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# 产业集群网络关系特征对产品创新绩效的影响

## ——环境不确定性的调节效应

吴松强<sup>1,2</sup>, 苏思骥<sup>2</sup>, 沈忠芹<sup>2</sup>, 宗峻麒<sup>3</sup>

1. 214064 2. 211816  
3. 211816

**摘要:** 网络关系特征是影响产品创新绩效的重要变量,对集群内企业产品创新有至关重要的影响。本文从网络视角出发,研究产业集群内网络关系强度、关系质量对产品创新绩效的影响,并从环境动态性和环境复杂性两个维度来研究企业所面临的环境不确定性对上述关系的调节效应。利用南京软件谷210家软件企业的调查数据,对所提的假设进行一一验证。研究发现:网络关系强度、关系质量均对产品创新绩效具有显著的正向影响,环境动态性对集群网络关系强度与产品创新绩效的关系起到负向调节作用,环境复杂性对集群网络关系质量与产品创新绩效的关系起到负向调节作用。本文通过引入环境不确定性这一调节变量,突破以往对网络关系特征与产品创新绩效的直接关系研究,对提升企业产品创新绩效以及引导区域创新政策的制定等具有重要的现实意义。

**关键词:** 关系特征;环境不确定性;调节效应;产品创新绩效

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### 一、引言

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industrial cluster • Michael  
E.Porter 1998

Fu Zhang 2012

2014

McEvily Zaheer 1999  
Tichy 1979 Whetten Rogers 1982  
2007  
2005

2011

Kale 2000 Zaheer Bell 2005

Granovetter 1973 Uzzi 1996 2003

Gulati Gargiulo 1990 2009

Kaufman 2000

Garcia Calantone 2002

Weerawardena O'Cass 2004

2005

Calantone 2003

2011 Dayan Basarir 2010

## 二、理论背景与研究假设

Granovetter 1985      2007

Granovetter 1985

Granovetter 1985

Granovetter 1985

Chi 2010

Yang

Liu 2012

H1

2007

H2

Jansen 2005

Keats Hitt 1988

2010

H3

H4

Miller Friesen 1983

H5

H6

1

### 三、研究设计

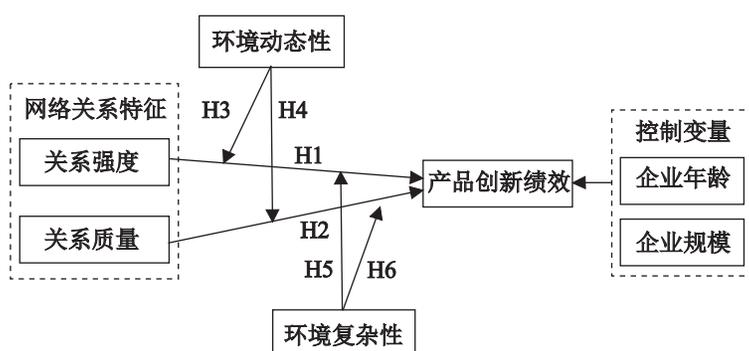


图 1 理论框架

1. 1 5 5

Granovetter 1985 Capaldo 2007 3

Walter 2003

1

表 1 网络关系特征测量量表

GXQD1	
GXQD2	Granovetter 1985
GXQD3	Capaldo 2007
GXZL1	
GXZL2	Walter 2003
GXZL3	

2.

Baker Sinkula 1999 2011 Ritter Gemeinde 2004

2

3.

Dess Beard 1984

2010 Jauch 1980

表 2 产品创新绩效测量量表

CPCX1	
CPCX2	Baker Sinkula 2011
CPCX3	2011
CPCX4	Ritter Gemeinde 2004
CPCX5	

表 3 环境不确定性测量量表

HJDT1			
HJDT2	2010	Jauch	1980
HJDT3			
HJFZ1			
HJFZ2	2010	Jauch	1980
HJFZ3			

4.

				580		
350		2015	1			
				350		280
	80%	210		60%		
	5~10	11~15		27.1%	36.2%	5
15		15.7%	21%		20	15.2%
	30%	51~100	28.6%	100		26.2%
						20~50

表 4 样本基本信息描述统计

		%
5	33	15.7
5~10	57	27.1
11~15	76	36.2
15	44	21.0
20	32	15.2
20~50	63	30.0
51~100	60	28.6
100	55	26.2

## 四、实证分析

Cronbach

CR

Cronbach Cronbach CR 0.7 Fornell Larcker 1981 CR 0.7

AVE Churchill 1979 AVE 0.5

$$\frac{\chi^2}{df} = 3.53, RMSEA = 0.151; RMR = 0.16; NFI = 0.91; CFI = 0.93; GFI = 0.71$$

