

# **Automation One**

## **File - ACCA FQP**

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## **Section 2 title**

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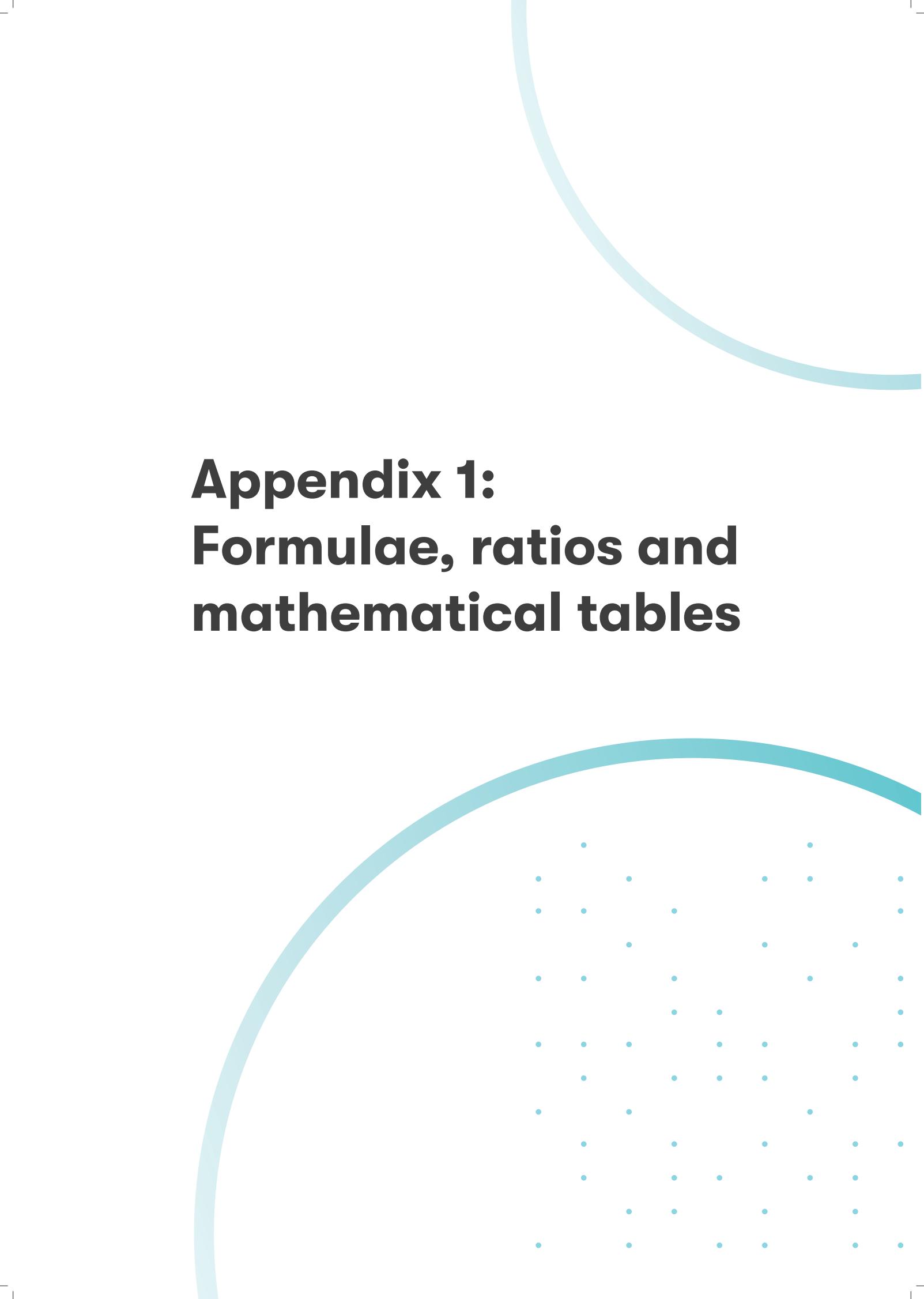
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# **Appendix 1: Formulae, ratios and mathematical tables**



