K796 PhD Course
Artificial Intelligence and Big Data Analytics
Winter 2024 Course Outline

Information Systems Area
DeGroote School of Business
McMaster University

COURSE OBJECTIVE

The objective of this course is to present and discuss IS research issues in artificial intelligence (AI) and big data analytics (BDA). Artificial intelligence (AI) refers to machines performing the cognitive functions typically associated with humans, including perceiving, reasoning, learning, interacting, etc. AI is not confined to one or a few applications, but rather is a pervasive economic, societal, and organizational phenomenon. Examples of AI technologies include robotics and autonomous vehicles, facial recognition, natural language processing, virtual agents, and machine learning, which are being deployed in a variety of problem domains ranging from cybersecurity to fintech to education to healthcare. AI provides businesses with unprecedented opportunities for designing intelligent products, devising novel service offerings, and inventing new business models and organizational forms. At the same time, the rapid accumulation of data in diverse forms and from various sources has been driving an increasing interest in big data and business analytics. Applications of a variety of analytical techniques have gained much attention in recent years. Businesses are exploring the new possibility of uncovering hidden knowledge, improving decision making, and supporting strategic planning from big data. Although substantial resources have been invested in big data and analytics (BDA) and anecdotal evidence of both success and failure have been reported, there has been little substantial research on the strategic contributions of BDA. In this course students will learn the technical, applicational, and managerial aspects of AI and BDA through paper reading, seminar presentation and class discussion. Students will also learn how to do research by writing a research paper. MBA students may attend this course with specific permission from the instructor.

INSTRUCTOR AND CONTACT INFORMATION

Dr. Yufei Yuan
Instructor
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Office: DSB A204
Office Hours:
By appointment.
Tel: (905) 525-9140 x23982

Class Location: DSB 321 or Online
Meeting Time: Wednesdays 2:30 - 5:30 pm
Course Website: http://avenue.mcmaster.ca

Zoom Website for virtual meeting:
https://mcmaster.zoom.us/j/99140392207?pwd=bjg1YVBvRG9sOE93UUJIRFg5QzB5Zz09

COURSE ELEMENTS

Credit Value:	3	Team skills:	Yes	IT skills:	Yes	Global:	Yes
Avenue:	Yes	Verbal skills:	Yes	Numeracy:	No	Political:	No
Participation:	Yes	Written skills:	Yes	Innovation:	Yes	Social:	Yes

COURSE DESCRIPTION

In this advanced PhD course, students will learn technical, behavioral, and managerial aspects of artificial intelligence (AI) and big data analytics (BDA) through paper reading, seminar presentation, and class discussion. Each student will be required to make two seminar presentations and write a research paper on a selected topic of AI or BDA. MBA students may attend this course with specific permission from the instructor.

LEARNING OUTCOMES

Upon completion of this course, students will be able to learn the following topics:

- The basic concept and technology of AI
- The application and impact of AI in our society
- User interaction with AI
- Management issue of AI applications in business
- Trend and application of Big data and Business Analytics
- User behavior with BDA
- Management issues of BDA in organization

REQUIRED COURSE MATERIALS AND READINGS

Lecture notes will be posted on the A2L course web site

OPTIONAL COURSE MATERIALS AND READINGS

Reference Papers

Artificial Intelligence

Benbya, H., Davenport, T. H., & Pachidi, S. (2020). Artificial Intelligence in Organizations: Current State and Future Opportunities. *MIS Quarterly Executive*, 19(4).

Benbya, H., Pachidi, S., & Jarvenpaa, S. (2021). Special Issue Editorial: Artificial Intelligence in Organizations: Implications for Information Systems Research. Journal of the Association for Information Systems, 22(2), 10.

Berente, N., Gu, B., Recker, J., & Santhanam, R. (2021). Managing artificial intelligence. *MIS Quarterly*, 45(3), 1433-1450.

Borges, A. F., Laurindo, F. J., Spínola, M. M., Gonçalves, R. F., & Mattos, C. A. (2020). The strategic use of artificial intelligence in the digital era: Systematic literature review and future research directions. *International Journal of Information Management*, 102225.

