Appendix A

Diversity – Performance Research

*Positive relationship between diversity and performance (17 studies)*

- Weston, Smith & Shrieveres (1972)
- Rumelt (1974)
- Michel & Shaked (1984)
- Jose, Nichols & Stevens (1986)
- Bühner (1987)
- Dubofsky & Varadarajan (1987)
- Grant & Jammie (1988)
- Galbraith, Samuelson, Stiles & Merrill (1989)
- Chatterjee & Lubatkin (1990)
- Nguyen, Séror & Devinney (1990)
- Chatterjee & Wernerfelt (1991)
- Belkaoui & Pavlik (1992)
- Davis, Robinson, Pearce & Park (1992)
- Kim, Hwang & Burgers (1993)
- Bergh (1995)
- Sjölander & Oskarsson (1995)

*Negative relationship between diversity and performance (29 studies)*

- Imel & Helmberger (1971)
- Markham (1973)
- Melicher & Rush (1973)
- Rhoades (1974)
- Rumelt (1974)
- Jones, Laudadio & Percy (1977)
- Grinyer, Yasai-Ardekani & Al-Bazzar (1980)
- Bettis (1981)
- Rumelt (1982)
Appendices

Bettis & Mahajan (1985)
Chang & Thomas (1987)
Hoskisson (1987)
Johnson & Thomas (1987)
Varadarajan & Thomas (1987)
Barton (1988)
Montgomery & Wernerfelt (1988)
Wernerfelt & Montgomery (1988)
Simmonds (1990)
Hill & Hansen (1991)
Lichtenberg (1992)
Hamilton & Shergill (1993)
Hoskisson, Hitt, Johnson & Moesel (1993)
Hughes & Oughton (1993)
Scott (1993)
Hall & St. John (1994)
Lang & Stulz (1994)
Berger & Ofek (1995)
Goll & Sambharya (1995)
Denis, Denis & Sarin (1997)

No relationship between diversity and performance (31 studies)

Gort (1962)
Weston & Masinghka (1971)
Melicher & Rush (1973)
Jones, Laudadio & Percy (1977)
Ulton (1977)
Jacquemin & Berry (1979)
Beattie (1980)
Christensen & Montgomery (1981)
Bettis & Hall (1982)
Hill (1983)
Ravenscraft (1983)
Wansley, Lane & Yang (1983)
McDougall & Round (1984)
Montgomery (1985)
Palepu (1985)
Schmalensee (1985)
Johnson & Thomas (1987)
Lubatkin (1987)
Varadarajan & Ramanujam (1987)
Amit & Livnat (1988b)
Capon, Hulbert, Farley & Martin (1988)
Appendix A

Morck, Shleifer & Vishny (1990)
De (1992)
Lubatkin, Merchant & Srinivasan (1993)
Loyd & Jahera (1994)
Cardinal & Opler (1995)
Lim & Teck (1995)
Riahi-Belkaoui (1996)
Bergh & Holbein (1997)
Busija, O’Neill & Zeithaml (1997)
Delios & Beamish (1998)

Curvilinear relationship between diversity and performance
(11 studies)

Bane & Neubauer (1981)
Itami, Kagono, Yoshihara & Sakuma (1982)
Ciscel & Evans (1984)
Lecraw (1984)
Grant, Jammine & Thomas (1988)
Geringer, Beamish & DaCosta (1989)
Markides (1992)
Lubatkin, Merchant & Srinivasan (1993)
Lubatkin & Chatterjee (1994)
Qian (1997)

Mixed relationship between diversity and performance
(9 studies)

Bass, Cattin & Wittink (1978)
Luffman & Reed (1984)
Wernerfelt & Montgomery (1986)
Chatterjee & Lubatkin (1990)
Davis & Thomas (1993)
Nayyar (1993)
Markides & Williamson (1994)
Markides & Williamson (1996)
Farjoun (1998)
Appendix B