## Appendices

### Appendix A: Formulae and ratios that you need to learn

Profitability ratios:

$$\text{ROCE} = \frac{\text{Profit from operations (before interest and tax)}}{\text{Capital employed}}$$

Debt ratios include:

$$\text{Gearing} = \frac{\text{Value of debt}}{\text{Value of equity (or debt + equity)}}$$

$$\text{Interest cover} = \frac{\text{Profit from operations}}{\text{Interest}}$$

Liquidity ratios:

$$\text{Current ratio} = \frac{\text{Current assets}}{\text{Current liabilities}}$$

Shareholder investor ratios include:

$$\text{Dividend yield} = \frac{\text{Dividend per share}}{\text{Share price}} \times 100$$

$$\text{Earnings per share (EPS)} = \frac{\text{Profits after tax - preference dividend}}{\text{Number of ordinary shares}}$$

$$\text{Price to earnings ratio (P/E)} = \frac{\text{Share price}}{\text{EPS}}$$

### Working capital ratios

Operating cycle = inventory days + receivable days – payables days

Inventory days = inventory/cost of sales × 365

Receivables days = trade receivables/(credit) sales × 365

Payables days = trade payables/(credit) purchases × 365

Sales to net working capital ratio = sales/net working capital (excl cash)

**Cost of capital formulae:**

$$K_d = \frac{I(1 - t)}{P_0}$$

$$K_p = \frac{d}{p}$$

**Other useful formulae to learn:**

$$IRR = a\% + \left[ \frac{NPV_a}{NPV_a - NPV_b} \times (b\% - a\%) \right]$$

$$\text{Total shareholder return} = \frac{\text{dividend gain} + \text{capital}}{\text{share price at start year}}$$

$$EAC = \frac{\text{NPV of costs}}{\text{Annuity factor for life of the project}}$$

$$\text{Profitability index} = \frac{\text{Present value of cash inflows (or NPV of the project)}}{\text{Present value of cash outflows}}$$

## **Appendix B: Mathematical tables**

### **Present Value Table**

## Annuity Table

## Formula Sheet

### Economic Order Quantity

$$= \sqrt{\frac{2C_o D}{C_H}}$$

### Miller-Orr Model

Return point = Lower limit + ( $\frac{1}{3} \times$  spread)

$$\text{Spread} = 3 \left[ \frac{\frac{3}{4} \times \text{transaction cost} \times \text{variance of cash flows}}{\text{Interest rate}} \right]^{\frac{1}{3}}$$

### The Capital Asset Pricing Model

$$E(n) = R_f + \beta_i(E(r_m) - R_f)$$

### The asset beta formula

$$\beta_a = \left[ \frac{V_e}{(V_e + V_d(1-T))} \beta_e \right] + \left[ \frac{V_d(1-T)}{(V_e + V_d(1-T))} \beta_d \right]$$

### The Growth Model

$$P_0 = \frac{D_0(1+g)}{(r_e - g)} \quad r_e = \frac{D_0(1+g)}{P_0} + g$$

### Gordon's Growth Approximation

$$g = br$$

### The weighted average cost of capital

$$WACC = \left[ \frac{V_e}{V_e + V_d} \right] k_e + \left[ \frac{V_d}{V_e + V_d} \right] k_d(1 - T)$$

### The Fisher formula

$$(1 + i) = (1 + r)(1 + h)$$

### Purchasing Power Parity and Interest Rate Parity

$$S_1 = S_0 \times \frac{(1 + h_c)}{(1 + h_b)} \quad F_0 = S_0 \times \frac{(1 + i_c)}{(1 + i_b)}$$



