

Analysing dairy health through farmer's competencies and advice makers : examples of dairy cattle mortality and udder health

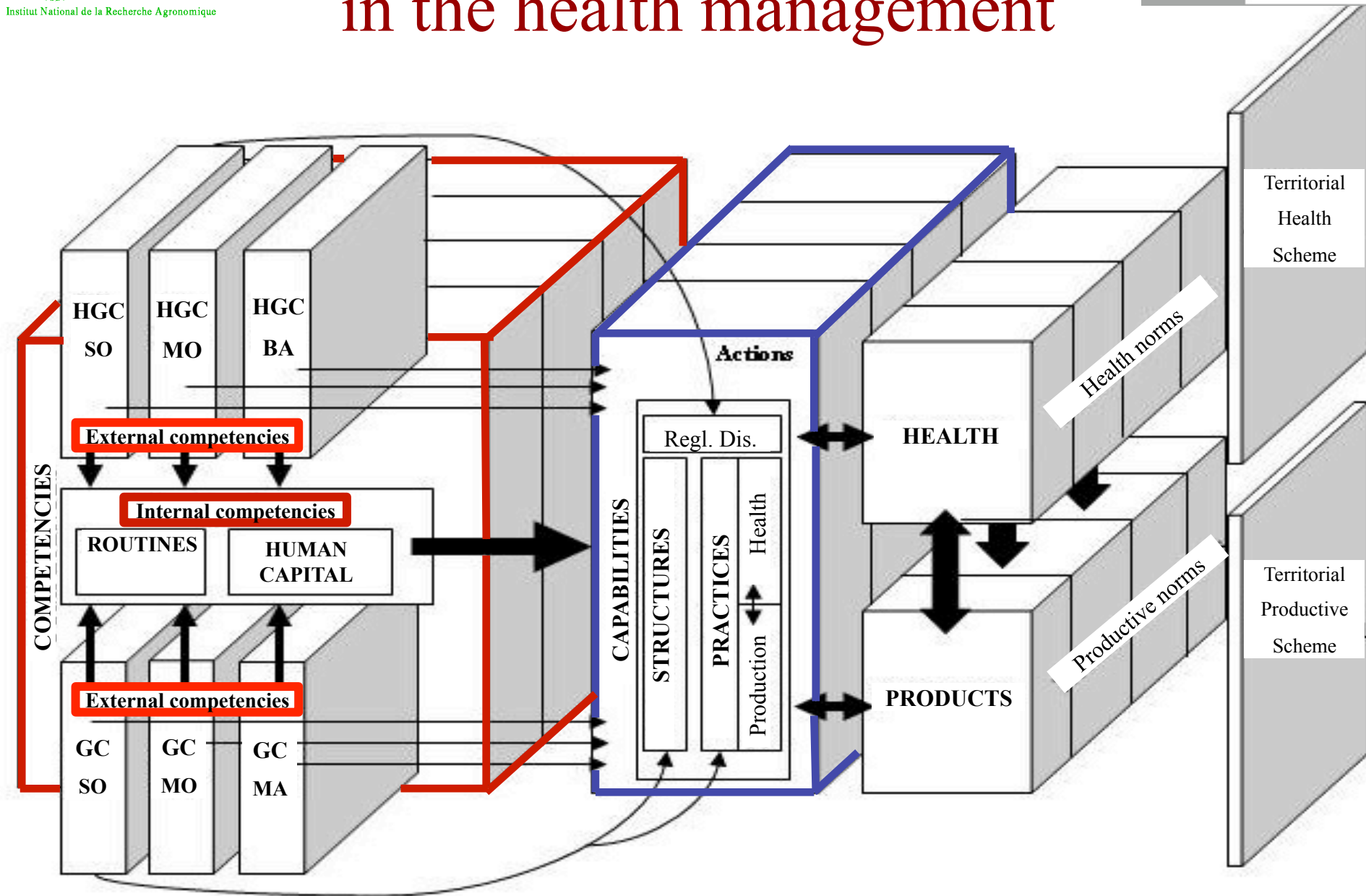
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Competencies and capabilities in the health management



- Databases

- NBID – MCP – others
- Indicators at the herd level

- Statistics

- Linear model, panel models, spatial auto-correlation models
- 2005 + 2006 or month
- France – livestock farming system

1 – Health depends on the adequation
between **core competencies** of the farmers
and **strategic activities** of the farms

effect of dairy specialisation

Dairy calf mortality : effect of having a beef herd in addition to dairy herd

- **Positive** effect on mortality for
 - Heifers 1m-6m & Heifers 6m-calving#1 (Raboison, 2011)
 - Calves 0d-2d crossed & Calves 3d-1m crossed
- **Negative** effect on mortality for
 - Calves 0d-2d non-crossed & Calves 3d-1m non-crossed
 - Heifers 3d-1m
- **Having a beef herd in addition to the dairy herd**
 - **Specific competencies/capacities for the dairy herd, that comes from the presence of beef herd**
 - But these competencies already present if crossed calves in the farm