Brynjolfsson, E., and Mitchell, T. 2017. "What Can Machine Learning Do? Workforce Implications," *Science* (358:6370), pp. 1530-1534.

Davenport, T. H. (2018). From analytics to artificial intelligence. *Journal of Business Analytics*, 1(2), 73-80.

Davenport, T., & Kalakota, R. (2019). The potential for artificial intelligence in healthcare. *Future healthcare journal*, 6(2), 94.

Davenport, T. H. (2021). Enterprise adoption and management of artificial intelligence, *Management and Business Review*, 1(1). https://mbrjournal.com/2021/01/26/enterprise-adoption-and-management-of-artificial-intelligence/

Desouza, K. C., Dawson, G. S., & Chenok, D. (2020). Designing, developing, and deploying artificial intelligence systems: Lessons from and for the public sector. *Business Horizons*, 63(2), 205-213.

Dirican, C. (2015). The impacts of robotics, artificial intelligence on business and economics. *Procedia-Social and Behavioral Sciences*, 195, 564-573.

Glikson, E., & Woolley, A. W. (2020). Human trust in artificial intelligence: Review of empirical research. *Academy of Management Annals*, 14(2), 627-660.

He, J., Baxter, S. L., Xu, J., Xu, J., Zhou, X., & Zhang, K. (2019). The practical implementation of artificial intelligence technologies in medicine. *Nature medicine*, 25(1), 30-36.

Keding, C. (2020). Understanding the interplay of artificial intelligence and strategic management: four decades of research in review. *Management Review Quarterly*, 1-44.

Köbis, N., Bonnefon, J. F., & Rahwan, I. (2021). Bad machines corrupt good morals.

Nature Human Behaviour, 5(6), 679-685.

Laird, J. E., Lebiere, C., & Rosenbloom, P. S. (2017). A standard model of the mind: Toward a common computational framework across artificial intelligence, cognitive science, neuroscience, and robotics. *AI Magazine*, 38(4), 13-26.

Li, B. H., Hou, B. C., Yu, W. T., Lu, X. B., & Yang, C. W. (2017). Applications of artificial intelligence in intelligent manufacturing: a review. *Frontiers of Information Technology & Electronic Engineering*, 18(1), 86-96.

Li, M., & Suh, A. (2021, January). Machinelike or Humanlike? A Literature Review of Anthropomorphism in AI-Enabled Technology. In Proceedings of the 54th Hawaii International Conference on System Sciences (p. 4053).

Lu, Y. (2019). Artificial intelligence: a survey on evolution, models, applications and future trends. *Journal of Management Analytics*, 6(1), 1-29.

Luger, E., & Sellen, A. (2016). " Like Having a Really Bad PA" The Gulf between User Expectation and Experience of Conversational Agents. In *Proceedings of the 2016 CHI conference on human factors in computing systems* (pp. 5286-5297).

Rahwan, I., Cebrian, M., Obradovich, N., Bongard, J., Bonnefon, J. F., Breazeal, C., ... & Wellman, M. (2019). Machine behaviour. *Nature*, 568(7753), 477-486.

Ramakrishna, K., Verma, I., Goyal, M. I., & Agrawal, M. M. (2020). Artificial intelligence: Future employment projections. *Artificial Intelligence*, 7(05), 2020.

Seeber, I., Bittner, E., Briggs, R. O., De Vreede, T., De Vreede, G. J., Elkins, A., ... & Söllner, M. (2020). Machines as teammates: A research agenda on AI in team collaboration. *Information & management*, 57(2), 103174.

Sheng, J., Amankwah-Amoah, J., Khan, Z., & Wang, X. (2021). COVID-19 pandemic in the new era of big data analytics: Methodological innovations and future research directions. *British Journal of Management*, 32(4), 1164-1183.

