# Attracting Young Engineers to the Rail Industry in Australia

**Refereed Paper**

Associate Professor Michelle Wallace PhD
Southern Cross University, Australia

Associate Professor Ian Lings PhD
Queensland University of Technology, Australia

Neroli Sheldon
Southern Cross University, Australia

Dr Roslyn Cameron
Southern Cross University, Australia

**Associate Professor Michelle Wallace**

Southern Cross Business School
Southern Cross University
Tweed Gold Coast Campus
Locked Mail Bag 4
Coolangatta QLD 4225 Australia
michelle.wallace@scu.edu.au
61-7 55069366

ANZAM Conference 7-9 December 2011, Wellington, New Zealand

**Track: Human Resource Management and Development**

The authors are grateful to the CRC for Rail Innovation (established and supported under the Australian Government's Cooperative Research Centres program) for the funding of this research, *Project R1.112 Attraction and Industry Image for the Rail industry*

**Attracting Young Engineers to the Rail Industry in Australia**

## Abstract

This paper reports the quantitative stage of a mixed-methods research project focussing on attracting engineers and skilled technologists to careers in the Australian rail industry. There is increased demand for engineering skills and a need to replace retirees yet it has been identified that rail is not attracting its share of entry level and mid-career professionals. Using career preference and brand equity theory the survey with engineering students and their influencers map what graduating engineers aspire to and what they and HR/industry stakeholders consider rail offers. The identified mismatch between what attracts these young engineers to engineering careers and what they perceive rail offers and what HR professionals believe rail offers can inform rail branding and attraction strategies.

**Keywords:**

Rail industry, engineers, technical staff, HR staff, brand, attraction.

## INTRODUCTION

The rail industry is in expansion mode in Australia with considerable investment in infrastructure and is in competition with other industries such as defence and mining for university-trained professional engineers and TAFE-trained technologists. However, the rail industry has an aging workforce and is not attracting sufficient numbers of engineers and skilled technicians to fulfil its current and future needs. Contemporary research suggests that this is because, in some cases, rail careers are not seen as attractive and, in other cases, because there is a lack of awareness of rail careers (DEEWR/ARA, 2007 a and b; Kerr & Waterhouse, 2008).

Furthermore, its workforce planning and marketing staff, have insufficient information to fully understand how engineers and skilled technicians, who are potential employees, perceive careers in rail and how these perceptions compare with careers in industries competing for the same recruits. This information will enable rail organisations to better target workforce planning and sustainability initiatives. This research forms part of a wider, mixed methods research project. Its aims that pertain to the findings in this paper are to:

- Understand the knowledge of/attitudes to rail and competing careers of students, staff, and other potential employees within the engineering, key trades and technical networks in TAFEs, universities and recruiters;
- Understand how rail is perceived as an employer brand within the engineering, key trades and technical networks in TAFEs, universities and recruiters;

This paper focuses on the quantitative research that explored engineering students' and rail HR professionals' perceptions of career attractors and of rail as a 'brand' and is informed by career preference literature and brand equity theory. The qualitative research has been reported elsewhere (Wallace et al., 2010).

## LITERATURE REVIEW

### Engineering Skills Shortage

At a global level, skilled tradespersons, engineering and maintenance technicians and engineers rank first, third and fourth in the list of ten jobs experiencing the greatest skills shortages (Manpower, 2009a). Reports from some industries such as rail indicate that the industry is not attracting sufficient entry level and mid-career engineers and skilled technicians from within the Australian labour market and is facing widespread retirements from an ageing workforce (Australasian Railway Association/DEEWR, 2007a).

Engineers Australia (2009) have noted that, by the 2011 Census, a conservative estimate of approximately 70,000 engineering retirements might have occurred. Over the same period, the report estimates, only 45,000 Australian engineers will have graduated. Between 2001 and 2008, domestic enrolments increased by 9.2% and international enrolments by 90.4% confirming Birrell, Sheridan, and Rapson's (2005) assessment that growth in numbers of students in engineering was fuelled by international enrolments. Despite this recent increase Engineers Australia (2010a) maintain that this only recovers lost ground of the recent past and is insufficient to meet infrastructure needs. A report by Engineers Australia (2010b) confirmed that that even at the height of the global financial crisis in 2009, 53% of companies reported they still experienced professional engineer skills shortages, suggesting that the skills shortage are chronic rather than cyclical. The highest shortages were in the discipline of civil, mechanical, electrical and structural engineers all of vital importance to the rail industry (EA, 2010b).