# Bibliography



- ACCA (2015) Not-for-profit organisations – Part 1. ACCA Technical Articles. [Online]. Available from: [www.accaglobal.com/gb/en/student/exam-support-resources/professional-exams-study-resources/p5/technical-articles/nfp-organisations1.html](http://www.accaglobal.com/gb/en/student/exam-support-resources/professional-exams-study-resources/p5/technical-articles/nfp-organisations1.html) [Accessed 18 September 2019].
- Altman, E. (1968) Financial Ratios, Discriminant Analysis and the Prediction of Corporate Bankruptcy. *Journal of Finance*, 23 (4), 589–609.
- American Society for Quality (ASQ) (2018) Cost of quality [Online]. Available from: <https://asq.org/quality-resources/cost-of-quality> [Accessed 18 December 2018].
- Anthony, R. N. (1965) *Planning and Control Systems: A Framework for Analysis*. Boston, Division of Research, Harvard Business School.
- Argenti, J. (1976) *Corporate Collapse: The Causes and Symptoms*. New York, McGraw Hill.
- Beaver, W. H. (1966) Financial Ratios as Predictors of Failure. *Journal of Accounting Research*, Vol 4, Empirical Research in Accounting: Selected Studies, 71–111.
- Berry, A. J., Broadbent, J. and Otley, D. T. (1995) *Management Control: Theories, Issues and Practices*. London, Macmillan.
- Berry, A. J., Broadbent, J. and Otley, D. T., (2005) *Management Control: Theories, Issues and Performance*. 2<sup>nd</sup> edition. Basingstoke, Palgrave Macmillan.
- Boston Consulting Group, (1970) The Product Portfolio. *BCG Perspectives*. [Online] Available from: [www.bcg.com/en-gb/publications/1970/strategy-the-product-portfolio.aspx/](http://www.bcg.com/en-gb/publications/1970/strategy-the-product-portfolio.aspx/) [Accessed 6 Feb 2020].
- Boston Consulting Group, (1973) The experience curve – reviewed IV. The growth share matrix or the product portfolio. *BCG Perspectives*. [Online]. Available from: [www.bcg.com/documents/file13904.pdf](http://www.bcg.com/documents/file13904.pdf) [Accessed 18 September 2017].
- Bratton, J. and Gold, J. (1999) *Human Resource Management: Theory and Practice*. Basingstoke, Palgrave Macmillan.
- Bratton, J. and Gold, J. (2007) *Human Resource Management: Theory and Practice*. 4<sup>th</sup> edition. Basingstoke, Palgrave Macmillan.
- Bratton, J. and Gold, J. (2012) *Human Resource Management: Theory and Practice*. 5<sup>th</sup> edition. Basingstoke, Palgrave Macmillan.
- Brown, G. (1994) Management Accounting and Strategic Management. ACCA Student Newsletter. March
- Burns, J. and Baldvinsdottir, G. (2007) The changing role of management accountants, in Hopper, T., Northcutt, D. and Scapens, R. *Issues in Management Accounting*. 3<sup>rd</sup> edition. Harlow, Pearson, pp117–132.
- Burns, J. and Scapens R. (2000) *The changing nature of management accounting and the emergence of ‘hybrid’ accountants*. International Federation of Accountants, New York.
- Buytendijk, F. (1 March 2009) Organization as network: A modern approach to performance management. *Business Finance*. [Online]. Available from: [www.frankbuytendijk.com/download.html](http://www.frankbuytendijk.com/download.html) [Accessed 4 February 2020].
- Campbell, A., Devine, M. and Young, D. (1990) *A sense of mission*. London, Economist Books/Hutchinson.
- Campbell, D. J. and Lee, C. (1988) Self-appraisal in performance evaluation: Development versus evaluation. *Academy of Management Review*. 13, 302–14.
- Chopra, S. and Meindl, P. (2016) *Supply Chain Management: Strategy, Planning and Operation*. 6<sup>th</sup> edition. Harlow, Pearson.
- CIMA, (2005) *CIMA Official Terminology*. Oxford, CIMA Publishing/Elsevier.
- CIMA (2014) *Big Data: Readyng business for the big data revolution*. London, CIMA.

