Reconciling Image with Innovative Need
How Employers Determine the ‘Fit’ of Engineering Higher Degree by Research Graduates for Industry

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Thesis submitted in fulfilment of the requirements for the degree of

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<tr>
<td>ACED</td>
<td>Australian Council of Engineering Deans</td>
</tr>
<tr>
<td>ADTP</td>
<td>Australasian Digital Theses Program</td>
</tr>
<tr>
<td>ARC</td>
<td>Australian Research Council</td>
</tr>
<tr>
<td>BAA</td>
<td>Backing Australia’s Ability</td>
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<tr>
<td>BHERT</td>
<td>Business/Higher Education Round Table</td>
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<tr>
<td>CRC</td>
<td>Collaborative Research Centre</td>
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<tr>
<td>DEST</td>
<td>Department of Education, Science and Training</td>
</tr>
<tr>
<td>DETYA</td>
<td>Department of Education, Training and Youth Affairs</td>
</tr>
<tr>
<td>DITR</td>
<td>Department of Industry, Tourism and Resources</td>
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<tr>
<td>EHDR</td>
<td>Engineering Higher Degree by Research</td>
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<td>EHDRG</td>
<td>Engineering Higher Degree by Research Graduate</td>
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<tr>
<td>GTM</td>
<td>Grounded Theory Methodology</td>
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<tr>
<td>HDR</td>
<td>Higher Degree by Research</td>
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<tr>
<td>IPR</td>
<td>Intellectual Property Rights</td>
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<tr>
<td>KBE</td>
<td>Knowledge-Based Economy</td>
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Abstract

A substantial proportion of engineering higher degree by research (HDR) graduates indicate an interest in a career in business and industry. However, little of substance is known about the ways these graduates and the engineering work they perform are perceived and valued by their industry employers. The purpose of this study was to research the beliefs and perceptions of employers of engineering HDR graduates, in order to gain a more complete understanding of how they perceive the abilities developed through higher degree by research study to contribute to the Australian industrial workplace.

Constructionist grounded theory methodology was used to explore the perceptions of 22 employers of research masters and PhD engineers in the fields of mechanical and chemical engineering in two major urban settings, both strong manufacturing and science and technology centres in Australia. The participants were located in a range of workplace contexts: consulting engineering firms, manufacturing firms, public utilities and government funded research organisations.

The study revealed that the employers viewed their engineering HDR employees with positive regard, but maintained a number of ‘theoretical’ concerns about engineering HDR graduates in general. Their concerns mainly emanated from (a) beliefs about the nature of engineering problem solving and how it contributes to the innovative needs of their workplaces, and (b) beliefs about, or the image of, personal characteristics of engineering HDR graduates. With respect to these latter beliefs, it is argued in this thesis that the employers maintained idiosyncratic, implicit personal theories of engineering HDR graduates. When considering accommodating engineering HDR graduates in the workplace, the employers resolved their concerns by engaging in a process of reconciliation between these two sets of beliefs.

The reconciliation process occurred in three stages: establishing innovative context, invoking personal theories and determining workplace fit. The employers were found to accommodate engineering HDR graduates to different extents, depending on the following factors: the value the employers placed on creativity to achieve workplace outcomes; the employers’ tolerance of the perceived personal attributes they
associated with engineering HDR graduates; and the perceived costs they perceived to the workplace of engineering HDR graduates who display personal creativity attributes. A decision pathway, or algorithm, is hypothesised in this thesis that illustrates the way these factors are taken into account by the employers.

In keeping with grounded theory research practice, each of the stages detailed in the thesis is then shown to elaborate, extend or challenge notions found in extant literature on creative achievement, implicit theories of creative people, and recruitment biases. The findings are also argued to contribute to the literature on HDR graduates’ employability and, in particular, to what is already known from studies of industry collaborative PhD programs.
Thesis Declaration

This work contains no material which has been accepted for the award of any other degree or diploma in any university or other tertiary institution to Karen Adams and, to the best of my knowledge and beliefs, contains no material previously published or written by another person, except where due reference has been made in the text.

I give consent to this copy of my thesis, when deposited in the University Library, being made available for loan and photocopying, subject to the Provisions of the Copyright Act 1968.

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Karen Adams
Publications

The following publications arose from this study:


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