The ARA estimates that demand for rail engineers in Australia outstripped employment by approximately 40% (ANET, 2010a). In an unpublished 2009 paper titled *Australia needs a national engineer strategy* (APESMA, 2009), statistics were cited from the ARA that estimated an increase in demand for engineers in passenger and freight rail of between 22 –33% to 2014, in addition to needing to replace retirees and an aging workforce. In order to understand how best to address skills shortages, the rail industry need to understand the range of factors that influence career decision-making.

**Career Preferences**

A survey of final year university engineering students (DEEWR, 2008) indicated a degree of consensus among male and female final year engineering students as to the importance of job related factors. In descending order these are: good working conditions, good work/life balance, opportunity for a variety of work, good pay, opportunities for promotions and career advancement opportunities to apply skills and knowledge in a practical way and permanency/job security (DEEWR, 2008). The top five most important factors were the same for both male and female respondents, suggesting that the most important factors making an engineering job appealing to engineering graduates are not gender specific (DEEWR, 2008).

The larger differences were in items ranked of lesser importance such as opportunity to extend experience and skill through Professional Development Programs, opportunity to work overseas opportunity to contribute to society, opportunity o help people improve their lives where females ranked these items six to eleven percentage points higher than males. In contrast males ranked items opportunity to be involved in new and emerging technologies, availability of cash bonuses and fringe benefits, fixed term contract between three and seven percentage points higher than females (DEEWR, 2008).

**Employer Branding**

Employer branding has emerged from academic research as a synthesis of marketing principles and recruitment practices, and has been shown to increase the quantity and quality of job applicants (Collins, & Han, 2004) and organizational performance (Fulmer, Gerhart, & Scott, 2003). Branding is the “Entire process involved in creating a unique name and image for a product (good or service) in the consumers' mind, through advertising campaigns with a consistent theme” (Business Dictionary, 2010). Branding is thus something an organisation or industry has control over. Image relates to the perceptions of individuals of a business or industry and can be influenced by branding activities and other consumer experiences of an organisation (Business Dictionary, 2010). An organisation has only some control over the image potential customers may have.

To extrapolate these concepts to attraction and recruitment strategies, potential recruits' belief that an employer will satisfy his/her needs represents the value of the employer's brand in the recruitment market. Potential recruits rely on employer branding to assist their decision making (Collins & Stevens, 2002) and those who perceive an employer to have high employer brand value perceive that working for the employer more attractive, or at least less risky (Berthon, Ewing, & Hah, 2005). The value that potential recruits attribute to an employer's brand thus depends on their evaluation of the employer. These evaluations are, in turn, dependent on potential recruits' awareness of the employer brand, the associations that they have with it, and their perceptions of the brand developed through marketing, personal experience or word of mouth.

Previous rail research in the area has shown that rail, as an employer, has low brand awareness and a poor brand image compared to other engineering companies (DEEWR/ARA, 2007 a and b; Kerr & Waterhouse, 2008). As a consequence, potential recruits see little value in 'rail' as an employer brand. This low brand awareness and poor brand image result in a high-risk decision for potential recruits. Other employers might be offering better working conditions. This results in rail being seen as less attractive than competitors for whom employer brand value is seen as higher.

Berthon et al., (2005), present a scheme of five benefits, or dimensions of employer image that are relevant to potential recruits: interest benefit, social benefit, economic benefit, development benefit and application benefit. In addition to these benefits, Lievens, Van Hoye, and Anseel (2007) present the following three additional salient benefits associated with employment: travel benefits, culture benefits and prestige benefits.