Shi, F., Wang, J., Shi, J., Wu, Z., Wang, Q., Tang, Z., ... & Shen, D. (2020). Review of artificial intelligence techniques in imaging data acquisition, segmentation and diagnosis for covid-19. *IEEE reviews in biomedical engineering*.

Vinuesa, R., Azizpour, H., Leite, I., Balaam, M., Dignum, V., Domisch, S., ... & Nerini, F. F. (2020). The role of artificial intelligence in achieving the Sustainable Development Goals. *Nature communications*, 11(1), 1-10.

Wang, Y., Kwong, S., Leung, H., Lu, J., Smith, M. H., Trajkovic, L., ... & Kinsner, W. (2020). Brain-inspired systems: A transdisciplinary exploration on cognitive cybernetics, humanity, and systems science toward autonomous artificial intelligence. *IEEE Systems, Man, and Cybernetics Magazine*, 6(1), 6-13.

Zhang, B., & Dafoe, A. (2019). Artificial intelligence: American attitudes and trends. Available at SSRN 3312874.

https://www.researchgate.net/publication/330525002_Artificial_Intelligence_American_Attitudes_and_Trends

Zhu, Song-Chun (2020) *AI: The Era of Big Integration Unifying Disciplines within Artificial Intelligence*, https://dm.ai/wp-content/uploads/ebook-ai-the-era-of-big-integration.pdf

Big Data Analytics

Ahmed, E., Yaqoob, I., Hashem, I. A. T., Shuja, J., Imran, M., Guizani, N., & Bakhsh, S. T. (2018). Recent advances and challenges in mobile big data. IEEE Communications Magazine, 56(2), 102-108.

Akter, S., & Wamba, S. F. (2016). Big data analytics in E-commerce: a systematic review and agenda for future research. *Electronic Markets*, 26(2), 173-194.

Anand, A., Sharma, R., & Kohli, R. (2020). The Effects of Operational and Financial Performance Failure on BI&A-Enabled Search Behaviors: A Theory of Performance-Driven Search. *Information Systems Research,* 31(4), 1144–1163.

Camacho, D., Panizo-LLedot, A., Bello-Orgaz, G., Gonzalez-Pardo, A., & Cambria, E. (2020). The four dimensions of social network analysis: An overview of research methods, applications, and software tools. *Information Fusion*, 63, 88-120.

Chen, H., Chiang, R. H., & Storey, V. C. (2012). Business intelligence and analytics: From big data to big impact. *MIS Quarterly*, 1165–1188.

Dai, H. N., Wang, H., Xu, G., Wan, J., & Imran, M. (2020). Big data analytics for manufacturing internet of things: opportunities, challenges and enabling technologies. *Enterprise Information Systems*, 14(9-10), 1279-1303.

Dremel, C., Wulf, J., Herterich, M. M., Waizmann, J. C., & Brenner, W. (2017). How AUDI AG Established Big Data Analytics in Its Digital Transformation. *MIS Quarterly Executive*, 16(2).

Dremel, C., Herterich, M. M., Wulf, J., & Vom Brocke, J. (2020). Actualizing big data analytics affordances: A revelatory case study. *Information & Management*, 57(1), 103121.

Ghasemaghaei, M., Hassanein, K., & Turel, O. (2017). Increasing firm agility through the use of data analytics: The role of fit. *Decision Support Systems*, 101, 95–105.

Ghasemaghaei, M., & Turel, O. (2021). Possible negative effects of big data on decision quality in firms: The role of knowledge hiding behaviours. *Information Systems Journal*. 268–293.

Grover, V., Chiang, R. H., Liang, T.-P., & Zhang, D. (2018). Creating strategic business value from big data analytics: A research framework. *Journal of Management*

Information Systems, 35(2), 388–423.

Grover, V., Lindberg, A., Benbasat, I., & Lyytinen, K. (2020). The perils and promises of big data research in information systems. *Journal of the Association for Information Systems*, 21(2), 9.

Günther, W. A., Mehrizi, M. H. R., Huysman, M., & Feldberg, F. (2017). Debating big data: A literature review on realizing value from big data. *The Journal of Strategic Information Systems*, 26(3), 191–209.