2 – Competencies (knowledge) implemented into capabilities (actions)

Sensitivity to SCC issue
Mortality and availability of heifers

Competencies implemented into capabilities

- Sensitivity of farmers to SCC issues

$$y_{it} = \rho y_{it-1} + \beta x_{it} + \mu_i + \varepsilon_{it} \quad (\text{Arellano, 1991})$$

$$\Delta y_{it} = \rho \Delta y_{it-1} + \beta \Delta x_{it} + \Delta \varepsilon_{it} \quad (\text{first differenced})$$

<i>OUTCOME VARIABLE : CMSCC month n</i>		CMSCC change (%)		
		2005	2006	
EXPLANATORY VARIABLES	CMSCC	month n-1	55.2 ***	13.6 *
		month n-2	2.0 *	28.8 *
		month n-3	-55.5 ***	-54.3 ***
	Test-day number of cows (10 cows)	month n	4.5 ***	4.7 ***
	Test-day milk production (10 L)	month n	-2.6 ***	-2.0 ***
		month n-1	2.6 ***	1.1 *
	Monthly average DIM (100 days)	month n	4.8 ***	9.6 ***
	First calving cow proportion (10 %)	month n	-4.2 ***	-8.9 ***
	% of cows with SARA (10 %)	month n-2	7.0 **	8.3 **
	% of cows with NEB (10 %)	month n	3.8 *	8.9 ***

Dairy calf mortality : effect of male/female ratio

- **Positive** effect on mortality for
 - Calves 0d-2d non-crossed & crossed
 - Calves 3d-1m non-crossed ($P > 0,05$ pour for crossed)
- **Negative** effect on mortality for
 - Heifers 3d-1m & Heifers 1m-6m & Heifers 6m-claving#1
- **Effect of an “internal disturbment”**
 - Heifer health management modified if heifer availability decrease

3 – Collective competencies

Spatial correlation of the model's residuals

Spatial correlation : collective effect

- Residuals correlation within area :

$$y = X \beta + \varepsilon$$

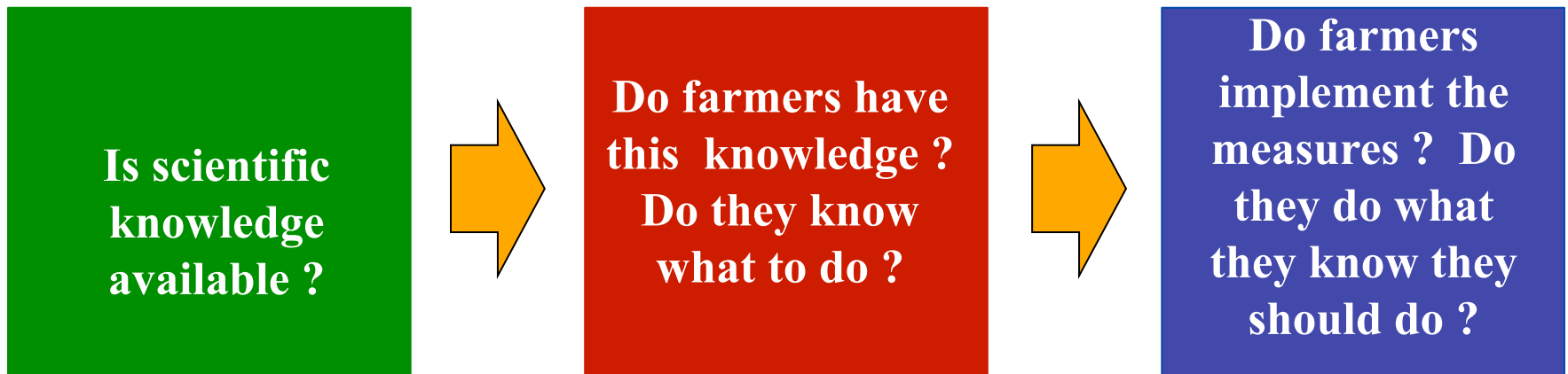
$$\varepsilon = \lambda W' \varepsilon + u$$

- Municipal explanatory variable deleted

- No physical /climatical conditions
- Common to local famers
- Farmer's relationship among municipality
- Common advisers
vets / other health managers
- Strength / long-lasting

	Mortality	CMSCC
Grand-Ouest a	0.071 *	0.097 ***
Grand-Ouest b	0.007	0.094 ***
Normandie	0.046 *	0.072 ***
Nord	0.057 ***	0.055 **
Est	0.036 .	0.114 ***
Centre	0.040	0.051
Poitou	-0.002	-0.005
Massif Central	0.014	0.058 *
Rhône-Alpes	0.056 .	0.059 **
Sud-Ouest	0.017	0.102 ***
Franche-Comté	-0.010	0.069 **
Savoie	-0.015	0.111 **

- Decision making at the herd level



- Simultaneous management of several diseases
- Place of vets within the collective competencies of farmers



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