logit}(ZCLUSTER54\_CBL) = \beta 0 + \beta 1 \bullet GEN06 + \beta 2 \bullet GEN14 + \beta 3 \bullet INF\_S\_06 + \beta 4 \bullet LEGAL\_D\_01 + \varepsilon$$

Regresión logística binaria para los digital laggards (1 es un digital laggard, 0 no es un digital laggard) como variable dependiente.

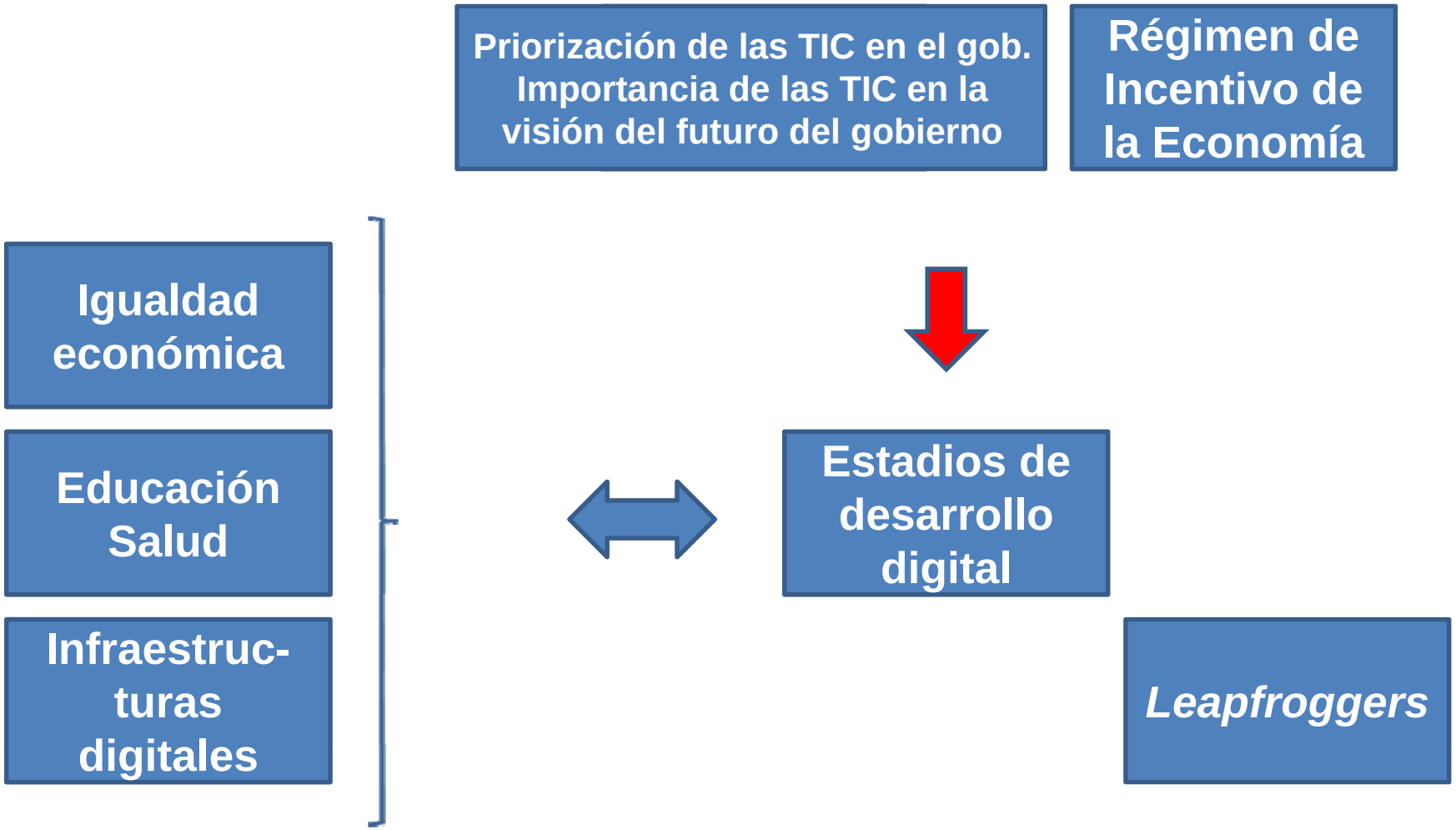
	B	S.E.	Wald	df	Sig.	Exp(B)
Constant	38.214	16.958	5.078	1	.024	$3.945 \cdot 10^{16}$
Inequality-10 (GEN06)	-.235	.138	2.909	1	.088	.790
Health Public Expenditure (% of total Health expenditure) (GEN14)	-.176	.081	4.665	1	.031	.839
Population covered by mobile telephony (%) (INF_S_06)	-.100	.050	3.936	1	.047	.905
Importance of ICT to government vision of the future (LEGAL_D_01)	-4.304	2.239	3.696	1	.055	.014

N	47		
Correctly predicted cases	94.6%	96.4% (laggards)	88.9 % (resto)
-2 Log likelihood	11.391		
Cox & Snell R-square	.551		
Nagelkerke R-square	.823		
Chi-Square (sig)	29.663	(.000)	
Hosmer and Lemeshow Test Chi-Square (sig)	3.684	(.815)	

Conclusiones



Conclusiones



Leganés, 29 de Octubre de 2009. Universidad Carlos III

Para citar esta obra:

Peña-López, Ismael. (2009) *Midiendo el Desarrollo Digital para las Políticas Públicas: el Papel del Gobierno*. Comunicación presentada en la II Conferencia Internacional sobre Brecha Digital e Inclusión Social
<http://ictlogy.net/presentations/20091029_ismael_pena-lopez_-_midiendo_desarrollo_digital_para_politicas_publicas_(presentacion).pdf>
[descargado dd/mm/aaaa]

Para contactar con el autor:
http://ismael.ictlogy.net