The organisational gender diversity-performance link:
Does industry type matter?

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Preferred Stream: Gender and Diversity in Organisations

Profile: Muhammad Ali has an MBA (2003) from California State University (CSU), an MPA (1998) from Quaid-i-Azam University and a B.Com (1995) from Punjab University. Prior to joining the MBA program at CSU, he worked in industry in HR positions. His first appointment was as Assistant Branch Officer at Commercial Union Life Assurance Limited. He then joined the MG Factory as an Assistant Manager HR. Muhammad is now pursuing a PhD at the Melbourne Business School. Muhammad’s research focuses on HR practices and workforce diversity. He is particularly interested in studying the impact of HR practices (including equal opportunity practices) and workforce diversity on organisational performance. Muhammad’s teaching interests lie in the areas of managing diversity, organisational behaviour, strategic management and human resource management. In 2007, Muhammad was a representative of the PhD students. He was also a member of the organising committee for the annual PhD retreat.
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Research on workforce diversity gained momentum in the 1990s. However, empirical findings to date on the link between gender diversity and performance have been inconsistent. Based on contrasting theories, this paper proposes a positive linear and a negative linear prediction of the gender diversity-performance relationship. The paper also proposes that industry type (services vs. manufacturing) moderates the gender diversity-performance relationship such that the relationship will be positive in service organisations and negative in manufacturing organisations. The results show partial support for the positive linear gender diversity-performance relationship and for the moderating effect of industry type. The study contributes to the field of diversity by showing that workforce gender diversity can have a different impact on organisational performance in different industries.

**Keywords:** gender diversity, organisational performance, competing predictions, services industry, manufacturing industry

Workforce gender diversity is increasing at a rapid pace in many countries. In particular, women’s representation in the Australian labour force has increased from 22.9 percent in 1954 (Commonwealth Bureau of Census and Statistics 1958) to 44.8 percent in 2004-2005 (Australian Bureau of Statistics 2006). The increase in workforce gender diversity is attributed to a number of factors. For instance, the Australian Affirmative Action (Equal Employment Opportunity for Women) Act 1986 established workforce gender diversity as a legal responsibility. Moreover, the human resources of an organisation are becoming an important source of competitive advantage, because non-human resources such as technology and machinery can be more readily imitated by competitors (Pfeffer 1994).

The increase in workforce gender diversity has attracted the attention of both researchers and practitioners. In particular, a question arises whether the gender composition in an organisation’s workforce will impact individual, group, or organisational level performance. In the early 1990s, both scholars and practitioners were generally optimistic about the effects of workforce diversity on performance. For example, Cox and Blake (1991) argued that diversity can be a source of competitive advantage. However, theories and empirical research thus far suggest that diversity can lead to either positive or negative outcomes. The resource-based view of the firm (Barney 1991) suggests a positive diversity-performance relationship, whereas social identity theory (Tajfel 1978) suggests a negative
diversity-performance relationship. Further, empirical research has found inconsistent results suggesting that diversity can be either good or bad for businesses (for reviews, see Milliken & Martins 1996; Williams & O'Reilly 1998; Jackson, Joshi & Erhardt 2003; Svyantek & Bott 2004). For instance, Svyantek and Bott (2004) reviewed nine diversity studies (published during 1989-2003) that investigated the gender diversity-performance relationship. Out of the nine studies, four found no main effects, two found positive effects, two found negative effects, and one found a nonlinear effect.

The body of literature on diversity sends a confusing message to practitioners on whether gender diversity is good for businesses or not. The mixed evidence suggests the value of focusing on competing predictions (Armstrong, Brodie & Parsons 2001) and of considering the impact of context on the diversity-performance relationship (Jackson et al. 2003). Competing predictions are useful when ‘prior knowledge leads to two or more reasonable explanations’ (Armstrong et al. 2001: 175). Competing predictions provide comprehensiveness because ‘a group of hypotheses encompass the subject on all sides, the total outcome of means and of methods is full and rich’ (Chamberlin 1890: 94). Moreover, Jackson et al. (2003) advised scholars to describe their studies’ contexts in detail to enable cross-study comparisons that might explain inconsistent results. Context underscores the application of the research findings to real life organisational settings (Johns 2006). Studying the moderating effect of context might help explain inconsistencies in past research and achieve a ‘more precise and specific understanding’ of the primary gender diversity-performance relationship (Rosenburg 1968: 100).

