



# Coordinated Interorganizational Networks: Empirical Results on Structures, Identity, and their Contingencies

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# Coordinated Networks in the Sample: Two Examples with Different Specialization Levels

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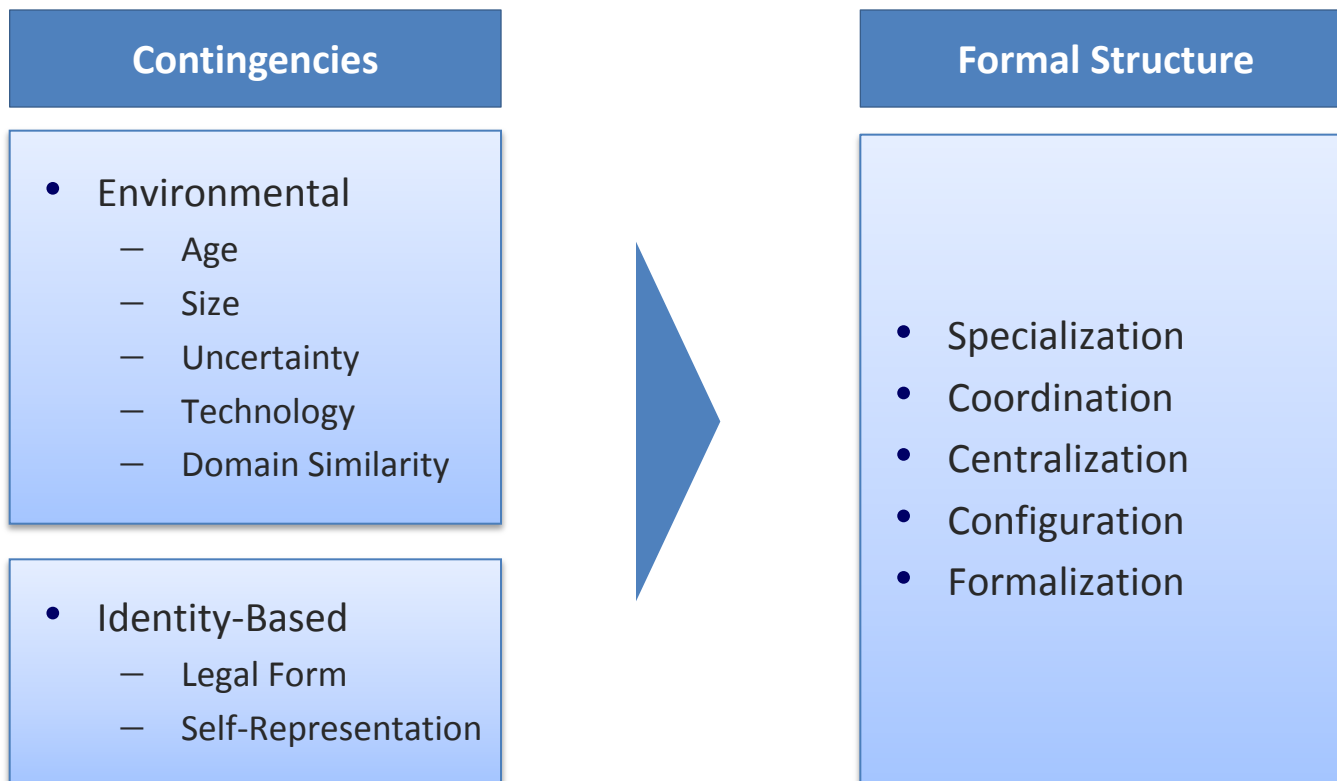
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## Two Types of Contingencies as Possible Predictors of Formal Structure of Networks



Pugh et al. 1969; Van de Ven & Walker 1984; Zuckerman et al. 2003; Van de Ven et al, 1976