Hindle, G., Kunc, M., Mortensen, M., Oztekin, A., & Vidgen, R. (2020). Business analytics: Defining the field and identifying a research agenda. *European Journal of Operational Research*, 281 (3), 483-490.

Jones, M. (2019). What we talk about when we talk about (big) data. *The Journal of Strategic Information Systems*, 28(1), 3–16.

Khanra, S., Dhir, A., Islam, A. N., & Mäntymäki, M. (2020). Big data analytics in healthcare: a systematic literature review. *Enterprise Information Systems*, 14(7), 878-912.

Kshetri, N. (2014). Big data′ s impact on privacy, security and consumer welfare. Telecommunications Policy, 38(11), 1134-1145.

LaValle, S., Lesser, E., Shockley, R., Hopkins, M. S., & Kruschwitz, N. (2011). Big data, analytics and the path from insights to value. *MIT sloan management review*, 52(2), 21-32.

Lehrer, C., Wieneke, A., Vom Brocke, J. A. N., Jung, R., & Seidel, S. (2018). How big data analytics enables service innovation: Materiality, affordance, and the individualization of service. *Journal of Management Information Systems*, 35(2), 424–460.

Leicht-Deobald, U., Busch, T., Schank, C., Weibel, A., Schafheitle, S., Wildhaber, I., & Kasper, G. (2019). The challenges of algorithm-based HR decision-making for personal integrity. *Journal of Business Ethics*, 160(2), 377–392.

Mikalef, P., Pappas, I. O., Krogstie, J., & Giannakos, M. (2018). Big data analytics capabilities: a systematic literature review and research agenda. *Information Systems and e-Business Management*, 16(3), 547-578.

Motiwalla, L., Deokar, A. V., Sarnikar, S., & Dimoka, A. (2019). Leveraging data analytics for behavioral research. *Information Systems Frontiers*, *21*(4), 735-742.

Price, W. N., & Cohen, I. G. (2019). Privacy in the age of medical big data. Nature medicine, 25(1), 37-43.

Shilo, S., Rossman, H., & Segal, E. (2020). Axes of a revolution: challenges and promises of big data in healthcare. *Nature medicine*, *26*(1), 29-38.

Sivarajah, U., Kamal, M. M., Irani, Z., & Weerakkody, V. (2017). Critical analysis of Big Data challenges and analytical methods. *Journal of Business Research, 70,* 263-286.

Vidgen, R., Hindle, G., & Randolph, I. (2020). Exploring the ethical implications of business analytics with a business ethics canvas. *European Journal of Operational Research, 281*(3), 491-501.

EVALUATION

Learning in this course results primarily from lecturing, reading, in-class discussion, specific topic presentation, and research paper. All work will be evaluated on an individual basis. Your final grade will be calculated as follows:

Components and Weights

Class participation	Attend and join class discussion, search and share information	10%
Specific Topic Presentation	Each student will make two one-hour presentation on selected topics	30%
Research paper	Require quality for journal or conference submission	60%
Total		100%

Please review the Graduate Examinations Policy (if applicable):
http://www.mcmaster.ca/policy/Students-AcademicStudies/GradExamsPolicy.pdf

Grade Conversion

At the end of the course your overall percentage grade will be converted to your letter grade in accordance with the following conversion scheme.

LETTER GRADE	POINTS	PERCENT
A+	12	90-100
A	11	85-89
A-	10	80-84
B+	9	77-79
B	8	73-76
B-	7	70-72
F	0	0-69

ACADEMIC INTEGRITY

You are expected to exhibit honesty and use ethical behaviour in all aspects of the learning process. Academic credentials you earn are rooted in principles of honesty and academic integrity.

Academic dishonesty is to knowingly act or fail to act in a way that results or could result in unearned academic credit or advantage. This behaviour can result in serious consequences, e.g. the grade of zero on an assignment, loss of credit with a notation on the transcript (notation reads: "Grade of F assigned for academic dishonesty"), and/or suspension or expulsion from the university.

