INNOVATION, SOCIAL CAPITAL AND DEVELOPMENT

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RESEARCH QUESTION

HOW UNIVERSITY CAN STIMULATE ECONOMIC GROWTH

SOME QUESTIONS: 1. HOW CAN UNIVERSITIES INTERACT WITH INDUSTRY? 2. WHAT DO THE FIRMS EXPECT FROM **UNIVERSITIES? 3. WHAT BROADER ROLE UNIVERSITIES CAN PLAY IN ECONOMIC DEVELOPMENT?** 4. WHAT ARE THE KEY TO SUCCESS OF **UNIVERSITY INDUSTRY INTERACTION?**

STUDY FOCUS

1. UNIVERSITY-INDUSTRY RESEARCH CENTERS IN THE US (22) IN THE US

2. REGIONAL STUDIES IN BOSTON AREA Southern New York State OULU, HELSINKI AND TAMPERE IN FINLAND

MEASURES OF SUSTAINABLE SUCCESS

UNIVERSITY: KNOWLEDGE GENERATION EDUCATIONAL SERVICES (ENROLLMENT & GRADUATION)

ECONOMIC DEVELOPMENT: JOBS NEW FIRMS EXPANSION OF FIRMS TAX BASE INCREASE

DIMENSIONS OF MEASURES

INDUSTRY/UNIVERSITY CENTER EFFECTIVENESS

GENERAL SUPPORT

TARGETED SUPPORT

I-U RELATIONSHIP

EXPLICIT KNOWLEDGE

TACIT KNOWLEDGE

PEER INTERACTION

JT VENTURE INFORMAL INTERACTIONS CONSULTING INSTITUTIONAL ARRANGEMENT

WHAT INDUSTRY IS CONCERNED ABOUT

TECHNOLOGY DEVELOPMENT RESEARCH, DEVELOPMENT & COMMERCIALIZATION

MANAGING RISKS FOR DEVELOPMENT RISKS OF PRE-COMPETITIVE RESEARCH, FLEXIBILITY AND IMPROVING LIKELIHOOD OF SUCCESS

HUMAN CAPITAL DEVELOPMENT TRAINING OF NEW EMPLOYEES, CONTINUING EDUCATION, CURRICULUM DEVELOPMENT

ACCESS TO EXPERTISE AND FACILITIES BUILD AND ENHANCE SKILLS AND KNOWLEDGE, USE OF FACILITIES

FORUM FOR NETWORKING STRUCTURE, MISSION AND CRITICAL MASS

	NETWORKED ORIENTED	PROBLEM SOLVING
UNIVERSITY REPUTATION	HIGH	MEDIUM
INTERACTION LEVEL	LOW	HIGH
NATURE OF OUTCOME	NOT TANGIBLE	TANGIBLE
NATURE OF CLIENT FIRMS	LARGE FIRMS	LARGE AND SMALL





UNIVERSITY-INDUSTRY COLLABORATION

ORGANIZATIONAL IMPACT

COMPETENCE BUILDING PROBLEM SOLVING CORE VS NON-CORE

TECHNOLOGY CENTRALITY

NATURE OF TRANSFER

KNOWLEDGE TRANSFER TECHNOLOGY TRANSFER

FORM OF COLLABORATION

RESEARCH SUPPORT COOPERATIVE RESEARCH

KNOWLEDGE CREATION



(Ref. Carayannis et.al. 2000

DYNAMIC CAPABILITY

ABILITY TO INTEGRATE, BUILD AND RECONFIGURE INTERNAL AND EXTERNAL COMPETENCES TO ADDRESS RAPIDLY CHANGING ENVIRONMENT LEARNING PROCESS TO DEVELOP DYNAMIC CAPABILITY

ACCUMULATION OF EXPERIENCE

KNOWLEDGE ARTICULATION

KNOWLEDGE CODIFICATION

SOCIAL CAPITAL DEFINITION

durable and institutionalized network of social relations (Bourdeau)

connections among individuals– social networks and the norms of reciprocity and trustworthiness (Putnam)

the sum of the actual and potential resources embedded within available through, and derived from the network of relationships (Nahapiet & Ghoshal)

networks and norms that enable people to work collectively (Woolcock)

