**Institution: University of Surrey**

**Unit of Assessment: UOA 19 Business and Management Studies**

**Title of case study:**

**Cluster Mapping; improving business intelligence in Health Care**

**1. Summary of the impact** (indicative maximum 100 words)

By addressing sub-optimal communication within business clusters, the Surrey research allowed a prescription medicine company serving the NHS to improve patient compliance rates using mobile technologies (addressing part of an estimated £300m pa loss to NHS through wasted prescription medicines – excluding adverse health impacts from non-compliance).

This produced a 14% adherence improvement within the study group, leading to a number of NHS-funded trials and prototypes promising considerable savings for NHS and benefits to the company, Message Dynamics.

The Surrey research was a collaboration with South East Health Technology Alliance (SEHTA), the UK's largest health sector support body, and has improved their business intelligence tools to benefit the community more generally.

**2. Underpinning research** (indicative maximum 500 words)

**The problem**

Although business clusters can be identified by geographical criteria, this does not always translate into productive commercial relationships between cluster members or to the optimization of competitive advantage for members individually or collectively. Part of this problem relates to difficulties of communication and knowledge-sharing that hinder members' awareness of potential collaborators within the cluster.

**The research**

Surrey researchers have developed a unique multi-stage cluster mapping methodology that combines formal clustering methods with network analysis techniques and economic performance models (see below). This provides robust procedures for developing and managing large business databases and developing business intelligence services for whole cluster networks and for individual organizations.

**The findings**

These methodologies were tested within the Health Technology Cluster in SE England (bio-technology, diagnostics, surgical /medical instruments and devices, pharmaceuticals and medical research, telecare and telehealth). The research initiatives over 5 years involved building comprehensive business databases of firms and their customers/clients in the SE (and Emilia Romania in Italy for comparison) and applying network mapping techniques to identify patterns that could be translated into business opportunities and gaps. This has provided business intelligence on geographical location advantages, comparative employment, revenue and output data, R&D capability identification and, relevant to this case, targeted surveying methods.

**Relevance**

These business intelligence tools have so far resulted in: (i) the validation of mobile communications devices for increasing prescription compliance within pharmacies' customer networks; ii) a commercial searchable database for SEHTA members allowing them to identify

sources of R&D funding and funding collaborators. The former is demonstrating commercial benefits to pharmaceutical suppliers and cost savings to the NHS (as well as individual health benefits to patients from better drug compliance). The prescription compliance project has now received funding from the NHS for prototype development and is in the process of being rolled out across the health network. The latter promises to increase cluster effectiveness in accessing resources.

**3. References to the research** (indicative maximum of six references)


*1.* Todeva, E., Knoke, D. and Keskinova, D. (2007) 'The Complementarity of Cluster Analysis and Network Analysis to Map the Structure of Capabilities in the Global Information Sector', in U. Serdült and V. Täube Volker (eds) *Applications of Social Network Analysis, Wissenschaftlicher Verlag, pp. 281-298*

*2.* Todeva E. (2013) 'Governance of Innovation and Intermediation in The Triple Helix Interactions'. *Industry and Higher Education*, 27 (4), pp. 263-278.

3. Todeva, E. (2006) *Clusters in the South East of England*, Report to SEEDA, UK

4. Todeva, E. (2007) *South East Health Technology Cluster*, Report to SEHTA

5. Todeva, E. (2010) *Assessment of Compliance and Adherence Rates of Patients*, Report to Cegedim, UK.


**4. Details of the impact** (indicative maximum 750 words)

This research's main impact is ***Economic, Commercial and Organizational.*** The Surrey researchers have applied their network algorithms to healthcare provider Message Dynamics' database of 10,000 pharmacy dispensing records to survey and track patients' adherence with medicine compliance when supported by a mobile communication device.

Director of Message Dynamics, states that this "was the first study in the United Kingdom to use the dispensing records of retail pharmacies to quantify the level of patient non-adherence to their medication. It showed that adherence could be significantly improved by the simple intervention of reminder calls" (published interview, *Chemist and Druggist,* 08/04/2010). The company reports that the study resulted "in a significant overall improvement in patient compliance and that there was a reduction in wastage. . . . . compliance improved in virtually every therapy class and the improvement in Statins compliance was particularly marked" (published Company Statement). The company commends the research as a demonstration of evidence-based business development, leading to upgraded training for their account managers to help them articulate the economic benefits of their services and to a change in the configuration of their software to make the innovation available to over 5,000 community pharmacies throughout the United Kingdom. Director, stated in an interview for the *PJO* (the official journal of the Royal Pharmaceutical Society of Great Britain; 06/04/2010) that changes resulting directly from the Surrey research would result in a £70,000 pa benefit to the company.

The company estimates that adopting this approach has improved patients' adherence by 14%. By improving patients' compliance, this project will yield financial benefits in terms of a reduction in wastage on prescription drugs and reduced call on health practitioners resulting from better outcomes due to better compliance. Chief Officer of Hampshire and Isle of Wight LPC, commented on the value of this study: "Sometimes commissioners have to go on blind faith that we can deliver a service. We need to create more evidence . . . It's very powerful" (published statement, *Chemist*

*and Druggist*, 08/04/2010). By improving patient outcomes through better compliance also suggests impact in terms of ***Health and Welfare.*** The demonstrated initial 14% increase of patient's adherence to prescribed medicines was acknowledged by recent Department of Health scrutiny of drug dispensing practices in the UK, resulting in three NHS funding awards to further develop and extend the system for the NHS. In terms of ***Reach,*** **the** project has been trialled regionally and is likely to extend to national coverage. In 2012 Message Dynamics was awarded Department of Health funding to develop this service to provide Automated Medicines Adherence Triage (prototyping trials currently underway). Given this potential reach across the NHS, the ***Significance*** of the project is likely to extend well beyond the evidence-based improvements reported from the initial regional testing, resulting in considerable scope for cost-savings for the NHS and improved performance and growth for the company.

In addition, SEHTA has used this research-base to produce a commercial searchable database (driven by the researchers' network algorithms) for its members, allowing them to identify sources of R&D funding and liaise with successful funding recipients over possible collaborations. This product was launched in 2011 and provides a resource for optimising communication between funding bodies, health care businesses and providers, pharmaceutical companies and R&D bodies in the quest to secure funding for new products and service innovations (see 4 below).

**5. Sources to corroborate impact** (indicative maximum of 10 references)


1. Director of Message Dynamics (Provided statement)
2. Interviews with Director of Message Dynamics and other users, *Chemist and Druggist,* 08/04/2010; *PJO* 06/04/2010
3. Press release re Department of Health funding awards.
4. SEHTA Research Database: http://www.researchawards.co.uk/