- Council of Supply Chain Management Professionals (2017) CSCMP Supply Chain Management Definitions and Glossary. [Online]. Available from:  
[https://cscmp.org/imis0/CSCMP/Educate/SCM\\_Definitions\\_and\\_Glossary\\_of\\_Terms/CSCMP/Educate/SCM\\_Definitions\\_and\\_Glossary\\_of\\_Terms.aspx?hkey=60879588-f65f-4ab5-8c4b-6878815ef921](https://cscmp.org/imis0/CSCMP/Educate/SCM_Definitions_and_Glossary_of_Terms/CSCMP/Educate/SCM_Definitions_and_Glossary_of_Terms.aspx?hkey=60879588-f65f-4ab5-8c4b-6878815ef921) [Accessed 22 September 2017].
- Daugherty, P. and Wilson, H. (2018) Human + Machine. Boston, HBR.
- Davenport, T. H. and Short, J. E. (1990) The New Industrial Engineering: Information Technology and Business Process Redesign. *Sloan Management Review*. 31 (4), 11–27.
- Denison, D. (1990) Toward a theory of organizational culture and effectiveness. *Organization Science*. 6 (2), 204–223.
- DHL, (December 2013) Big Data in Logistics: A DHL perspective on how to move beyond the hype. [Online]. Available from:  
[www.dhl.com/content/dam/downloads/g0/about\\_us/innovation/CSI\\_Studie\\_BIG\\_DATA.pdf](http://www.dhl.com/content/dam/downloads/g0/about_us/innovation/CSI_Studie_BIG_DATA.pdf) [Accessed 22 September 2017].
- Dunk, A. and Perera, H. (1997) The incidence of budgetary slack: a field study exploration. *Accounting, Auditing & Accountability Journal*. 10 (5), 649–664.
- Drury, C. (2004) Management and Cost Accounting. 6<sup>th</sup> edition. London, Thomson Learning.
- Fitzgerald, L., Johnston, R., Brignall, S., Silvestro, R. and Voss, C. (1991) Performance Measurement in Service Businesses. London, CIMA.
- Fitzgerald, L. and Moon, P. (1996) Performance Measurement in Service Businesses: Making it Work. London, CIMA.
- Gartner (2018) IT glossary. [Online]. Available from: [www.gartner.com/it-glossary/big-data/](http://www.gartner.com/it-glossary/big-data/) [Accessed 18 December 2018].
- Hamel, G. and Prahalad, C. K. (1990) The core competence of the corporation. *Harvard Business Review*. 68 (2), 79–91.
- Hammer, M. (1996) Beyond Reengineering: How the Process-Centred Organisation is Changing Our Work and Our Lives. New York, Harper Collins.
- Hammer, M. and Champy, J. (2001) Reengineering the Corporation: A manifesto for Business Revolution, (Revised edition). New York, Harper Collins.
- Harmon, P. (2014). Business Process Change: A Business Process Management Guide for Managers and Process Professionals. 3<sup>rd</sup> edition. Waltham, MA, Morgan Kaufmann.
- Harrigan, K. R. (1980) Strategies for Declining Industries. *Journal of Business Strategy*. 1 (2), 20–34.
- Harrigan, K. R. and Porter, M. E. (1989) End-game Strategies for Declining Industries, in Asch, D. and Bowman C., (eds). *Readings in Strategic Management*. Basingstoke, Macmillan, 219–233.
- Hicks, B. J. (2007) Lean information management: Understanding and eliminating waste. *International Journal of Information Management*. 27 (40, 233–249. [Online]. Available from: [www.sciencedirect.com/science/article/pii/S0268401206001435](http://www.sciencedirect.com/science/article/pii/S0268401206001435) [Accessed 22 September 2019].
- Hopwood, A. (1974) Accounting and Human Behaviour. London, Haymarket Publishing.
- Imai, M. (1986) Kaizen: The key to Japan's competitive success. New York, McGraw-Hill.
- Imai, M. (2012) Gemba Kaizen: A commonsense approach to a continuous improvement strategy. 2<sup>nd</sup> edition. New York, McGraw-Hill.
- International Integrated Reporting Council (IIRC), (2013) The International <IR> Framework. [Online]. Available from: <http://integratedreporting.org/wp-content/uploads/2013/12/13-12-08-THE-INTERNATIONAL-IR-FRAMEWORK-2-1.pdf> [Accessed 22 September 2019].
- International Integrated Reporting Council (IIRC), (no date) Integrated Reporting: A Force for Financial Stability and Sustainability. [Online]. Available from: [www.iasplus.com/en/resources/sustainability/iirc](http://www.iasplus.com/en/resources/sustainability/iirc) [Accessed 4 February 2020].