Research on Moderating Factors

**Industry structure (32 studies)**

*Industry profitability*
- Rumelt (1974)
- Bettis & Hall (1982)
- Rumelt (1982)
- Montgomery (1985)
- Schmalensee (1985)
- Wernerfelt & Montgomery (1986)
- Chang & Thomas (1987)
- Wernerfelt & Montgomery (1988)
- Hansen & Wernerfelt (1989)
- Nguyen, Séror & Devinney (1990)
- Rumelt (1991)
- Kim, Hwang & Burgers (1993)
- Lloyd & Jahera (1994)
- Stimpert & Duhaime (1997a)

*Industry structure*
- Christensen & Montgomery (1981)
- Bettis & Mahajan (1985)
- Grant & Jammine (1988)
- Hamilton & Shergill (1993)
- Sharma & Kesner (1996)

*Market power*
- Montgomery (1985)
- Barton (1988)
- Nguyen, Séror & Devinney (1990)

*Environmental characteristics*
- Jones, Laudadio & Percy (1977)
- Bass, Cattin & Wittink (1978)
- Chenhall (1984)
- Hitt & Ireland (1985)
- Galbraith, Samuelsen, Stiles & Merill (1990)
Organisational factors (65 studies)

|-------------------------------|-----------------|----------------|--------------|--------------------|-------------------|--------------|----------------------|------------------------------------------|----------------|----------------|-------------------------------|-------------------------------|------------------|
### Appendices

#### Capital structure

Stimpert & Duhaime (1997a)  
Montgomery & Singh (1984)  
Barton (1988)  
Smith & Cooper (1988)  
Hamilton & Shergill (1993)  
Riahi-Belkaoui & Bannister (1994)  
Lim & Teck (1995)  
Wiersema & Liebeskind (1995)  
Denis, Denis & Sarin (1997)

#### Core competencies

Hitt & Ireland (1985)  
Hitt & Ireland (1986)  
Chatterjee & Wernerfelt (1991)  
Davis, Robinson, Pearce & Parker (1992)  
Lubatkin & Chatterjee (1994)  
Chen (1996)

#### CEO compensation

Napier & Smith (1982)  
Kerr (1985)  
Belkaoui & Pavlik (1992)  
Gomez-Mejia (1992)  
Rose & Sheppard (1994)

#### Organisational culture/management style

Leontiades & Tezel (1981)  
Chenhall (1984)  
Hansen & Wernerfelt (1989)  
Chatterjee, Lubatkin, Schweiger & Weber (1992)  
Goll & Sambharya (1995)

#### Autonomy units

Dundas & Richardson (1982)  
Hill, Hitt & Hoskisson (1992)  
Argyres (1996)

#### International diversification

Hitt, Hoskisson & Kim (1997)

#### Synergy/economies of scope (28 studies)

**General**

Kitching (1967)  
Salter & Weinhold (1979)  
Singh & Montgomery (1987)  
Capon, Hulbert, Farley & Martin (1988)  
Nguyen, Séror & Devinney (1990)  
Lichtenberg (1992)  
Lubatkin & Chatterjee (1994)  
Cardinal & Opler (1995)
### Kinds of synergy

- Bettis (1981)
- Chatterjee (1986)
- Singh & Montgomery (1987)
- Baysinger & Hoskisson (1989)
- Chatterjee & Lubatkin (1990)
- Nayyar (1992)
- Davis & Thomas (1993)
- Nayyar (1993)
- Farjoun (1994)
- Lubatkin & Chatterjee (1994)
- Berger & Ofek (1995)

### Balance

- Rumelt (1982)
- Markides (1985)
- Johnson & Thomas (1987)
- Montgomery & Wernerfelt (1988)
- Haveman (1993)

### Contingencies

- Wernerfelt & Montgomery (1986)
- Johnson & Thomas (1987)
- Davis, Robinson, Pearce & Parker (1992)
- Hill, Hitt & Hoskisson (1992)

### Mode of diversification (32 studies)

#### Choice

- Song (1982)
- Yip (1982)
- Reed & Reed (1989)
- Simmonds (1990)
- Zejan (1990)
- Ingham & Thompson (1994)
- Pennings, Barkema & Douma (1994)
- Busija, O’Neill & Zeithaml (1997)
- Kochhar & Hitt (1998)