Potential recruits' anticipation of these benefits influences how attracted they are to careers with an employer (see for example: Lievens & Highhouse, 2003; Slaughter et al., 2004; Lievens, Van Hoye & Schreurs, 2005). Finally, in understanding a recruit's evaluation of the employer brand, it is important to note that all attributes are not equally important to all recruits and it is likely that potential recruits at different life/career stages will have different motivations and, as a consequence, may value the various aspects or benefits of employment differently.

Our research thus extrapolates a brand equity approach to exploring rail as a brand and calls on career preference literature to help make sense of the perceptions of rail held by engineering students and their influencers.

## METHOD

The research design of the overall project articulated a three-stage, sequential and concurrent process that used qualitative and quantitative methodologies. An exploratory mixed methods research design informed the research methodology, where the first method (qualitative) can help develop or inform the second method (quantitative) (Greene, 2007). This design is well suited for exploring a phenomenon (Plano, Clark, & Creswell, 2008) and is useful when the researchers need to develop an instrument because one is not available (Creswell, 2009).

The first stage of this research was predominantly qualitative and involved interviews and focus groups with: final year university and TAFE engineering students; their teachers/lecturers and careers advisers; commercial recruiters specialising in engineering employment; and human resource practitioners/recruiters in rail organisations. This data was analysed using NVIVO software. The research team then workshopped the results to delineate key themes and develop nodes around five main themes: employment characteristic preferences; industry engagement with stakeholder; influencers; perception and image of rail careers; sources of knowledge of rail careers; and suggested attraction and image strategies. This qualitative data has been reported elsewhere (Wallace et al., 2010). These themes also helped inform the development of the survey instrument.

The first step in the survey instrument development procedure was to create a pool of items designed to assess the dimensions of employer image as demoted through the themes above. A dual approach involving the modification of published scales measuring employer image (Lievens & Highhouse, 2003; Slaughter et al., 2004; Lievens, Van Hoye, & Schreurs, 2005; Berthon, Ewing, & Hah, 2005; Lievens, Van Hoye, & Anseel, 2007) and the development of new items from the qualitative research resulted in a large pool of potential items that capture several dimensions of employer image. A final set of forty-six questions was chosen to measure eight dimensions of employer image. These dimensions and associated benefits appear in the Table below:

INSERT TABLE 1 HERE

The questions developed around these constructs were used twice in the survey to first measure the importance of these dimensions to potential employees in relation to engineering careers in general and second, to measure their perceptions of rail as an employer in delivering these benefits. In addition, to measure rail's attractiveness as an employer, three items were adapted from the scale of organizational attractiveness proposed by Highhouse, Lievens and Sinar (2003). Two items were included to measure the uniqueness of rail's image. All of these items were measured on a seven-point Likert type scale anchored at strongly agree and strongly disagree. In addition to the Likert scales described above, items were included to measure the perceptions of five image attributes of rail relative to its nearest competitors. The benchmark competitors chosen were a) private construction and engineering consultancies, b) public utilities (gas/water/electricity), c) local or state government (e.g. councils), d) mining (oil/gas/coal) and e) the defence force. These questions were anchored at "much better than rail" and "much worse than rail". Several demographic questions were included in order to profile respondents.

The survey instrument was piloted with engineering graduates and minor modifications made to the question wording and layout. Several design initiatives were incorporated into the survey to ensure that the data collected were as free from error as possible and were valid measures of the constructs under observation. Where possible existing measures were used (or adapted) for this study. The research team assessed each question included in the questionnaire for face validity (i.e. do the questions seem sensible to measure the construct?). Systematic errors commonly arise from self-report bias, and take the form of acquiescence and social desirability bias. Acquiescence arises as a result of the respondents' tendency to agree (or disagree) with all questions regardless of content and can be reduced by including both positively and negatively worded questions, as was done in this study. Social desirability arises as a result of the respondents' tendency to present themselves in a favourable light, irrespective of their true feelings (Spector 1987; Podsakoff, MacKenzie, Lee &

Podsakoff, 2003). To minimise the impact of social desirability, surveys were collected anonymously and respondents assured that their responses could not be traced back to them.

