



# Innovation performance from a network perspective: IT industry in Szeged

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# Introduction



- Mode of innovation: linear → interactive
- Access to external knowledge is crucial for firms' innovation activities (Powell et al. 1996, Bathelt et al. 2004)
- Firms' embeddedness in knowledge networks is decisive for their economic success (Uzzi 1996, Cantner-Graf 2004)
- Emergence of network approach + analytical tools

# Innovation + network characteristics



Importance of interactions



Few empirical researches dealing with the characteristics of linkages

- **Relation** (correlation) between network position and innovation performance (Boschma - Ter Wal 2007, Quimet et al. 2004, Graf 2006, Giuliani 2007)
- Few researches deal with **causality** (Schilling - Phelps 2007, Ahuja 2000)
- **Causality** between innovation and network characteristics are vague (Fritsch 2001)

# Aim #1



Investigate the effect of **network position** on firms' innovation performance

# Innovation + network characteristics

## + absorptive capacity



- Innovation performance of firms = internal innovation capacity + structure of external connections (Doloreux 2002)
- In firms' innovation activities external knowledge complements internal resources (Powell et al. 1996)
- *Boschma - Ter Wal (2007)*: absorptive capacity doesn't have a direct impact on innovation performance
- *Giuliani - Bell (2005)*: absorptive capacity influences the flow of innovation related knowledge and network position

# Aim #2



Investigate whether the **internal resources** of firms or the **level of accessibility** to external knowledge has a more significant effect on innovation performance

# Knowledge network vs. social network



- Economic processes are **embedded** in social relations (Granovetter 1985)
- Personal/social proximity positively influences the creation of research collaborations (Broekel - Boschma 2012, Huber 2012; Balland et al. 2013)
- Personal/social proximity has a **positive effect** on innovation outputs (Balland et al. 2013)
- *„Personal and social proximities that lead to a personal relation between individuals in different organisations can, in turn, be the base for generating business relations” (Romero 2018, pp. 26)*

# Aim #3



Investigate whether network position in the **social or knowledge network** has greater influence on the innovation performance



# Data collection and methodology



- **IT industry:**
  - 5829 (Other software publishing),
  - 6201 (Computer programming activities),
  - 6202 (Computer consultancy activities),
  - 7219 (Other research and experimental development on natural sciences and engineering)
- **Headquarter in Szeged**
- >2 employee
- Online questionnaire (ongoing) ~98 companies
- **3 research dimensions:** innovation performance, absorptive capacity, social and knowledge network

# Data collection and methodology



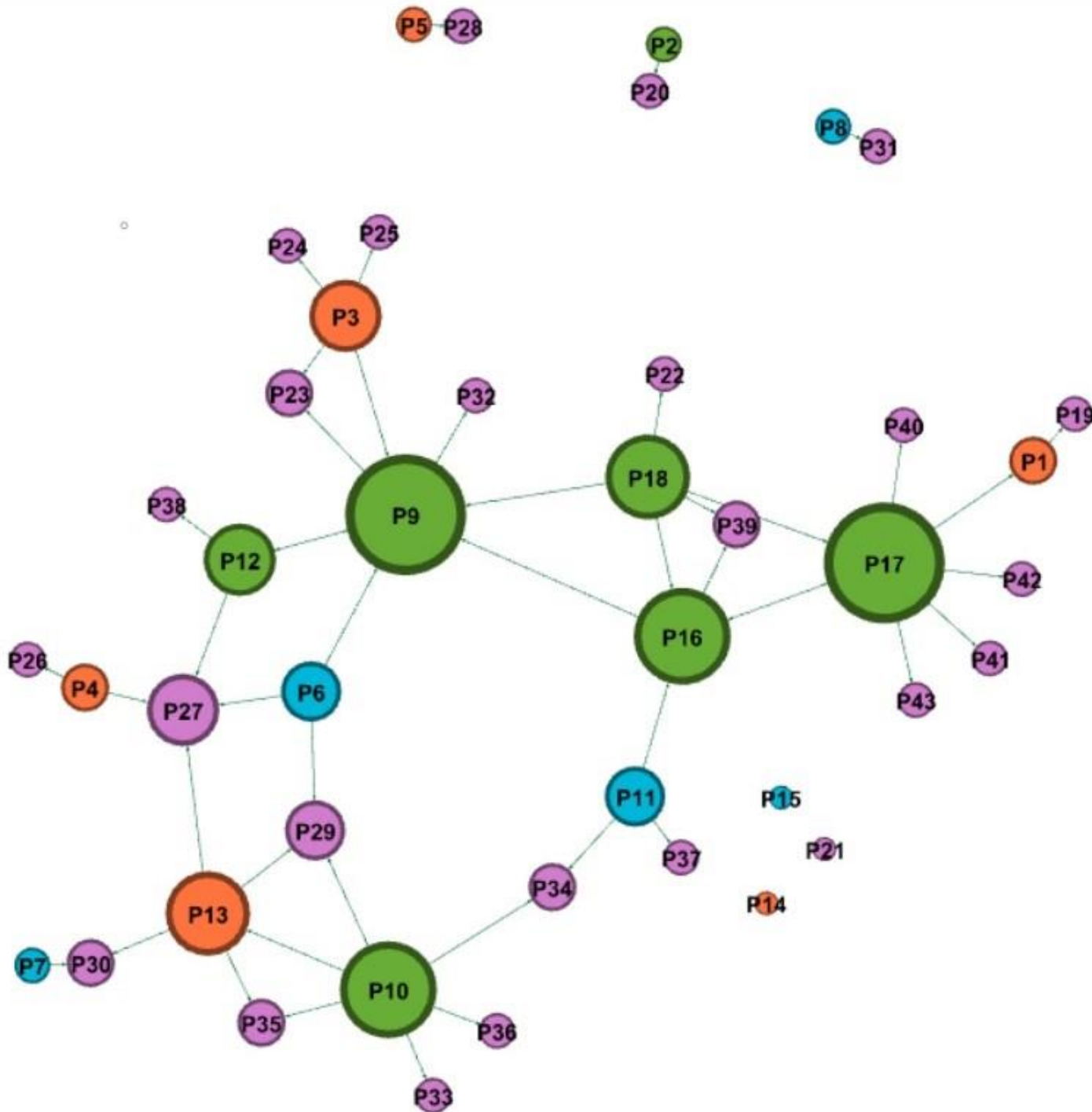
- **Innovation performance:** questions based on CIS
- **Absorptive capacity:** firm's level of prior knowledge (Cohen - Levinthal 1990) → stock of knowledge → four dimensions based on Giuliani - Bell (2005):
  - the level of technical education of the technical personnel
  - the number of years of experience in the sector of the technical personnel
  - the number of former employers in the sector of the technical personnel
  - level of experimentation
- **Networks:** roster-recall method (KN-technical advice, SN-friendship)
- **Planned method: PLS-SEM**