## Two Groups of Hypotheses

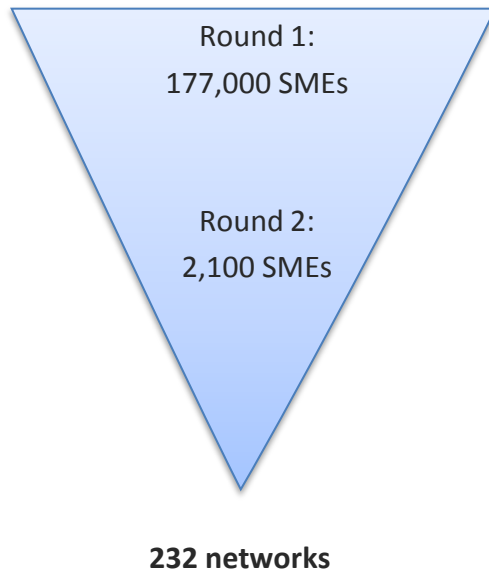
### Contingencies: Environmental

- H 1: The degree of (a) specialization and (b) formalization rise with network age.
- H 2: The more organizations are members of an interorganizational network (network size), the higher specialization.
- H 3: The higher (a) competitive pressure, (b) volatility of the market, or (c) regulation pace, the more formalization (in terms of job descriptions) will occur.
- H 4: The higher domain similarity, the easier personal and group methods can be substituted by impersonal mechanisms, the use of planning rises.
- H 5: The higher the role of ICT in an interorganizational network, the easier planning as an impersonal coordination mechanisms occurs.

### Contingencies: Identity-Based

- H 6: A network's identity expressed as the legal form will positively impact the degree of task specialization.
- H 7: A network's identity expressed as a self-representation will positively impact the degree of task specialization.

## Data Collection through two Survey Rounds



1. Detecting networks: Online screening of SMEs
  - 177,000 German SMEs contacted by e-mail  
Addresses from 'Hoppenstedt' firm database
  - 3,822 respondents indicate to be member of a coordinated network
2. Refining sample: Exclude purely lobbying and/or purely vertical networks
  - 2,100 SMEs selected  
Asking SMEs for one coordinated network
  - 340 returning questionnaires
3. Analyzing 232 networks which have 'identity' (11% return)

## Measures: Environmental Contingencies

Item	Measure	Scale (6-point Likert)	Mean	Std.
<b>Network age</b>	What is the official founding year of the network?	Continuous variable, recalculated for survey year	16.97	23.46
<b>Network size</b>	How many members are affiliated to the network?	Continuous variable	103.54	246.18
<b>Environmental uncertainty</b>				
Competitive pressure	The interorganizational network suffers from high competitive pressure.	<i>Strongly disagree – Strongly agree</i> ; 6-point Likert scale	5.18	1.34
Volatility of the market environment	Market environment changes quickly.	<i>Strongly disagree – Strongly agree</i> ; 6-point Likert scale	3.85	1.73
Regulation pace	Governmental directives and regulatory rules change frequently.	<i>Strongly disagree – Strongly agree</i> ; 6-point Likert scale	4.43	1.33
<b>Technology (ICT)</b>	The use of electronic media is of importance in our network.	<i>Strongly disagree – Strongly agree</i> ; 6-point Likert scale	3.76	1.52
<b>Domain similarity</b> (Van de Ven & Walker, 1984)	To what extent do network members affiliate to the same industry? (As shown in NACE list displayed in questionnaire.)	<i>All in different industries – All in the same industry</i> ; 6-point Likert scale	4.98	1.26

## Measures: Identity-Based Contingencies

Item	Measures	Total Obs.	% of Total
<b>Legal form</b> – mutually exclusive categories (survey data)		<b>232</b>	<b>100 %</b>
No legal form	No explicitly chosen legal form	58	25 %
Personal liability	German forms: “GbR,” “OHG,” “KG”	12	5 %
Limited liability	German forms AG or GmbH or the European SE	72	31 %
Cooperative society	German form: “Genossenschaft, e.G.”	14	6 %
Membership corporation	German form: “eingetragener Verein, e.V.”	47	20 %
Other	As indicated by respondent	30	13 %
<b>Internet self-representation</b> – mutually exclusive categories (coded data)		<b>232</b>	<b>100 %</b>
No internet website		95	41 %
Network as a plurality	Logos of network members visible on front page (yes) Names of network members displayed on front page (yes)	66	28 %
Network as an entity	Logos of network members visible on front page (no) <i>and</i> Names of network members displayed on front page (no)	71	31 %