0.5 0.63~0.98 5 AVE

Bagozzi Yi 1988 6 AVE AVE

表 5 量表的测量指标、信度与收敛效度检验

		t	AVE	CR
GXQD1	0.88	53.22		
GXQD2	0.81	50.56	0.729	0.889
GXQD3	0.86	52.41		0.729
GXZL1	0.87	55.88		
GXZL2	0.75	51.48	0.633	0.852
GXZL3	0.81	51.41		0.651
HJDT1	0.97	42.47		
HJDT2	0.65	41.84	0.589	0.839
HJDT3	0.73	46.40		0.649
HJFZ1	0.68	45.57		
HJFZ2	0.70	41.31	0.564	0.724
HJFZ3	0.96	42.46		0.645
CPCX1	0.82	45.35		
CPCX2	0.83	47.74		
CPCX3	0.86	44.84	0.705	0.912
CPCX4	0.84	43.14		0.696
CPCX5	0.87	47.95		

表 6 变量AVE的平方根与变量之间Pearson相关系数的比较

0.854				
0.612**	0.796			
0.515**	0.538**	0.764		
0.524**	0.554**	0.545**	0.751	
0.685**	0.593**	0.576**	0.562**	0.840
AVE			Pearson	** p 0.01

7 VIF 10

1 2 1

表 7 调节效应检验

	1	2	3	4	5	6
	0.027	0.036	0.07	-0.041	-0.012	-0.035
	0.047	0.011	0.009	0.078	0.034	0.031
	0.569**	0.475**	0.842*			
		0.324**	0.081*	0.701**	0.463**	0.654**
		0.113	0.635		0.229*	0.315**
	×		-0.953**			
	×		0.356			
	×					-0.165
	×					-0.167**
R <sup>2</sup>	0.463	0.561	0.575	0.484	0.578	0.579
R <sup>2</sup>		0.088**	0.016**		0.091**	0.005*
F	32.059	28.978**	20.032**	33.342**	28.342**	19.341**
VIF	1.176	3.354	5.564	1.233	2.653	6.453

\*\* \* 5% 10%

3

5

4 6

2

R<sup>2</sup>=0.088 p 0.01

=0.324 p 0.01

3

R<sup>2</sup>=0.016 p 0.05  
=-0.953 p 0.01

H3

=0.356

p 0.05 H5

5

R<sup>2</sup>=0.091

p 0.01

=0.229 p 0.01

6

=-0.165 p 0.01 H4

=-0.167 p 0.01

H6

2a 2b

2a

2b

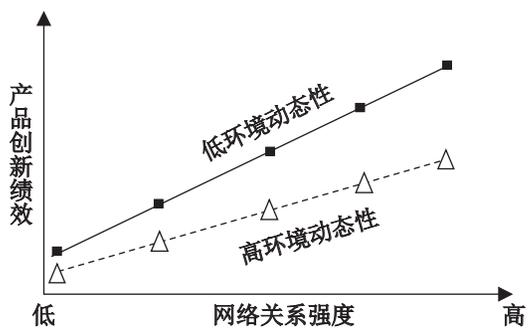


图 2a 环境动态性的调节作用

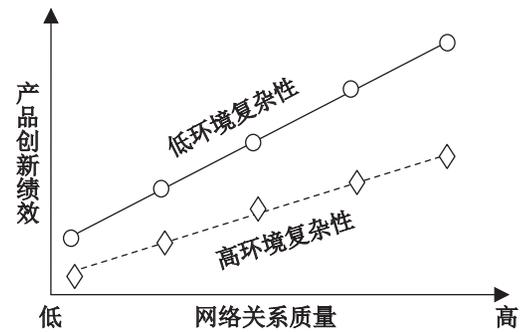


图 2b 环境复杂性的调节作用

210

H1 H2

H3

H4

H5

H6

五、结论与展望

SPSS LISREL

65%

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## **The Influence of Industrial Cluster Network Relationship Characteristics on Product Innovation Performance: Based on the Adjustment Effect of Environmental Uncertainty**

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**Abstract:** Network relationship characteristic is an important variable affecting product innovation performance, and has a crucial influence on the cluster enterprise product innovation. From a network perspective, this paper studies the influences of network relationship intensity and relationship quality within the industry clusters on product innovation performance. At the same time, it studies the moderating role of environmental uncertainty enterprises face in the relationship above from two dimensions of environmental dynamics and complexity. Using the survey of 210 software enterprises in Nanjing Software Valley, it verifies the proposed hypotheses. The empirical results show that: network

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