# Knowledge network

**Colour:** innovation activity based on net revenue

**Node size:** degree



Nodes	Edges	Components	Density
43	47	7	0.05

● No innovation activity

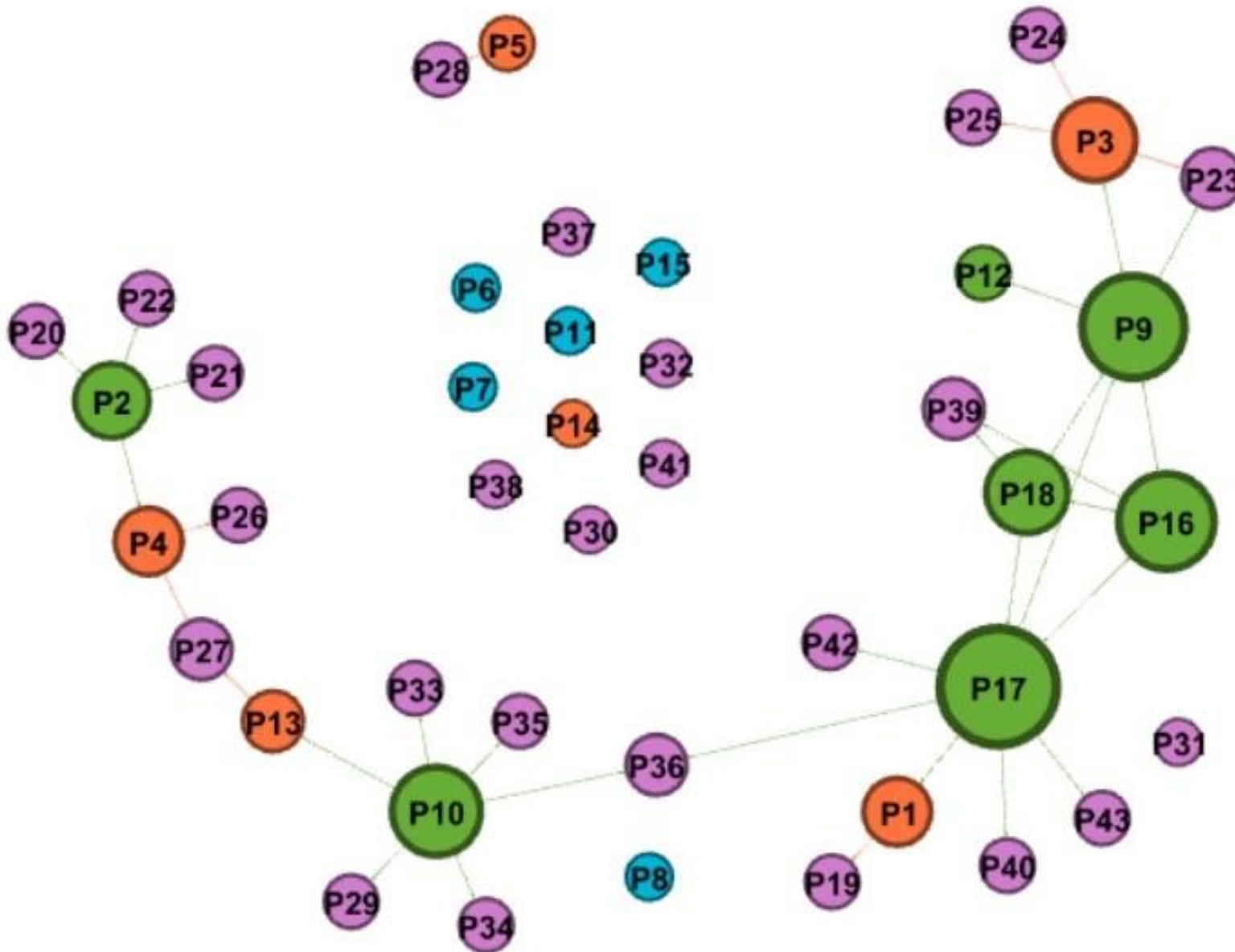
● New to market

● New to enterprise

● N/A



# Social network



Colour: innovation activity based on net revenue

Node size: degree

Nodes	Edges	Components	Density
43	39	14	0.038

- No innovation activity
- New to market
- New to enterprise
- N/A



**Thank you for your  
attention!**

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