- International Organisation for Standardisation (ISO) (2005) *International Standard ISO 9000*. 3<sup>rd</sup> edition. Geneva, ISO.
- International Organisation for Standardisation (ISO) (2016) Selection and use of the ISO 9000 family of standards. [Online]. Available from: [www.iso.org/files/live/sites/isoorg/files/store/en/PUB100208.pdf](http://www.iso.org/files/live/sites/isoorg/files/store/en/PUB100208.pdf) [Accessed 4 February 2020].
- Jobber, D. (2010) *Principles and Practice of Marketing*. 6<sup>th</sup> edition. Maidenhead, McGraw-Hill.
- Johnson G., Whittington, R., Scholes, K., Angwin, D. and Regnér, P. (2017) *Exploring Strategy: Text and Cases*. 11<sup>th</sup> edition. Harlow, Pearson Education Limited.
- Johnson, S. (no date) Environmental Management Accounting. ACCA Technical articles. [Online]. Available from: [www.accaglobal.com/gb/en/student/exam-support-resources/professional-exams-study-resources/p5/technical-articles/environmental-management.html](http://www.accaglobal.com/gb/en/student/exam-support-resources/professional-exams-study-resources/p5/technical-articles/environmental-management.html) [Accessed 22 September 2019].
- Johnson, S. (2005) The pyramids and pitfalls of performance measurement. ACCA Technical articles. [Online]. Available from: [www.accaglobal.com/gb/en/student/exam-support-resources/professional-exams-study-resources/p5/technical-articles/the-pyramids.html](http://www.accaglobal.com/gb/en/student/exam-support-resources/professional-exams-study-resources/p5/technical-articles/the-pyramids.html) [Accessed 22 September 2019].
- Kaiser Associates (1988) *Beating the competition: a practical guide to benchmarking*. Washington, DC, Kaiser Associates.
- Kaplan, R. and Cooper, R. (1998) *Cost and Effect: Using Integrated Cost Systems to Drive Profitability and Performance*. Cambridge MA, Harvard Business School Press.
- Kaplan, R. and Norton, D. (1992) The Balanced Scorecard: Measures that Drive Performance. *Harvard Business Review*. 70 (1), 71–79. [Reprint available Online]. Available from: <https://hbr.org/1992/01/the-balanced-scorecard-measures-that-drive-performance-2> [Accessed 22 September 2019].
- Kaplan, R. and Norton, D. (1996a) *The Balanced Scorecard: Translating Strategy into Action*. Boston, Harvard Business School Press.
- Kaplan, R. and Norton, D. (1996b) Using the Balanced Scorecard as a Strategic Management System, *Harvard Business Review*. 74 (1), 75–85.
- Kaplan, R. and Norton, D. (2004) *Strategy Maps: Converting Intangible Assets into Tangible Outcomes*. Boston, Harvard Business School Press.
- Koller, T. (1994) What is value-based management? *McKinsey Quarterly*. August [Online]. Available from: [www.mckinsey.com/business-functions/strategy-and-corporate-finance/our-insights/what-is-value-based-management](http://www.mckinsey.com/business-functions/strategy-and-corporate-finance/our-insights/what-is-value-based-management) [Accessed 22 September 2016].
- KPMG, (2012) *Integrated Reporting: Performance insight through better business reporting*. Issue 2. [Online]. Available from: <http://integratedreporting.org/wp-content/uploads/2012/06/KPMG-Integrated-Reporting-Performance-Insight-Through-Better-Business-Reporting-Issue-2.pdf> [Accessed 22 September 2019].
- Liker, J. (2004) *The Toyota Way: 14 Management Principles from the Word's Greatest Manufacturer*. New York, McGraw Hill.
- Lucey, T. (2005) *Management Information Systems*. 9<sup>th</sup> edition. Andover, Cengage Learning.
- Lynch, R. L. and Cross, K. F. (1991) *Measure up! Yardsticks for Continuous Improvement*. Malden, MA, Blackwell.
- McKinsey & Company (2011) *Big data: The next frontier for innovation, competition, and productivity*. [Online]. Available from: [www.mckinsey.com/business-functions/business-technology/our-insights/big-data-the-next-frontier-for-innovation](http://www.mckinsey.com/business-functions/business-technology/our-insights/big-data-the-next-frontier-for-innovation) [Accessed 22 September 2017].
- Mendelow, A. (1991) *Stakeholder Mapping*. Proceedings of the 2nd International Conference on Information Systems. Cambridge, MA.
- Merchant, K. A. (1988) *Modern Management Control Systems: Text and Cases*. New Jersey, Prentice Hall.