The survey was conducted in later 2009/early 2010 among a convenience sample of 407 final year, women and men engineering students from seven universities and one TAFE college in Brisbane, Rockhampton, Sydney, Melbourne, Adelaide and Perth in order to measure rail image in terms of brand awareness. The educational institutions were chosen because they offered engineering courses and accepted our invitation to participate. All surveys were paper-based and administered in person by the Research Associate at the educational institutions usually after class in the lecture rooms. Few students declined to participate so the response rate was almost eighty-five percent. The industry HR practitioners' survey was distributed to attendees of the Rail Careers Conference held in Brisbane in May 2010 and resulted in 20 usable responses.

Data were analysed using SPSS V 16.0. The first stage of the data analysis was to to establish reliability of the measures used in the quantitative analysis several statistical tests were undertaken, prior to analysis of the relationship between job attributes and attractiveness of a rail career. Responses from students with substantial missing data were removed from the sample, as were responses where it was apparent that the survey had not been filled in correctly resulting in a sample of 352. Prior to analysis, the internal consistency of all scales was assessed and, for all scales, met the recommended minimum Cronbach's alpha of 0.7 (Bagozzi, Youjae, & Phillips, 1991; Hair et al., 1998). The convergent validity of the measures was assessed by examining the variance extracted for each of the measures. In all instances the measure explains more than 50% of the variance in the data and so meets the criterion for convergent validity set by Fornell and Larcker (1981). Discriminant validity was assessed by comparing the variance extracted with the correlations between the measures and in all cases the measures were found to discriminate between the construct that they purport to measure. Data cleaning resulted in a total usable sample of 352.

## RESULTS

The sample was overwhelmingly male (87%) and with modal age 21 years. Respondents were studying for a Bachelors' degree (85%) with the bulk of the remainder studying for a Masters' degree (8%) or Certificate III (5.5%).

**Benefits Considered Important to Engineering Students when Considering Employment**

Several questions relating to each type of benefit were presented to respondents. These questions related to the component parts of each of the benefits. For example, to assess interest benefits, respondents were asked to indicate how important an innovative environment, varied projects and cutting edge technology were to them when considering a career. Each of these elements represents an aspect of interest and so the overall score for interest benefit was calculated by averaging the response to each of these questions. This was then averaged for the whole sample to give an overall ranking of importance for each of the eight benefits for all respondents and is presented below.

INSERT TABLE 2 HERE

A regression analysis suggests that four of the eight benefits have a significant impact (at p=0.05) on the attractiveness of a career with Rail ($R^2$=0.40). These are interest (β= 0.18), prestige (β= 0.25), economic (β= 0.16) and culture (β= -0.22) benefits.

**Aspects Considered Important by Students**

In addition to knowing the relative importance of each of the general benefits it is also insightful to understand the importance of specific components. The following table list those aspects of the eight benefits that students consider most important when considering a potential employer.

INSERT TABLE 3 HERE

**Aspects Considered Unimportant by Students**

It is also insightful to understand which of the components of these benefits are considered to be unimportant to students. The components that were ranked least important by students correspond primarily to application and prestige benefits. The following table describes these aspects.

INSERT TABLE 4 HERE

From the above survey results it appears most engineering students are seeking economic, development, social and interest benefits from their jobs. In particular the economic benefits that potential employees think are important include salary, promotion opportunities, job security and flexibility. Potential employees also consider whether the job offers experiences that support their future career and whether they will be recognised and supported in the job. The other benefits that employees consider important are working on a variety of interesting, innovative projects in which they will be using cutting edge technology and having a good relationship with their team and managers. These students appeared to be much less concerned with the prestige associated with working for a particular company, opportunities to travel, or feeling as if they are contributing to the wider social good.

**Perceptions of How Well a Rail Career Provides these Benefits**

Respondents were asked to report their perceptions of how well a career in rail would provide these benefits. The results suggest that most respondents do not have a clear view of whether a career in rail will offer the benefits that they seek. This is consistent with a weak brand image of rail as an employer. This is also confirmed by questions asking if respondents consider rail to have a distinct and unique identity. This weak brand identity of rail in the recruitment market suggests that potential recruits lack information about rail's image.

