

**An Absorptive Capacity Based View of the Determinants of University Technology
Transfer**

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Abstract

Background to Research

With the emergence of the knowledge based economy, universities have undertaken a new 'entrepreneurial' role whereby they can contribute directly to economic development through the commercialisation of knowledge residing within universities (Lu and Etzkowitz, 2008). Lord Drayson, Science and Innovation Minister, (2009) identifies that "*universities are a key component in positioning the UK as a key knowledge economy at the forefront of the 21st Century innovation*" hence, there has been increased interest in how knowledge can be leveraged within universities to attain sustainable competitive advantage. Technology commercialisation from universities, by means of licences, spin out firms and joint ventures is a highly dynamic, complex and risky process (McAdam et al., 2005; 2010). A multitude of knowledge flows and exchanges from multiple actors and entities are required to develop and commercialise embryonic technologies. Thus, to ensure technologies are successfully transferred from universities to industry, there is a need to understand these knowledge processes and how they can be managed (Khoja and Maranville, 2010; Lu and Etzkowitz, 2008; O'Shea et al., 2008). A tool which can help organisations to achieve this is absorptive capacity (Cohen and Levinthal, 1990; Zahra and George, 2002; Khoja and Maranville, 2010). Absorptive capacity has emerged as one of the most prominent themes in the literature on organisational knowledge transfer (Khoja and Maranville, 2010) as it can be used to explore how knowledge is acquired, assimilated, transformed and exploited from external sources. As such, it has emerged as a useful framework to explore knowledge exchanges and transfer within a wide range of organisational contexts (Rothaermel et al., 2007). In particular, absorptive capacity has emerged as an important construct in technology transfer research due to the complex knowledge exchanges that take place amongst various stakeholders and entities to aid commercialisation (Lane et al., 2006; McAdam et al., 2010). Thus, absorptive capacity was chosen as the lens from which to explore the knowledge processes within a university technology transfer context.

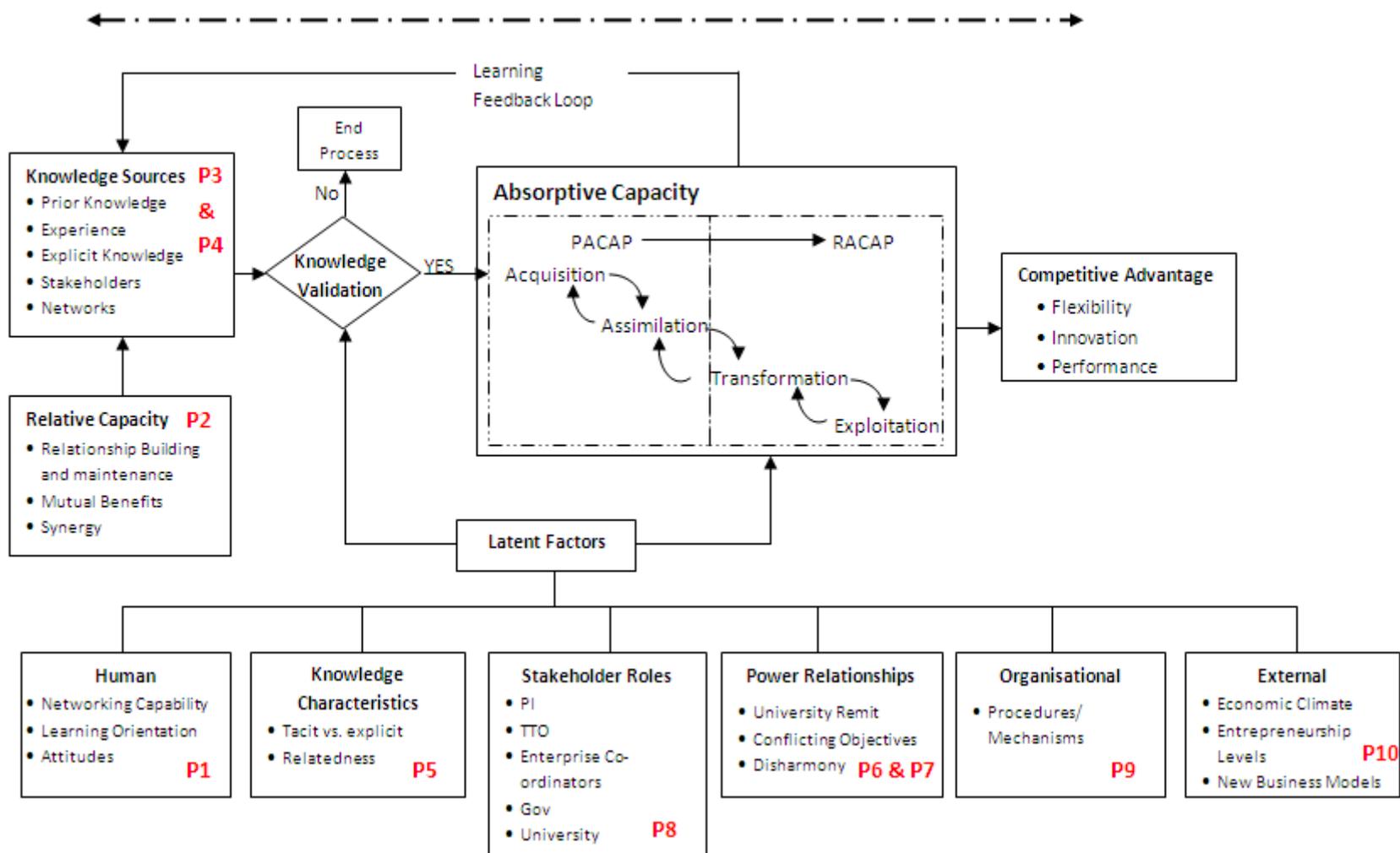
The aim of this research is to investigate the determinants of university technology transfer from an absorptive capacity lens. The emphasis is on gaining an understanding as to how knowledge can be transferred from multiple university technology transfer stakeholders and entities to aid knowledge commercialisation. Looking at the knowledge processes within university technology transfer from an absorptive capacity lens is relatively new. Whilst links