- Meyer, H. H., Kay, E. and French J. R. (1965) Split Roles in Performance Appraisal. *Harvard Business Review*. 43 (1), 123–9. [Reprint online]. Available from: <https://hbr.org/1965/01/split-roles-in-performance-appraisal> [Accessed 22 September 2017].
- Mintzberg, H. (1979) *The Structuring of Organisations*. New Jersey, Prentice Hall.
- Monden, Y. and Lee, J. (1993) How a Japanese auto maker reduces costs. *Management Accounting*. 75 (2), 22–26.
- Morgan, G. (2008) Accounting and Organisational Cultures. ACCA Technical Articles. Originally published in ACCA Student Accountant, November/December, 44–46. [Online]. Available from: [www.accaglobal.com/content/dam/acca/global/PDF-students/2012/sa\\_novdec08\\_morgan.pdf](http://www.accaglobal.com/content/dam/acca/global/PDF-students/2012/sa_novdec08_morgan.pdf) [Accessed 22 September 2019].
- National Institute of Standards and Technology (NIST) (2011) The NIST Definition of Cloud Computing (SP 800–145). [Online]. Available from: [www.nist.gov/news-events/news/2011/10/final-version-nist-cloud-computing-definition-published](http://www.nist.gov/news-events/news/2011/10/final-version-nist-cloud-computing-definition-published) [Accessed 13 September 2019].
- OECD (2017) *OECD Transfer Pricing Guidelines for Multinational Enterprises and Tax Administrations 2017*. Paris, OECD Publishing.
- Ohno, T. (1988) *Toyota Production System: Beyond Large-Scale Production*. New York, Productivity Press.
- Otley, D. T. (1978) Budget use and managerial performance. *Journal of Accounting Research*. 15 (1), 122–49.
- Ouchi, W. G. (1979) A conceptual framework for the design of organizational control mechanisms. *Management Science*. September, 833–48.
- Peters, T. J. (1986) What gets measured gets done. [Online]. Available from: <http://tompeters.com/columns/what-gets-measured-gets-done/> [Accessed 22 September 2019].
- Peters, T. J. and Waterman, R. H. (1982) *In Search of Excellence*. New York, Harper and Row.
- Pogue, M. (2008) Business Failure: Prediction and Prevention. ACCA Technical Articles. [Online]. Available from: [www.accaglobal.com/gb/en/student/exam-support-resources/professional-exams-study-resources/p5/technical-articles/business-failure.html](http://www.accaglobal.com/gb/en/student/exam-support-resources/professional-exams-study-resources/p5/technical-articles/business-failure.html) [Accessed 22 September 2017]. (Originally published in Student Accountant, June/July 2008, pp 54–57).
- Porter, M. E. (1980) *Competitive Strategy: Techniques for Analyzing Industries and Competitors*. New York, Free Press.
- Porter, M. E. (1985) *Competitive Advantage: Creating and Sustaining Superior Performance*. New York, Free Press.
- PwC, (no date) Data building blocks. [Online]. Available from: [www.pwc.co.uk/data-analytics/data-building-blocks.html](http://www.pwc.co.uk/data-analytics/data-building-blocks.html) [Accessed 14 September 2018].
- Rockart, J. (1979) Chief Executives Define Their Own Data Needs. *Harvard Business Review*. 57 (2), 81–93. Reprint available online from: <https://hbr.org/1979/03/chief-executives-define-their-own-data-needs> [Accessed 22 September 2019].
- Ryan, N. (2011a) Economic Value Added versus Profit-Based Measures of Performance – Part 1. ACCA Technical Articles. [Online]. Available from: [www.accaglobal.com/gb/en/student/exam-support-resources/professional-exams-study-resources/p5/technical-articles/economic-value-added-part1.html](http://www.accaglobal.com/gb/en/student/exam-support-resources/professional-exams-study-resources/p5/technical-articles/economic-value-added-part1.html) [Accessed 22 September 2019].
- Ryan, N. (2011b) Economic Value Added versus Profit-Based Measures of Performance – Part 2. ACCA Technical Articles. [Online]. Available from: [www.accaglobal.com/gb/en/student/exam-support-resources/professional-exams-study-resources/p5/technical-articles/economic-value-added-part2.html](http://www.accaglobal.com/gb/en/student/exam-support-resources/professional-exams-study-resources/p5/technical-articles/economic-value-added-part2.html) [Accessed 22 September 2019].
- Ryan, N. (2015a) Human resource management and the appraisal system. ACCA Technical Articles. [Online]. Available from: [www.accaglobal.com/gb/en/student/exam-support-resources/professional-exams-study-resources/p5/technical-articles/human-resource-management-and-the-appraisal-system.html](http://www.accaglobal.com/gb/en/student/exam-support-resources/professional-exams-study-resources/p5/technical-articles/human-resource-management-and-the-appraisal-system.html) [Accessed 22 September 2019].