It is your responsibility to understand what constitutes academic dishonesty. For information on the various types of academic dishonesty please refer to the Academic Integrity Policy, located at:

www.mcmaster.ca/academicintegrity

The following illustrates only three forms of academic dishonesty:

1. Plagiarism, e.g. the submission of work that is not one's own or for which other credit has been obtained.
2. Improper collaboration in group work.
3. Copying or using unauthorized aids in tests and examinations

MISSED ACADEMIC WORK

Late assignments will not be accepted. No extensions are available except under extraordinary circumstances. Please discuss any extenuating situation with your instructor at the earliest possible opportunity.

STUDENT ACCESSIBILITY SERVICES

Students who require academic accommodation must contact Student Accessibility Services (SAS) to make arrangements with a Program Coordinator. Academic accommodations must be arranged for each term of study. Student Accessibility Services can be contacted by phone 905-525-9140 ext. 28652 or e-mail sas@mcmaster.ca.
For further information, consult McMaster University's Policy for Academic Accommodation of Students with Disabilities:
http://www.mcmaster.ca/policy/Students-AcademicStudies/AcademicAccommodation-StudentsWithDisabilities.pdf

ACADEMIC ACCOMMODATION FOR RELIGIOUS, INDIGENOUS OR SPIRITUAL OBSERVANCES (RISO)

Students requiring academic accommodation based on religious, indigenous or spiritual observances should follow the procedures set out in the RISO policy. Students requiring a RISO accommodation should submit their request, including the dates/times needing to be accommodated and the courses which will be impacted, to their Program Office normally within 10 days of the beginning of term. Students should also contact their instructors as soon as possible to make alternative arrangements for classes, assignments, and tests.

POTENTIAL MODIFICATION TO THE COURSE

The instructor reserves the right to modify elements of the course during the term. There may be changes to the dates and deadlines for any or all courses in extreme circumstances. If either type of modification becomes necessary, reasonable notice and communication with the students will be given with explanation and the opportunity to comment on changes. It is the responsibility of the student to check their McMaster email and course websites weekly during the term and to note any changes.

The University reserves the right to change the dates and deadlines for any or all courses in extreme circumstances (e.g., severe weather, labour disruptions, etc.). Changes will be communicated through regular McMaster communication channels, such as McMaster Daily News, A2L and/or McMaster email.

RESEARCH USING HUMAN SUBJECTS

Research involving human participants is premised on a fundamental moral commitment to advancing human welfare, knowledge and understanding. As a research intensive institution, McMaster University shares this commitment in its promotion of responsible research. The fundamental imperative of research involving human participation is respect for human dignity and well-being. To this end, the University endorses the ethical principles cited in the Tri-Council Policy Statement: Ethical Conduct for Research Involving Humans:

http://www.pre.ethics.gc.ca/english/policystatement/policystatement.cfm

McMaster University has mandated its Research Ethics Boards to ensure that all research investigations involving human participants are in compliance with the Tri-Council Policy Statement. The University is committed, through its Research Ethics Boards, to assisting the

research community in identifying and addressing ethical issues inherent in research, recognizing that all members of the University share a commitment to maintaining the highest possible standards in research involving humans.

If you are conducting original research, it is vital that you behave in an ethical manner. For example, everyone you speak to must be made aware of your reasons for eliciting their responses and consent to providing information. Furthermore, you must ensure everyone understands that participation is entirely voluntary. Please refer to the following website for more information about McMaster University's research ethics guidelines:

http://www.mcmaster.ca/ors/ethics

Organizations that you are working with are likely to prefer that some information be treated as confidential. Ensure that you clarify the status of all information that you receive from your client. You **MUST** respect this request and cannot present this information in class or communicate it in any form, nor can you discuss it outside your group. Furthermore, you must continue to respect this confidentiality even after the course is over.