This paper proposes two competing predictions of the gender diversity-performance relationship at the organisational level: a positive linear prediction based on the resource-based view of the firm, and a negative linear prediction based on self-categorisation and social identity theories. We also argue that because of certain HR related differences in the services and manufacturing industries, diversity can have different dynamics in the two industries. Therefore, we propose that the industry context (services vs. manufacturing) can impact the form of the linear gender diversity-performance relationship.
Positive Linear

According to the resource-based view, a firm can gain a sustained competitive advantage if it takes advantage of its valuable, rare, inimitable, and non-substitutable (VRIN) resources (Barney 1991). Workforce gender diversity is associated with resources that can provide a firm with a sustained competitive advantage. These resources include market insight, creativity and innovation, and improved problem-solving. Men’s and women’s different experiences (Nkomo & Cox 1996) may provide insights into the different needs of male and female customers. Further, men and women may have different cognitive abilities, such as men’s proficiency in mathematics and women’s proficiency in verbal and interpersonal skills (Hoffman 1965; Maccoby & Jacklin 1974). A mix of cognitive abilities in a gender diverse team may enhance the team’s overall creativity and innovation. Moreover, a gender diverse team can produce high quality decisions (Rogelberg & Rumery 1996).

The resources of market insight, creativity and innovation, and improved problem-solving may be considered VRIN. They are valuable, because they drive business growth (Robinson & Dechant 1997). They may also be considered rare (Oetinger 2001). These resources cannot be easily accomplished or copied by homogeneous organisations (Frink et al. 2003). Therefore, they are largely inimitable. It can also be argued that there are no readily-available substitutes for these resources. In sum, workforce gender diversity in general can provide a firm with a sustained competitive advantage.

Empirical research supports the argument that a gender diverse workforce is positively linked to an organisation’s performance. McMillan-Capehart (2003) used the resource-based view of the firm to argue that gender and racial diversity can provide a firm with a competitive advantage. Of the author’s 12 predictions, the study’s results supported only the prediction of a positive relationship between organisational gender diversity and return on equity. Further, Frink et al. (2003) conducted two organisational level empirical studies to examine the gender diversity-performance relationship, measuring performance differently in each study. The overall results supported Frink et al.’s argument that an organisation’s performance would be greatest when diversity is maximised. Thus, it is proposed:
Hypothesis 1a: Organisational gender diversity will be positively related to organisational performance.

Negative Linear

Self-categorisation theory suggests that people categorise themselves into various social and psychological identity groups, such as intellectual, engineer, male, white, or Australian (Turner, Hogg, Oakes, Reicher & Wetherell 1987). Tajfel defined social identity as ‘that part of an individual’s self-concept which derives from his knowledge of his membership of a social group (or groups) together with the value and emotional significance attached to that membership’ (1978: 63). For instance, a categorisation on the basis of sex would result in a person developing a psychological association with either the male social group or the female one.

Messick and Mackie (1989) noted that categorisation based on race, gender, and age is common. A gender diverse workgroup may produce the psychological groups of male group-members and female group-members. Subsequently, social comparison between the male and female psychological groups triggers in-group out-group dynamics. As a result, gender diversity may produce negative group behaviour, such as decreased communication (Kravitz 2003), stereotype-based role expectations (Elsass & Graves 1997), a lack of cohesion (Triandis, Kurowski & Gelfand 1994) and cooperation (Chatman & Flynn 2001), and increased conflict among group members (Pelled 1996).

Organisational research based on social identity theory is relatively new compared to the long history of social identity theory research in social psychology (Kramer 1991; Nkomo & Cox 1996). However, empirical research supports the argument that gender diversity produces the group behaviour predicted by self-categorisation and social identity theories. For instance, based on social identity theory, Jehn, Northcraft and Neale (1999) argued that workgroup social diversity in the form of sex and age would be positively related to relationship conflict. The authors studied 92 workgroups from a household goods moving firm in the United States. The results suggested a positive association between workgroup social diversity and intra-group relationship conflict. Similarly, Alagna, Reddy and Collins (1982) found that students in mixed sex groups, compared to students in all male groups, reported
more communication problems, greater unresolved interpersonal conflicts, more difficulty working
together, more frequent changes in group membership, lower perceived cooperation, and higher
perceived tension.

If a high level of gender diversity at the organisational level is reflected in gender-diverse workgroups
then in-group out-group dynamics may result. These in-group out-group dynamics may lead to more
relationship conflict (Jehn et al. 1999), more communication problems and difficulty in working
together (Alagna et al. 1982), and lower task cohesion (Shapcott, Carron, Burke, Bradshaw &
Estabrooks 2006) than would occur in less gender-diverse workgroups. Moreover, these negative
effects, suggested by social identity theory, should result in low individual and group performance
(Richard, McMillan, Chadwick & Dwyer 2003). Consequently, low individual and group performance
may aggregate to low organisational performance. Thus, it is proposed:

Hypothesis 1b: Organisational gender diversity will be negatively related to organisational
performance.