have been made within literature as to the inter-related nature of university technology transfer, knowledge transfer and absorptive capacity; to date, very few researchers have carried out an empirical study exploring these three fields collectively. This renders this study an exploratory one, focused on theory development within this area.

Design/Methodology/Approach – The research was exploratory in nature with the aim of inductively building theory in an under researched area. A qualitative methodology within one intrinsic case study of a university was undertaken. Data was collected in four stages by means of pilot study interviews (stage one), in-depth interviews of multiple stakeholders, namely the technology transfer office staff, principal investigators, enterprise co-ordinators and government (stage two), observational analysis of technology transfer meetings over a period of 8 months (stage three) and repeat interviews of multiple stakeholders (stage four). Documents used within the university technology transfer process were also analysed. The multiple data collection stages allowed for triangulation to gain a rich overview of the phenomena under study (Yin, 2009). A method of open inductive coding (Strauss and Corbin, 1998) was followed. Coding was carried out both manually and with the use of NVivo 8. Open codes were then grouped into themes and sub themes.

Findings – The findings resulted in six key themes, namely human factors, knowledge sources, stakeholder roles, power relationships, organisational factors and external influences. These themes and corresponding sub-themes were found to both positively and negatively affect knowledge transfer and sharing within the university technology transfer process. A conceptual absorptive capacity based framework was developed as a result of a critical analysis of the literature within the area and this was then revised in light of the findings. This conceptual framework depicts the knowledge processes existing within the university technology transfer process, thus aiding theoretical development. In addition propositions were developed as a result of the empirical findings. The conceptual framework and corresponding propositions are shown below.

Knowledge Transfer



Propositions

P1: Human factors, such as networking capability, learning orientation and attitudes can both positively and negatively affect the ability to value new knowledge and engage in knowledge transfer and sharing during UTT activities.

P2: Relative capacity is positively related to prior knowledge needed for absorptive capacity within UTT activities.

P3- Prior knowledge and experience is positively related to future knowledge sharing, knowledge transfer and learning for UTT activities.

P4 – The presence and access to knowledge sources is positively related to knowledge processes when undergoing UTT activities.

P5 – The characteristics of knowledge can affect its transference, absorption and exploitation within UTT commercialisation.

P6- Power relationships (as a result of university remit, conflicting objectives and disharmony) can negatively affect the willingness of PIs to engage in knowledge sharing and technology transfer.

P7- Power relationships negatively influences the knowledge processes when engaging in UTT activities.

P8- The role that the PI, TTO, enterprise co-ordinators, government and university play within UTT activities can enhance or hinder UTT success.

P9 – Organisational factors, such as their procedures and mechanisms can positively and negatively affect knowledge sharing and transfer for UTT activities.

P10 – External factors, such as the economic climate, entrepreneurship levels and new business models can both positively and negatively affect UTT activities.

Research Limitations

Due to the uniqueness of universities as knowledge organisations, the findings are only representative of one university.

Originality/Value

This research contributes to theory development due to the fact there is a paucity of research to date investigating multiple stakeholder knowledge transfer within the context of a university setting particularly from an absorptive capacity lens. By providing knowledge and understanding of the determinants of the knowledge transfer between multiple stakeholders

this research also has implications for policy makers interested in triple helix interactions and knowledge transfer from universities as a key strategy for economic development.

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