The survey also indicates that students perceive rail careers to have low prestige. Negative responses were given to questions asking if rail jobs were highly regarded, well respected, prestigious or positively reported in the media. Rail was also seen to offer poor development opportunities, with negative responses to questions about whether engineers in the rail industry were well recognised and appreciated for their work achievements and whether respondents would feel proud to work in the rail industry. Rail careers were also viewed as hindering professional freedom or innovation. Students rated careers in rail most highly on the following aspects:

- The rail industry makes an important contribution to my nation (Application benefit).
- Engineers in rail can work interstate (Travel benefit).

- An engineering job in the rail industry would involve working in a variety of locations (Travel benefit).
- The rail industry has a secure future (Economic benefit).
- The rail industry offers job security (Economic benefit).

Despite these relatively higher ratings for rail careers on some individual questions, general benefits that these questions relate to were considered to be unimportant by students participating in the survey. **This suggests that a career in rail is seen as providing benefits that potential recruits do not consider important and is not providing benefits that they consider to be important.** However, working in an industry that has a secure future and job security were two aspects of the Economic benefits that students consider important and which could be highlighted by public rail organisations which traditionally offer job security.

The following Figure shows the benefits that engineering students think that rail provides.

INSERT FIGURE 1 HERE

The major benefits that potential recruits associate with rail are travel benefits and the opportunity to apply their learning to their role. The major weakness that potential recruits perceive is the low prestige associated with rail jobs. By examining which benefits may influence students' perceptions of how attractive a career with rail would be, it is possible to set targets for action to make rail careers more attractive to this market. A regression analysis suggests that four of the eight benefits have a significant impact on the attractiveness of a career with rail. These are interest, prestige, economic and culture benefits. Other benefits did not have any significant role in determining how attractive a career with rail was seen to be.

These results suggest that it is the work environment, novel work practices, salary and compensation package, job security, promotional opportunities and perceptions that rail is highly regarded that make a career in rail attractive. The management structure and support from managers in a rail organisation is seen to make a career with rail less attractive. The other benefits do not appear to have any impact on whether these students considered a career with rail attractive or not.

**HR Practitioners' Perspectives**

The second survey was conducted to determine what, if any, discrepancies existed between the perceptions of the university students as external potential recruits and the perceptions of human resource practitioners working in rail organisations. The following bar chart shows the opinion of rail HR professionals and students of what is important in terms of the following job characteristic preferences: development, social, interest, economic and application benefits.

INSERT FIGURE 2 HERE

These results suggest that rail HR professionals and engineering students are fairly well in agreement about what is important in engineering jobs. However, HR professionals overemphasise the importance of development benefits and underemphasise the importance of social benefits compared to engineering students. Perceptions of careers in consultancies, mining and the defence force differ considerably between rail HR professionals and engineering students in the image of salary, status, career enhancement and environmental friendliness they offer.

These results also suggest that rail HR professionals have a different view of how rail compares to other industries than do engineering students. This may give rise to communications that do not position rail against its competitors in a favourable light. For example engineering students perceive mining to be much less environmentally friendly than do rail HR professionals. This might lead HR professionals to underestimate the environmental consciousness of engineering students. Similarly HR professionals overestimate the difference in perceived career enhancement that engineering students associate with mining careers and consequently may not attempt to compete in this area. Finally, HR professionals vastly underestimate students' perceptions of the status of working for consultancies and overestimate students' perceptions of the status of working in mining. Both may have an impact on how careers in rail are positioned in the minds of potential recruits.

**Limitations and Suggestions for Further Research**

This research has limitations in that it has focused on one specific employment market, that of newly graduating engineers and skilled technicians, and presents a moment-in-time perspective. As

these engineers mature in the workforce the perceived benefits of different employers may change as their values evolve. Specific research into mid career employees, who may be recruited to rail, may yield positive workforce planning information for the rail industry but is beyond the brief of the research reported here.