Moderating Effect of Industry Type

The theories used in the previous sections of this paper do not take into account contingencies that
might change the strength or the direction (or both) of the gender diversity-performance relationship.
One contingency is accounted for in this study by proposing the contextual variable of industry type
(services vs. manufacturing) as a moderator.

Jackson and Schuler defined industry as ‘a distinct group of productive or profit-making enterprises’
(1995: 251). There are various types of industries, such as manufacturing, services, and trading.
However, the most fundamental differences in the nature of business lie between firms in the services
industry and firms in the manufacturing industry (Jackson, Schuler & Rivero 1989). Service firms are
characterised by more involvement of customers in production and delivery processes, and a closer
connection between production and consumption, than in manufacturing firms (Bowen & Schneider
1988). Differences between the two industries can affect various aspects of organisations including
their HR practices (Jackson & Schuler 1995). For instance, the relative separation of operations in
manufacturing firms results in manufacturing employees performing their jobs more independently than services employees (Dean & Snell 1991). Because of the differences between the manufacturing and services industries, workforce gender diversity may have different dynamics in organisations operating in the two industries.

According to the value-in-diversity perspective, diversity can be a source of market insight, creativity and innovation, and improved problem-solving. These resources can provide a firm with a competitive advantage if they are considered valuable, rare, inimitable, and non-substitutable. However, the value of these resources varies in firms across industries and so does their ability to provide a competitive advantage. For instance, in comparison to manufacturing firms, market insight is more important in services firms, because service-marketing requires cultural knowledge of the target segment (Richard 1997, 2000). Moreover, according to Allport’s (1954) contact hypothesis, interaction among employees in services firms may weaken the intensity of in-group out-group dynamics predicted by self-categorisation and social identity theories. In sum, the positive effects of gender diversity may overcome its negative effects in the services industry and, as a result, may provide a sustained competitive advantage to services organisations.

Operations in manufacturing firms are relatively isolated from each other compared to those in services firms (Bowen & Schneider 1988; Irons 1997; Kulonda & Moates 1986). As a result, employees in manufacturing firms have relatively low job interdependence (Dean & Snell 1991) and less interaction (Frink et al. 2003). Supervisory styles in manufacturing firms tend to further isolate employees from one another. For example, Kulonda and Moates (1986) noted that only 39.8 percent of manufacturing supervisors conduct group meetings in their departments compared to 54.1 percent of services supervisors. Therefore, manufacturing employees belonging to different social identities do not get frequent opportunities to interact (Frink et al. 2003). According to Allport’s (1954) contact hypothesis, less interaction between male and female employees in manufacturing firms may exacerbate the intensity of in-group out-group dynamics. Consequently, the negative effects predicted by self-categorisation and social identity theories may prevail in manufacturing firms.
In sum, industry type may impact the form of the linear relationship between gender diversity and performance. Specifically, gender diversity will have a positive linear relationship with performance in firms in the services industry and a negative linear relationship in firms in the manufacturing industry. Thus it is proposed:

Hypothesis 2: Industry type moderates the gender-diversity performance relationship such that the relationship is positive in firms in the services industry and negative in firms in the manufacturing industry.

METHODS

The objective of testing competing theories that imply a temporal precedence of diversity drives the choice of a longitudinal research design. The data points are on both sides of the starting date of data collection (October 2006) (see Figure 1), representing a combination of prospective (going forward) and retrospective (going backward) longitudinal research designs (Huselid 1995; Wright, Gardner, Moynihan & Allen 2005). This study uses secondary data from the Equal Opportunity for Women in the Workplace Agency (EOWA) database, the FinAnalysis database, the Datalink database, and the Business Who’s Who of Australia database.

Sample and Data Collection

The population of this research comprises all for-profit organisations of all sizes across industries in Australia. The research samples 1899 organisations listed on the Australian Securities Exchange in the year 2006. The listed organisations’ financial performance data are available from secondary sources. The data on organisational gender diversity of 213 listed organisations for the year 2002, and 209 listed organisations for the year 2005 (with an overlap of 155 organisations) were obtained from the EOWA database. This is the full set of listed organisations that have annual equal opportunity reports available for 2002 and 2005 in the EOWA database. Organisational size ranged from 45 employees to 162,432 for the year 2002 (mean 3,378), and from 73 to 183,897 for the year 2005 (mean 3,473). Women’s representation in these organisations ranged from 1% to 99% (mean 36%) for the year 2002, and 5% to 99% (mean 38%) for the year 2005. The organisations were drawn from nine out of ten
industry groups based on Standard Industrial Classification codes; no organisation belonged to the Nonclassifiable Establishments category. In 2002, the best represented industries were Manufacturing (with 30% of the organisations), Services (18%) and Finance, Insurance and Real Estate (13%). In 2005, the best represented industries were again Manufacturing (25%), Services (21%) and Finance, Insurance and Real Estate (15%).

