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Trial Exam I: MOT1412 Technology Dynamics

Exercise	Assessment Criteria	Points
1a	Major concepts with definitions: Proximity, particularly personal proximity/ agglomerations/strategic alliances/social networks Research Question (citation in quotation marks and with page number): "… is there a positive relationship between personal and business links?" (p. 3), preferably in own words (else -1 point) Resolution (citation in quotation marks and with page number): ""The results suggest a positive and highly significant relationship between personal and business relations in high-tech clusters in the context of an emerging economy, ... Personal relations can overcome certain problems when generating new collaborations between firms – such as transaction costs, monitoring costs, or information asymmetries – generating trust between two organizations. Personal relations can therefore be considered an important resource in the creation of links between firms" (p. 28), preferably in own words (else -1 point). The study also highlights a possible negative effect of relationships, as if personal and social proximities are too strong firms tend to generate cliques, which get trapped in old strategies that are detrimental for the generation of new knowledge and the growth of clusters and their firms. Full sentences with explanation	 3 6 3 5 3
1b	"a cluster is a geographically bounded system with multiple interacting actors (Porter 1998)" (p. 842), preferably in own words (else -1 point) Both the innovation system's approach (give definition) and the cluster's approach are frameworks used to analyse and understand the actors and their relationships within a system. The main differences between the two approaches are • that in the cluster approach we define system of geographically close innovative agents' and analyse their relationships within in this context Full sentences with explanation • that the innovation systems approach explicitly focuses on institutions (give definition) Full sentences with explanation	3 4 3
1c	The paper suggests a positive impact of personal and business relations, as they can overcome certain problems (e.g., transaction costs) and generate trust among organizations. Full sentences with explanation However, relying too much on personal and social proximities can generate bad outcomes in the long term, as described by Boschma (2015) and Ooms et al. (2015). Full sentences with explanation The study also outlines how it is difficult to analyze the effect of personal and social proximity, because the indicator personal relations contains both types of proximities. Full sentences with explanation Through a statistical analysis support for the hypothesis that geographical proximity enhances collaboration. (Full …)	4 4 4 3

Exercise	Assessment Criteria	Points
2a	Examples of five innovation indicators or groups of innovation indicators to discuss (full answer includes what they measure, what advantages and disadvantages they have): • human resources indicators = input indicators: cover a broad spectrum with doctorate graduates, population with tertiary education and lifelong learning but might miss that you need engineers more than other highly educated employees for innovation and technological change • patent application = output indicator: gives good indication of output of mostly large firms of applied research but not about basic research output in the academic sector • innovative SMEs collaborating with others: measure relationships between stakeholders but only those involving SMEs, • broadband penetration measures digitalisation but is only about physical infrastructure, missing out on the use of it • R&D expenditure in the business sector = input indicator covering only the business but not the academic sector	3 for each
2b	The summary innovation index gives blurry information as it • includes all indicators with the same weight • mixes input and output indicators Edquist et al 2018 suggest an efficiency indicator relating input to output indicators instead	 1 1 3
2c	Following the paper by Marxt et al. and the innovation scoreboard, Switzerland comes out as a country with: • A great academic environment, composed of top-in-the-world Universities (like ETH Zurich, ETH Lausanne, etc.) • Good and well-funded, research facilities (like CERN, PSI, etc.) • Very R&D intensive businesses (Private business account for more than 70% of R&D expenses) • High spending by central government on education, a commission of Technology and Innovation (CTI), and cantons that promote economic growth in their region with specific targeted policies Strengths: very favourable for multinational companies, both from an institutional point of view (low taxation), and from a human resources point of view, with a highly skilled workforce. Weaknesses are the innovative collaboration of SMEs with others scores very low, the low governmental support to business R&D, low willingness to take the entrepreneurial risk by citizens. All: full sentences with explanation	10 5 5
2d	Actively support (the emergence) of innovative SMEs, e.g. by firm incubators at universities specialized on technology-oriented start-ups, provide funding for networking activities between SMEs, large firms, academia etc., e.g. for conferences or for seed-funds that enable them to apply for external funding. Full sentences with explanation	5
Total	**Number of Points realized**	
Calculate	Number of Points realized divided by 90 points, multiplied by 100	
Calculate	Round up or down to full or half marks (two digit after the dot, e.g. 0.8-1.2 = 1; 1.3-1.7 = 1.5; fill in final mark (>=5.75 is pass)	