Another limitation is the sample of final year students surveyed. It represents a relatively small proportion of final year engineering students and does not include all states and territories. A wider sample may have yielded different results. Similarly, the sample of rail HR personnel surveyed was small and may be a limitation. Further research into the perceptions of this group regarding their recruitment labour pools and the relationship between the marketing, human resources and recruitment functions may prove useful in better positioning the public rail industry as a career choice.

Of course, the elephant in the room is rail culture(s) and working conditions. All the branding in the world is in vain if the branding promise is not in synergy with the actuality. Further research is needed regarding these important factors.

**Conclusion**

The survey results indicate that most engineering students are seeking economic, development, social and interest benefits from their jobs. Other benefits considered important include working on interesting, innovative projects in which they will be using cutting edge technology. These results are supported by other surveys of final year engineering students (DEEWR, 2008; Chandler Macleod, 2007) who confirmed that good working conditions, work/life balance, remuneration, career advancement and permanency/job security were important attractors of graduating engineers. Whilst some of these benefits including salary, job security and promotional opportunities were identified by students as being available in rail, the absence of benefits such as the opportunity to work on large, innovative projects using cutting edge technology is alarming and confirms a lack of knowledge of opportunities in the rail industry. In order to attract young engineers to the rail industry, the industry needs to better market and brand itself as an industry capable of providing the benefits that young engineers are seeking from their employers.

**References**

Association of Professional Engineers, Scientists and Managers, Australia (APESMA). 2009. ***Australia needs a national engineer strategy.*** Paper presented at APESMA's 2009 National Engineer Conference, Sydney.

Australian National Engineering Taskforce (ANET). 2010a. ***Scoping our Future: Australia's Engineering Skills Shortage.*** Paper prepared by Pearce, A., Flavell, K., & Dao-Cheng, N., Australia.

Australasian Railway Association (ARA)/Department of Education, Employment and Workplace Relations (DEEWR). 2007a. ***The Changing Face of Rail: A Journey to the Employer of Choice,*** report prepared by PriceWaterhouseCoopers, Canberra: ARA.

Bagozzi, R., Youjae, Y., & Phillips, L. 1991. Assessing construct validity in organizational research. ***Administrative Science Quarterly,*** 36: 421–458.

Berthon, P., Ewing, M., & Hah, L. 2005. Captivating company: dimensions of attractiveness in employer branding. ***International Journal of Advertising****,* 24(2): 151–172.

Birrell, B., Sheridan, J., & Rapson, V. 2005. Why No Action on Engineering Training? ***People and Place,*** 13(4): 34–47.

***Business Dictionary,*** 2010. Available: http://www.businessdictionary.com/definition/branding.html

Chandler Macleod. 2007. ***Workplace Barometer – Employer of Choice: A Reality Check.*** In Association with the Australian Human Resource Institute (AHRI). Available at:

http://www.workplacebarometer.com.au/DownloadCentre/tabid/987/Default.aspx

Collins, C., & Stevens, C. 2002. The Relationship Between Early Recruitment-Related Activities and the Application Decisions of New labour Market Entrants: A Brand Equity Approach to Recruitment. ***Journal of Applied Psychology***, 87(6): 1121–1133.

Collins, C., & Han, J. 2004. Exploring applicant pool and quality: the effects of early recruitment practices, strategies, corporate advertising, and firm reputation. ***Personnel Psychology***, 57: 685–717.

Creswell, J. 2009. ***Research design: qualitative, quantitative, and mixed methods approaches*** (3rd ed.). Thousand Oaks, CA: Sage Publications.

Department of Education, Employment and Workplace Relations (DEEWR). 2008. ***Views of Engineering Students: Report of a survey of final year university engineering students*** Canberra: Commonwealth of Australia.

Engineers Australia (EA). 2010a. ***Engineering sector remains well short of meeting demand***, media release, Engineers Australia, Barton, ACT.

Engineers Australia (EA). 2010b. ***The Engineering Profession – A statistical overview 2010*** (7th ed.). A report prepared by Kaspura, A. Barton, ACT: Engineers Australia.