- Ryan, N. (2015b) Reward schemes for employees and management. ACCA Technical Articles. [Online]. Available from: [www.accaglobal.com/gb/en/student/exam-support-resources/professional-exams-study-resources/p5/technical-articles/reward-schemes-for-employees-and-management.html](http://www.accaglobal.com/gb/en/student/exam-support-resources/professional-exams-study-resources/p5/technical-articles/reward-schemes-for-employees-and-management.html) [Accessed 22 September 2019].
- Ryan, N. (no date) Lean enterprises and lean information systems. ACCA Technical Articles. [Online]. Available from: [www.accaglobal.com/gb/en/student/exam-support-resources/professional-exams-study-resources/p5/technical-articles/lean.html](http://www.accaglobal.com/gb/en/student/exam-support-resources/professional-exams-study-resources/p5/technical-articles/lean.html) [Accessed 29 November 2018].
- Slatter, S. (1984) *Corporate Recovery*. London, Penguin Books.
- Slatter, S. and Lovett, D. (1999) *Corporate Turnaround*. London, Penguin Books.
- Stern Value Management, (2019) Proprietary Tools. [Online]. Available from: <http://sternvaluemanagement.com/intellectual-property-joel-stern/proprietary-tools-value-creation/> [Accessed 29 January 2019].
- Van den Berg, G. and Pietersma, P. (2016) *Key Management Models: The 75+ models every manager needs to know*. 3<sup>rd</sup> edition. Harlow, FT/Pearson.
- Womack, J. P. and Jones, D. T. (2003) *Lean Thinking: Banish Waste and Create Wealth in Your Corporation*. 2<sup>nd</sup> edition. London, Simon & Schuster.
- Zeithaml, V., Parasuraman, A. and Berry, L. (1990) *Delivering Quality Service: Balancing Customer Perception and Expectation*. New York, Free Press.

**\*\*\*THE DOCUMENT HAS ERRORS\*\*\***

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