CORE CONCEPTS















SOUTHERN NEW YORK

RURAL DOMINANT FIRM: Corning Glass University: Alfred University specialty Glass Science Isolated Community

BOSTON Mass

Urban Dominant University: Harvard and MIT other Universities: Boston University, Northeastern Tufts, University of Massachusetts Home for High Tech Industry Aerospace Industry Dept of Defense Research Laboratories Financial Institutions

FINLANDOULU TAMPERE HELSINKI

SOME POINTS ABOUT FINLAND

HOMOGENEOUS CULTURE VERY HIGH EDUCATIONAL LEVEL SMALL COUNTRY GEOGRAPHICALLY ISOLATED PROACTIVE POLICIES

GROWTH OF FINNISH ECONOMY

Figure 2. Explosive Growth in Electronics Since the Early 1990s: Finnish Manufacturing Production Volume by Industry (€ billions in 2000 prices)



Sources: ETLA database. Hierppe et al. (1976). National industrial statistics by Statistics Finland.

THREE FINNISH REGIONS

OULU TAMPERE HELSINKI

OULU: MOST ISOLATED CLIMATE IS SEVERE ARCTIC WEATHER SMALL TIGHTLY KNIT COMMUNITY UNIVERSITY OF OULU TWO DOMINANT FIRMS: NOKIA AND SONERA

TAMPERERICH INDUSTRIAL HISTORY
MAJOR SHOCK IN EARLY 1990
UNIVERSITY OF TAMPERE AND TAMPERE
UNIVERSITY OF TECHNOLOGY
DOMINANT FIRMS: NOKIA AND SONERA

HELSINKI

CAPITAL OF THE COUNTRY UNIVERSITY OF HELSINKI AND HELSINKI UNIVERSITY OF TECHNOLOGY HOME OF ALL MAJOR CORPORATIONS INCLUDING NOKIA AND SONERA

COMPARISON OF THREE REGIONS

ITEMS	SOUTHERN NY	FINLAND	BOSTON
POLICY ORIENTATION	DRIVEN BY A STATE FUNDED AGENCY	DRIVEN BY MULTIPLE AGENCIES	NO DIRECT GOVERNMENT INTERVENTION
ORIENTATION	LOCAL	GLOBAL	NATIONAL
FINANCIAL NETWORK	POOR	GOOD THROUGH PRIVATE AND PUBLIC AGENCIES	GOOD THROUGH PRIVATE INITIATIVES
PEER SUPPORT NETWORK	ABSENT	GOOD	GOOD
ROLE OF DOMINANT FIRMS	VERY LITTLE	IMPORTANT	ESTABLISHED FIRMS WERE MENTORS

COMPARISON OF THREE REGIONS

ITEM	SOUTHERN NY	FINLAND	BOSTON
ROLE OF THE UNIVERSITY	MINIMUM	SOURCE OF TECHNOLOGY SOURCE OF TALENTS NETWORK	SOURCE OF TALENTS NODE IN THE NETWORK
INNOVATION MODEL	ANALYTICAL	INTERPRETIVE	INTERPRETIVE
SOCIAL CAPITAL	LOW	HIGH	HIGH
NETWORK STRUCTURE	POORLY DEVELOPED	HIGHLY ORGANIZED	SELF-ORGANIZED

INNOVATION PROCESSES

ANALYTIC PROCESS LINEAR PROCESS RATIONAL PROCESS EMPHASIS ON EFFICIENCY

LOW LEVEL OF UNCERTAINTY

INTERPRETIVE PROCESS NON-LINEAR INTUITIVE PROCESS EMPHASIS ON EFFECTIVENESS HIGH LEVEL UNCERTAINTY EMPATHY

TOLERANCE FOR DIVERSITY RICHARD LESTER & MICHAEL PIORE: INNOVATION: THE MISSING DIMENSION, HBS 2004

Public Support for Innovation Development in Finland



Innovation Process in Oulu University

RESEARCH BASE

PRE-INCUBATOR ACTIVITIES

COMMERCIALIZATION



Ref: Oulu University



INNOVATION NETWORK IN BOSTON

ALUMNI

SPECIAL FORUMS



VENTURE CAPITAL CORPORATE NETWORKS