For the years 2002 and 2005, data on gender diversity were matched to performance data on employee productivity for each organisation for the year 2007 (see Figure 1). Employee productivity data were calculated using data obtained from the FinAnalysis and Datalink databases. Data on industry type were obtained from the Business Who’s Who of Australia database. In addition, employee productivity for the years 2001 and 2004 was calculated to control for past organisational performance and test reverse causality (see Figure 1). Data on additional three control variables were obtained as follows: Organisation Size from the EOWA database, and Organisation Age and Organisation Type (holding or subsidiary/stand-alone) from the Business Who’s Who of Australia database.

Measures

*Predictor:* Blau’s index of heterogeneity for categorical variables was used to calculate workforce gender diversity, based on gender proportions. Using Blau’s index, heterogeneity equals $1 - \sum p_i^2$, where $p_i$ represents the fractions of the population in each group. Blau’s index of heterogeneity is based on a ratio or continuous scale (Buckingham & Saunders 2004), so the index increases as the representation of men and women in the organisation becomes more equal (Blau 1977). For gender diversity, the index values range from zero representing homogeneity (0/100 gender proportions) to 0.5 representing maximum gender diversity (50/50 gender proportions).

*Outcome:* Organisational performance was measured using the intermediate performance measure of employee productivity. Employee productivity was calculated as the natural logarithm of operating revenue (obtained from the FinAnalysis database) divided by number of employees (obtained from the Datalink database) (Huselid 1995).
**Moderator:** The nine industry groups of the sampled organisations were collapsed into the categories of services and manufacturing, and a dummy variable called ‘Industry type’ was created with ‘1’ representing manufacturing and ‘0’ representing services. ‘Construction’, ‘Transportation, Communications, Electric, Gas and Sanitary Services’, ‘Wholesale Trade’, ‘Retail Trade’, ‘Finance, Insurance and Real Estate’, and ‘Services’ made up the services category. ‘Agriculture, Forestry and Fishing’, ‘Mining’, and ‘Manufacturing’ made up the manufacturing category.

**Controls:** The study controls for the effects of organisational size, age and type on performance. Because of the economies of scale, large organisations have more potential to make large profits. Organisational size was operationalised as the total number of employees (Huselid 1995). Organisation age may have an impact on performance. Compared to old firms, new firms with less formalised structures may capitalise on the benefits of gender diversity, such as creativity and innovation. Organisation age was operationalised as the number of years since the organisation was founded (Richard et al. 2003). Organisations that are holding companies or subsidiaries, compared to stand-alone organisations, may benefit from the combined financial resources and economies of scale (Richard 1997; Richard et al. 2003). A dummy variable called ‘Organisation type’ was created with ‘1’ representing ‘Holding or subsidiary’ and ‘0’ representing ‘Stand-alone’. This study also controlled for the variance in post organisational performance that can be accounted for by past organisational performance. Firms that perform better have more resources to spend on training and employee development programs than their low performing counterparts. These investments can improve the future performance of such firms. Although there is no precedent for controlling for past performance in diversity research, recent HR studies have done so (e.g., Guest, Michie, Conway & Sheehan 2003; Wright et al. 2005). Therefore, the study included controls for employee productivity for the years 2001 (for analyses involving gender diversity in 2002) and 2004 (for analyses involving gender diversity in 2005). Because the gender proportions and their impact on performance can vary across industries (Frink et al. 2003), industry type was also controlled for in the analyses of the main effects.

**RESULTS**

Table 1 presents the means, standard deviations, and correlation coefficients for all variables.
Hierarchical regression analyses were performed to test the hypotheses (see Table 2). To test Hypotheses 1a and 1b, Employee Productivity 2007 was regressed separately on each predictor (Gender Diversity 2002 and Gender Diversity 2005), after the relevant control variables were entered in step 1. The results partially supported Hypothesis 1a, because Gender Diversity 2002 had a significant positive effect on Employee Productivity 2007 ($\beta = .16$, $p < .05$). There was no support for competing Hypothesis 1b, which proposed that organisational gender diversity would be negatively related to organisational performance.