Engineers Australia (EA). 2009. ***Inquiry into Skills Shortages in the Rail Industry – Submission to the Victorian Education and Training Committee*** Barton, ACT: Engineers Australia.

Fornell, C. & Larcker, D. 1981. Structural Equation Models with Unobservable Variables and Measurement Error: Algebra and Statistics. ***Journal of Marketing Research***, 18(3): 382–388.

Fulmer, I. Gerhart, B., & Scott, K. 2003. Are the 100 best better? An empirical investigation of the relationship between being a 'great place to work' and firm performance. ***Personnel Psychology,*** 56: 965–993.

Greene, J. 2007. ***Mixed methods in social inquiry*****.** San Francisco: Jossey-Bass.

Hair, J., Tatham, R., Anderson, R., & Black, W. 1998. ***Multivariate Data Analysis*****,** (5th ed.). New Jersey, USA: Prentice Hall.

Highhouse, S., Lievens, P., & Sinar, F. 2003. Measuring Attraction to Organisations. ***Educational and Psychological Measurement***, 63(6): 986–998.

Kerr, C., & Waterhouse, J. 2008. ***Bridging the gap: Towards a Better Understanding of Target Cohort Belief Systems,*** a report prepared for the CRC for Rail Innovation, Brisbane, QLD.

Lievens, F., Van Hoye, G., & Anseel, F. 2007. Organizational Identity and Employer Image: Towards a Unifying Framework. ***British Journal of Management*****,** 18(s1): S45.

Lievens, F., & Highhouse, S. 2003. The Relation of Industrial and Symbolic Attributions and a Company's Attractiveness as an Employer. ***Personnel Psychology*****,** 56(1): 75–102.

Lievens, F., Van Hoye, G., & Schreurs, B. 2005. Examining the relationship between employer knowledge dimensions and organizational attractiveness: An application in a military context. ***Journal of Occupational and Organizational Psychology,*** 78: 553–573.

Manpower. 2009a. ***2009 Talent Shortage Survey Results*****.** Sydney: Manpower Services (Australia) Pty Ltd.

Plano Clark, V., & Creswell, J. 2008. ***The mixed methods reader.*** Thousand Oaks, California: Sage Publications.

Podsakoff, P., MacKenzie, S., Lee, J. L. & Podsakoff, N. 2003. Common Method Biases in Behavioural Research: A Critical Review of the Literature and Recommended Remedies. ***Journal of Applied Psychology,*** 88(5): 879-903.

Slaughter, J., Zickar, M., Highhouse, S., & Mohr, D. 2004. Personality trait inferences about organizations: Development of a measure and assessment of construct validity. ***Journal of Applied Psychology***, 89 (5): 85–103.

Spector, P. E.1987. Method variance as an artefact in self reported affect and perceptions at work: Myth or significant problem? ***Journal of Applied Psychology,*** 72(3): 438-443.

Wallace, M., Sheldon, N., Lings, I., & Cameron, R. 2010. ***Attraction and Image for the Australian Rail Industry*****.** British Academy of Management Conference, Sheffield, UK, September.

## TABLE 1

**Table 1: Summary and Definition of Benefits Sought by Prospective Employees**

| Benefit | Definition |
|---|---|
| Interest benefit | An exciting work environment, novel work practices and that makes use of its employees' creativity to produce high-quality, innovative products and services |
| Social benefit | A working environment that is fun, happy, provides good collegial relationships and a team atmosphere. |
| Economic benefit | Above average salary, compensation package, job security and promotional opportunities |
| Development benefit | Recognition, self-worth and confidence, coupled with a career-enhancing experience and a springboard to future employment. |
| Application benefit | Opportunities for the employee to apply what they have learned and to teach others, in an environment that is both customer orientated and humanitarian |
| Travel benefits | Opportunities that the employer offers to travel for work |
| Culture benefits | Work environment that includes an open and supportive management structure |
| Prestige benefits | Wider perceptions that working for the employer is highly regarded |

Source: Lievens et al. 2007, qualitative data form Stage 1 of the Project.