# Linear Regression: Formalization\*

VARIABLES	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6		Model 7		
	formal_a	pval	formal_a	pval	formal_a	pval	formal_a	pval	formal_a	pval	formal_a	pval	formal_a	pval	
Task specialization	-0.06	(0.361)							-0.10	(0.291)	-0.15	(0.073)	-0.05	(0.546)	
Level of coordination	0.19*	(0.034)							0.01	(0.902)	0.27**	(0.009)	0.22*	(0.030)	
Coordination: coordinator	0.13	(0.100)							0.23*	(0.015)	0.16	(0.078)	0.18*	(0.027)	
Coordination: ad-hoc contact	-0.15	(0.082)							-0.06	(0.605)	-0.24**	(0.008)	-0.11	(0.233)	
Coordination: programming	0.32***	(0.000)							0.28*	(0.019)	0.28**	(0.002)	0.38***	(0.000)	
Coordination: planning	0.01	(0.898)							0.09	(0.364)	-0.02	(0.794)	0.02	(0.855)	
Coordination: scheduled meetings	0.06	(0.539)							-0.07	(0.582)	0.18	(0.086)	0.03	(0.756)	
Coordination: unscheduled meetings	-0.17	(0.063)							-0.16	(0.143)	-0.19	(0.073)	-0.16	(0.127)	
Decision concentration	0.10	(0.348)							0.18	(0.189)	0.06	(0.636)	0.10	(0.428)	
Use of directions	0.01	(0.914)							0.03	(0.842)	0.07	(0.564)	0.07	(0.603)	
Dynamics of directions	-0.11	(0.097)							-0.12	(0.154)	-0.10	(0.167)	-0.12	(0.081)	
Age (ln)			0.06	(0.697)					-0.13	(0.385)					
Size (ln)			0.05	(0.662)					0.17	(0.130)					
Domain similarity			0.10	(0.414)					-0.15	(0.271)					
Competitive pressure			0.02	(0.818)					0.17	(0.070)					
Volatility of the market			-0.09	(0.500)					-0.10	(0.398)					
Regulation pace			0.01	(0.920)					-0.07	(0.524)					
Technology (ICT)			0.45***	(0.001)					0.23	(0.112)					
Legal form: Personal		Ref: No legal form											-0.71	(0.247)	
Legal form: Limited													-0.74	(0.056)	
Legal form: Cooperative society													-0.51	(0.431)	
Legal form: Membership corporation													-0.81*	(0.043)	
Legal form: Other													-0.75	(0.094)	
Self-representation: As plurality		Ref: No website												-0.67*	(0.040)
Self-representation: As entity														-0.37	(0.258)
Constant	3.37***	(0.000)	3.24***	(0.000)	3.21***	(0.000)	3.35***	(0.000)	3.28***	(0.000)	3.96***	(0.000)	3.67***	(0.000)	
Observations	150		131		186		192		104		126		133		
R-squared	0.35		0.12		0.03		0.04		0.43		0.42		0.38		
Adj. R-squared	0.29		0.07		0.00		0.03		0.30		0.34		0.31		

pval in parentheses  
 \*\*\* p<0.001, \*\* p<0.01, \* p<0.05  
 Variables 'Task specialization' - 'Technology': Centered to the mean

\* All activities in the network must to be recorded in written form.



## Key Results: Which Contingencies are Best Predictors?

IV	DV: Structure	Sign. Coefficient?	Hypothesis
<b>Contingencies: Environmental</b>			
• Network Age	• Specialization	• (no)	• H 1 a (rejected)
• Network Age	• Formalization	• (no)	• H 1 b (rejected)
• Network Size	• Specialization	• (no)	• H 2 (rejected)
• Environmental Uncertainty	• Formalization	• (no)	• H 3 (rejected)
• Domain Similarity	• Personal vs. Impersonal Coordination	• (yes)	• <i>H 4 (not rejected)</i>
• Technology (ICT)	• Planning	• (yes)	• <i>H 5 (not rejected)</i>
<b>Contingencies: Identity-Based</b>			
• Legal form	• Specialization	• (yes)	• <i>H 6 (not rejected)</i>
• Internet Self-Representation	• Specialization	• (yes)	• <i>H 7 (not rejected)</i>

## Discussion

- Key results
  - “Classic” contingent dimensions (age, size, uncertainty): no significant effects
  - Both domain similarity and technology (ICT): significant effects
  - Identity-based dimensions: significant effects
- Contributions
  - Empirical study: Large sample of coordinated interorganizational networks
    - As claimed for ‘whole networks’ (cf. Provan, Fish, & Sydow, 2007; Kenis, Provan, & Kuynen, 2009)
  - Not contingency theory, but new institutionalism seems to better predict network structures
    - Networks reproduce known patterns, e.g. those typical to legal entities
    - These patterns combine specific types of identity construction with specific types of formal structures

## Next Steps

- Dissect the sample
  - Which parts of the sample could be explained in contingency terms?
- Methodologically
  - QCA (Qualitative Comparative Analysis; e.g., Fiss, 2003): Detecting archetypes of networks in the sample
  - Linear hierarchical regression: Regressing structural dimensions nested in categorical dimensions of identity
  - Isolating most significant contingent dimensions for regressions (domain similarity, technology)
- Deepen analysis on identities
  - More fine grained coding of self-representation

*Thank you for your attention!*