To test Hypothesis 2, an interaction term (Gender Diversity Centred 2002×Industry Type or Gender Diversity Centred 2005×Industry Type) was entered in step 3, depending on the year under focus. The results shown in Table 2 indicate that only the interaction term of Gender Diversity Centred 2002×Industry Type was significant ($\beta = -.24$, $p < .05$) for the analyses involving Gender Diversity 2002 and Employee Productivity 2007. The interactions were plotted using Aiken and West’s (1991) procedure. Figure 2 and 3 present separate regression lines for services and manufacturing industries. Figure 2 shows that the relationship between Gender Diversity 2002 and Employee Productivity 2007 was positive for the firms in the services industry ($b = 4.64$, $p < .01$) and negative for the firms in the manufacturing industry ($b = -0.24$, n.s.), as proposed by Hypothesis 2. Although the interaction term Gender Diversity Centred 2005×Industry Type was not significant, the directions of the diversity-performance relationship in the two industries were consistent (see Figure 3).
For completeness, the study also tested the possibility of reverse causality between gender diversity and performance (i.e., performance impacts gender diversity) (Guest et al. 2003). For example, Gender Diversity 2002 was regressed on Employee Productivity 2001, with the control variables entered in step 1. No support was found for reverse causality between gender diversity and performance (results available from the first author upon request).

DISCUSSION

The main objective of testing two competing gender diversity-performance predictions (a positive linear and a negative linear) in the context of industry type (services vs. manufacturing) was to investigate this relationship from a broad perspective. The narrow focus of past diversity research on either a positive or a negative linear diversity-performance relationship in a single industry might have resulted in inconsistent findings. The current study’s results suggest that gender diversity is a source of competitive advantage. Importantly, the moderating effect of industry type found in this study may help explain the conflicting results in past research. This study shows that the industry context enables one effect (e.g., positive) of diversity to dominate over the other (e.g., negative). Therefore, a diverse workforce might need to be managed differently in different industries for the benefits of diversity to be realised. For instance, managers in the services industry might need to manage gender diversity at the employee-customer interface to capitalise on the market insights that a gender diverse workforce might deliver. Alternatively, manufacturing managers might benefit from a gender diverse workforce by creating opportunities for male and female employees to interact with each other.

This study makes three major contributions to the field of diversity. First, the longitudinal research design of the study allows for stronger conclusions to be made regarding the causal relationship between gender diversity and performance than those provided by past research. The study ensured temporal precedence of diversity with two and five year time lags between gender diversity and performance (Menard 1991) and tested reverse causality (Huselid, 1995; Wright et al. 2005). Significant results were found only when there was a time lag of five years between gender diversity
and organisational performance. This furthers our understanding that diversity dynamics (e.g., creativity and innovation) take longer than two years to have an impact on performance. Second, this study tests and finds support for the differential impact of gender diversity on the organisational performance of services and manufacturing firms that diversity theories do not yet explain. Richard, Murthi and Ismail (2007) tested the moderating effect of industry type on the strength of the positive linear and the U-shaped curvilinear racial diversity-performance relationships. The authors proposed that the relationships would be more salient in the services oriented industry than in the manufacturing oriented industry. Their results only supported the proposed moderating effect of industry type on the U-shaped curvilinear relationship. In contrast, our study found the moderating effect of industry type on the form of the linear gender diversity-performance relationship. Third, the paper provides Australian managers with some useful insights, such as the impact of organisational gender diversity on intermediate performance measures and the different challenges that gender diversity poses for managers in the services and manufacturing industries.

This research focuses on the two ends of the diversity-performance causal chain. We encourage researchers to continue to examine the gender diversity-organisational performance relationship and include direct measures of mediators (e.g., improved problem solving) in the relationship. Perhaps a detailed study of the differences in diversity management in the services and manufacturing industries will provide further insight into why diversity can have different impact on performance in the two industries. Future research can also benefit from collecting primary data from organisations and include other industry-related differences (e.g., environmental uncertainty) and organisation-related differences (e.g., culture).
REFERENCES


### Table 1: Means, Standard Deviations, and Correlations

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<td>5. Employee Productivity 2001</td>
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<td>-.10</td>
<td>-.07</td>
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<td>.01</td>
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<td>.17**</td>
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<td>8. Gender Diversity 2002</td>
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<td>.03</td>
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2-tailed; * p<.05, ** p<.01

### Table 2: Hierarchical Regression Analyses for Gender Diversity 2002 & 2005 Predicting Employee Productivity 2007

<table>
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Standardised coefficients are reported
* p<.05, ** p<.01, *** p<.001
Figure 1. Data Points

Figure 2: Significant Moderating Effect of Industry Type (Gender Diversity 2002)

Figure 3: Non-significant Moderating Effect of Industry Type (Gender Diversity 2005)