CLASS SCHEDULE (SUBJECT TO POSSIBLE MODIFICATION)

Week	Date	Topic	Readings/Assignments
1	Jan. 10	Introduction to AI and Business Analytics	Benbya et al. (2021), Davenport (2021)
2	Jan. 17	The technology, application, and impact of AI	Zhu (2020), Devenport (2019), Vinuesa et al (2020)
3	Jan. 24	User interaction, trust, and team work with AI	Rahwan et al. (2019), Glikson & Woolley (2020), Seeber et al. (2020), Luger & Sellen (2016)
4	Jan. 31	Student Presentation: Special topic on AI	
5	Feb. 7	Management Issue of AI applications	Berente (2021) Keding (2020)

6	Feb. 14	Trend of big data and business analytics	Lavalle (2011), Chen et al. (2012), Sivarajah et al. (2017) Davenport (2018) Grover et al. (2020)
7	Feb 20- 24	Spring break	No class
8	Feb. 28	BDA technology and applications	Lehrer et al. (2018), Shilo et al. (2020), Akter & Wamba (2016) Camacho et al. (2020)
9	Mar. 6	Student Presentation: Special topic on BDA	
10	Mar. 13	User behavior study with BDA	Kshetri (2014), Leicht-Deobald et al. (2019) Motiwalla et al. (2019)
11	Mar. 20	Research topic discussion	
12	Mar. 28	Management issue with BDA applications	Grover et al. (2018), Dremel et al. (2017) Günther et al. (2017) Ghasemaghaei & Turel (2017)
13	Apr. 4	Research paper presentation	Research paper due

Specific Topic Presentation Guidelines

Objective: To make a seminar presentation that addresses a current issue on the use of AI and BDA in business. The presentations are mainly based on literature review. Each student will be required to make two presentations (one hour each) on two different fields.

Topic Selection: Following are the schedule of student presentation. Each topic will be presented by up to three students. Each student can select two topics from the list. You may select a subtopic based on the recommendation or your own interests. Please make sure your subtopics are not overlap with each other.

Presentation Schedule

Week		Topic	Subtopics
4	Jan. 31	Specific topics in AI	• Users' interaction and attitude towards AI • Organization's power change and coordination shift as AI tools are used • Ethical implications of AI deployment • Effectiveness of AI applications • Management and coordination of AI development
9	Mar. 6	Specific topics in BDA	• User's attitude towards BDA deployment • BDA applications and impact • BDA strategy • BDA management issues • BDA trust, privacy and ethical issues

Presentation and paper sharing: For each subtopic, please prepare a PowerPoint presentation and provide a copy of most valuable papers (three to four) and a list of references for students to share.

Research Paper Guidelines

Objective:

To write a research paper that addresses a current issue on security, privacy and trust in electronic business. The topic of your research paper can overlap with your seminar presentation but should be more in-depth study. Students are expected to work more closely with the instructor for possible conference or journal publication.

Topic Selection:

The topic of your research paper may be on any contemporary issue relating to security, privacy, and identity theft in electronic business. A one-page proposal of your research topic must be handed in by the third week. You may build a theoretical framework or evaluate existing technologies. Your topic should not cover too broad a field, since your report will not be long enough to do justice to the material and will result in a poor mark. For example, "Network Security" is too broad as a topic, while "Hackers on Internet" is considerably narrower, and "Intrusion detection techniques" has an even sharper focus.

Guidelines:

1. Since many students will not have much experience within their selected topic, most of the material for the research paper will be gathered from literature surveys. The University library has many books and journals which may be of use, and your instructor may also help you in your search if you are short of material. Your best sources of information will likely be the World Wide Web and the electronic libraries available in the Innis Room. **Do not** consult your instructor until you have looked at topics from this source. Books are good sources of material, but to obtain up-to-date material, journals should also be consulted.

2. Since the purpose of this research paper is to show that you have studied a particular topic area well, do not simply repeat information you find in your literature review. In particular, beware of the unbridled enthusiasm on many topics often appearing in the popular press. This may be a mask to cover a lack of facts. You should not consider yourself as a reporter, but as an analyst. Present your own views on the material gathered, since this develops your ability to think logically and creatively. Remember, marks are given for originality.