#### Mode - performance

- Biggadike (1979)
- Lamont & Anderson (1985)
- Porter (1987)
- Balakrishnan (1988)
- Simmonds (1990)
- Douma (1991)
- Pennings, Barkema & Douma (1994)

#### Acquisitions/mergers

- Kitching (1973)
- Salter & Weinhold (1979)
Appendices

Elgers & Clark (1980)
Song (1983)
Wansley, Lane & Yang (1983)
Chatterjee (1986)
Lubatkin (1987)
Singh & Montgomery (1987)
Shelton (1988)
Walsh (1988b)
Seth (1990)
Chatterjee & Lubatkin (1990)
Morck, Shleifer & Vishny (1990)
Chatterjee, Lubatkin, Schweiger & Weber (1992)
Markides & Ittner (1994)

**Direction of diversification (20 studies)**

**Escape paradigm**
- Weston & Masinghka (1971)
- Rumelt (1974)
- Miles (1982)
- Chenhall (1984)
- Kashlak & Joshi (1994)

**Motives**
- Dundas & Richardson (1980)
- Luffman & Reed (1982)
- MacDonald (1985)
- Montgomery & Wernerfelt (1988)
- Chatterjee & Wernerfelt (1991)
- Nayyar (1993)
- Farjoun (1994)
- Sjölander & Oskarsson (1995)
- Chang (1996)
- Chen (1996)
- Kim & Kogut (1996)
- Merino & Rodríguez (1997)

**Control**
- Amihud & Lev (1981)
- Fox & Hamilton (1994)
Appendix C

Indices of Grid Structure and Content

\[ D_{ij} = \sqrt{\sum_{i=1}^{n} d_{ij}^2} \]

Perceived distance between businesses; businesses that are close together are perceived as similar by the manager making the ranking.

Frame uniformity score:

\[ FU = \frac{1}{m^2} \sum_{j=1}^{m-1} \sum_{j=j+1}^{m} r_{ij}^2 \]

Degree to which each business is connected to every other business with respect to the specified constructs; the nearer to zero, the higher the tendency to construe businesses as highly unrelated.

Business centrality:

\[ BC = \frac{1}{m} \sum_{j=1}^{m} r_{ij}^2 \]

Centrality of a business as perceived by the manager making the ranking; the higher the average coefficient of determination for pairs of businesses on each construct, the more central a business is considered.

\[ CD = \frac{1}{6} \sum_{j=1}^{n-1} \sum_{k=j+1}^{n} f(a_{jk} - a_{kj}) \]

Degree to which each business is construed as different from every other business; a score nearer to one reflects a more complex construct system in which each construct differentiates across business in another way.
Cognitive integration: 

$$CI = \frac{1}{n^2} \sum_{j=1}^{n} \sum_{i=j+1}^{n} r_{ij}^2$$

Degree of relatedness of each construct; high scores suggest minimal differentiation, which means that each construct performs the same function as every other construct.

Construct significance: 

$$CS = \frac{1}{n} \sum_{i=1}^{n} p_{ij}^2$$

Construct significance refers to the importance of a construct in relation to other constructs; constructs with high significance are more closely related to every other construct.

Abbreviations

- $a_{ji} - a_{jk} = $ absolute difference in the ranks of two constructs on the $i^{th}$ business
- $c^2 = $ greatest common denominator between $m$ and $n$
- $d_{ij}^2 = $ squared difference between the rank value of the $j^{th}$ construct on the $i^{th}$ businesses
- $m = $ number of businesses
- $n = $ number of constructs
- $p_{ij}^2 = $ coefficient of determination for the $j^{th}$ pair of constructs on the $i^{th}$ business
- $r_{ij}^2 = $ coefficient of determination for the $j^{th}$ construct on the $i^{th}$ pair of businesses

Sources: Osgood et al. (1957), Tripodi and Bieri (1964), Dunn and Ginsberg (1986), Dunn et al. (1986), Ginsberg (1989).