## TABLE 2

**Table 2: The Relative Importance of Eight Benefits**

| General job benefits | Mean score | Importance rank |
|---|---|---|
| Development Benefits | 4.07 | 1 |
| Economic Benefits | 4.03 | 2 |
| Interest Benefits | 3.93 | 3 |
| Social Benefits | 3.80 | 4 |
| Culture Benefits | 3.68 | 5 |
| Application Benefits | 3.65 | 6 |
| Travel Benefits | 3.50 | 7 |
| Prestige Benefits | 2.99 | 8 |

Scale, 5= very important, 1= not important at all

## TABLE 3

**Table 3: Aspects Considered Important by Students**

| Important benefit | Important aspects of benefit |
|---|---|
| Development | Gaining experience to support their career progression<br>Working in an organisation that enhances their career flexibility in the future<br>Recognition and appreciation for their work achievements<br>Support from their organisation for their continued learning |
| Economic | An attractive employment package (superannuation, travel, allowances etc)<br>A competitive salary |

| | |
|---|---|
| | Good promotion opportunities in the organisation<br>Job security in the organisation<br>Working in an industry that has a secure future<br>Flexible working conditions<br>Promotion based on merit rather than length of service |
| Interest | The opportunity to work on interesting projects<br>The opportunity to design and innovate<br>The opportunity to work on a variety of projects<br>The opportunity to use cutting edge technology |
| Social | Having a good relationship with the team<br>Supportive and encouraging team<br>Having a good relationship with the management |

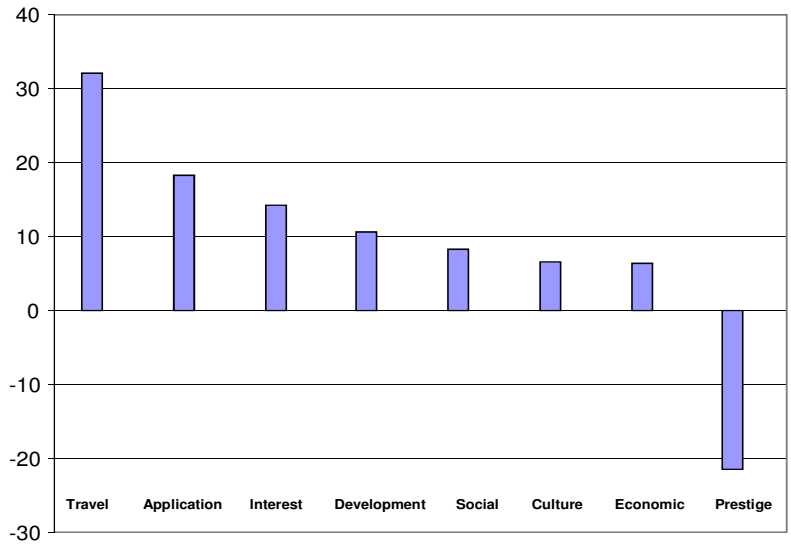
**TABLE 4**

**Table 4: Aspects Considered Unimportant by Students**

| Unimportant benefit | Unimportant aspects of benefit |
|---|---|
| Application | Working for an employer that is environmentally responsible<br>Working as part of a diverse workforce<br>Working for organisation that makes an important contribution to our nation<br>Working for an organisation that is customer focussed |
| Prestige | Working for an organisation that has high status<br>Working in an industry where the workload is not too heavy<br>Working for an organisation that wins big contracts<br>Working in an industry that is easy to get into<br>Working for a multinational organisation<br>Working for an organisation that is positively reported in the media |
| Economic | Working for organisation that has a streamlined, simple recruitment process<br>The opportunity to rotate jobs within the organisation |
| Interest | The opportunity to work for a high profile organisation |
| Travel | The opportunity to work interstate |
| Culture | Working for an organisation that makes quick decisions<br>Working in a high pressure environment |

**FIGURE 1**

**Figure 1: Benefits Engineering Students Think that Rail Provides**




Scale is +200 to -200

**FIGURE 2**

**Figure 2: Importance of Job Characteristic Preferences**