3. Your report must be typed. It should be a minimum of 20 (maximum of 35) double spaced 8 x 11 typewritten pages, (not including references, figures, and appendices). However, you will not be penalized if you can put forward a good presentation in less than 20 pages.

4. Your report should be written in a concise, crisp, business-like style such as would be used in writing a report for high level management. Try to use diagrams and tables to get your point of view across and to "dress up" your report's appearance.

5. Your report should include the following sections:

    - A cover page which includes the title, the course name and number, the date, and the author’s' name.

    - Abstract: The abstract should cover the most important points presented in your paper as well as any conclusions that should be derived from the report.

    - Introduction: This section includes background material to bring the reader "up to speed" before launching into the main thrust of your report. It should also briefly discuss a general outline of the report which follows.

    - Report body: The body of the report should be broken into reasonably sized sections on various aspects of the topic under consideration. Each section should be numbered and given an appropriate heading.

- Major findings and conclusions: This section should reflect the important results that the reader should have learned from the paper.

- References: You must show several references from more advanced literature (you may also reference the popular press, but it may tend towards uncritical enthusiasm). Guidelines for reference format are provided below.

- Appendices: If appropriate, appendices should be included after your reference section.

6. Jargon should not be used unless the words are carefully defined when they are first used in your report. In general, make sure you carefully define your topic, assuming that potential readers may have little or no background knowledge within the area.

7. References to gender should not appear in the paper, unless referring to an actual person. A minimal use of "he or she" is permitted instead of "he" or "she", but it is normally possible to eliminate such references entirely. For example, consider the following sentence: "The manager will normally rely on his secretary to perform her work as rapidly as possible, regardless of whether or not she has access to a word processor". A statement like this one will cost you marks in your paper, so consider the following statement as a replacement: "Managers will normally rely on their secretaries to work as rapidly as possible, regardless of whether they have access to word processors". There are other ways to achieve this effect, but this should demonstrate what is desired.

8. Sources for your material must be referenced. If you develop original material in your report, be sure to substantiate the grounds upon which you build your arguments, through references to other published material or personal communications. All of your reference material should be referred to by numbers in square brackets, corresponding to numbers used in your reference list at the end of your paper. In your reference section, references should be listed in alphabetic order of the first author's last name. An example of proper reference format is shown below:

   Cofta, P. (2007), *Trust, Complexity and Control: Confidence in a Convergent World*, Wiley &Sons, 2007.

   Pollach, I. (2007), What's Wrong with Online Privacy Policies? *Communications of the ACM*, September 2007, Vol. 50, No. 9, pp. 103- 108.

9. Short footnotes may be used, provided that they are referenced on the same page with a special symbol such as a dagger or an asterisk. Longer footnotes should be included as appendices, to avoid breaking the continuity of the presentation.

10. Figures or tables should be numbered and should appear as soon as possible after they are referenced in the paper. However, if a large number of tables or figures are referenced in one place, it is best to move all the tables and/or figures to the end of the report.

11. Appendices should have titles and be numbered using Roman numerals.

12. All pages of the report, except the title page, should be numbered.

13. Equations should be numbered if they are referred to elsewhere in the report.

14. Grammar, spelling, sentence and paragraph structure are important. A good general reference which may be useful is the Harbrace College Handbook published by Longman Canada Limited. Other references which contain helpful sections on business report writing style are:

    - Ewing, E.W. (1979), Writing For Results, New York: Wiley, 1979.
    - Himstreet, W.C., and W.M. Baty (1977) Business Communications, Belmont, California : Wadsworth, 1977.
    - Smith, R.S. (1976), Written Communications For Data Processing, New York: Van Nostrand, 1976.
    - Weiss, A. (1977), Write What You Mean, New York: Amacom, 1977.

15. PowerPoint presentation. You should prepare and submit (email me) your PowerPoint presentation document one day before the scheduled presentation time. You will have 25 minutes presentation followed by 10 minutes discussion.