eHealth 745 eHealth Innovations and Trends
Winter 2021 Course Outline

Information Systems Area
DeGroote School of Business
McMaster University

COURSE OBJECTIVE:
THIS COURSE REVIEWS AND DISCUSSES CRITICAL ISSUES RELATED TO INNOVATIONS IN E-HEALTH, INCLUDING THE DRIVERS FOR THESE INNOVATIONS, THE TRENDS THAT ARE DEVELOPING IN THE E-HEALTH, SOME NOTABLE SUCCESSES / FAILURES OF E-HEALTH TO MEET EXPECTATIONS, AND WHAT MIGHT BE DONE TO IMPROVE THE POTENTIAL OF E-HEALTH AS A POSITIVE FORCE FOR CHANGE IN OUR HEALTHCARE SYSTEM. IT IS DESIGNED TO BE COMPLETELY ONLINE.

Instructor and Information

Wednesday Evenings 7:00 to 10:00 pm	
DR. JOSEPH TAN	**Fatma Elbabour**
Instructor	Teaching Assistant
tanjosep@mcmaster.ca	elbabouf@mcmaster.ca
Office: Online	Office: Online
Office Hours: before/after class or by appointment	Office hours by appointment at (https://mcmaster.zoom.us/my/felbabour)
Contact via McMaster or Avenue to Learn Email Systems	Contact via McMaster Email system
Class Location: Online at https://mcmaster.zoom.us/j/95826039372	
Course Website: http://avenue.mcmaster.ca	

COURSE ELEMENTS

Avenue:	Yes	Leadership:	Yes	IT skills:	Yes	Global view:	Yes
Participation:	Yes	Ethics:	Yes	Numeracy:	Yes	Written skills:	Yes
Evidence-based:	Yes	Innovation:	Yes	Group work:	Yes	Oral skills:	Yes
Experiential:	Yes	Guest speaker(s):	Yes	Final Exam:	No		

Course Description

This course can only be attended via online. It reviews the latest eHealth innovations, trends in their use, how they are affecting the provision of healthcare, whether they are regarded by users as successes or failures, and the related reasons for these opinions. Learning will be via online group presentations on topics that students have reviewed in detail, by class discussions of cases relevant to each topic, by presentations of instructor, visiting experts, and by developing, writing, and presenting term papers and cases on eHealth topics of interest

LEARNING OUTCOMES

Upon completion of this course, students will be able to complete the following key tasks:

➢ Explain the role that eHealth plays in the healthcare system, based on topics introduced during the course;

➢ Assess the prospects of eHealth innovations proposed in specific circumstances in the healthcare system;

➢ Define the capabilities needed to successfully develop and deploy a specific eHealth innovation;

➢ Formulate a plan that considers how to modify an organization's capabilities in preparation for an eHealth innovation;

➢ Implement changes, as necessary, in order to position the organization in preparation for implementing an eHealth innovation in the organization

REQUIRED COURSE MATERIALS AND READINGS

Avenue registration for course content, readings and case materials
http://avenue.mcmaster.ca

Online access to the McMaster Library to search for journal articles or books relevant to the topics being reviewed in the course.

OPTIONAL COURSE MATERIALS AND READINGS

Textbook: Tan & Olla (eds). Adaptive HMIS (4th Edition, 2020); Others: Open to student research of suitable journal publications and/or books.

Case Studies: Students can use the below link to purchase the Harvard Business Case Package required for eHealth 745.

https://hbsp.harvard.edu/import/769558

EVALUATION

All students will be evaluated largely in term of individual participation and interaction with others (online), shared contribution to group presentations and group case development & presentations. Class learning is via online introductory instructor lectures, discussions of cases relevant to specific topics, student reviews, and presentations of topic material, and/or (presentations by visiting speakers, if these can be scheduled ONLINE). Please see pages 8-11 for more details. Each class will feature a specific topic, and student groups will be organized such that each will volunteer to review material on one specific topic and present their reviews on the day assigned for that topic, based as much as possible on published literature reviews or published papers. Students may use videos to illustrate topic material

but these are limited to five minutes maximum per presentation. Depending on the class size, individuals rather than teams may be assigned to present class material. Presentations should take approximately one hour, not including discussion. Discussion contributions via online will be assessed by the instructor while all written submissions will be assessed by the TA, reviewed by the Instructor only if there is an "appeal." Suggested references are offered for each topic (see pages 11-13), but students should also search for additional sources of material upon which to base their work/discussions. Presenters are also asked to give their thoughts about whether and why: a) the subject under discussion is an innovation; b) it represents a trend; and c) its implementation to date has been a success or a failure. Each presentation should include a discussion of how well the topic subject integrates and works with other existing systems and with healthcare processes in general. Each presentation will be followed by a general class discussion of issues related to the topic, and students will also be graded on their participation mark heavily based on their contribution to class discussions. Some sessions will be enriched by invited guests, or the TA uploaded materials.

Students will also develop cases based on topics in real-world setting relevant to the selected topics and present them during the last two weeks of the course, but these may NOT be regarded by eHealth students as potential scholarly papers. Term paper topics are to be decided after discussion and agreement with the instructor. The deadline for deciding on a case topic is the fifth week of class, when an abstract of the proposed case has been approved by the instructor. Term papers should include at least 25-32 pages (1.5 line spacing), and should include title page, abstract, table of contents, introduction, literature review, findings, discussion, and reference list, plus appendices as appropriate (15-20 pages for the mid-term theoretical component and 10-12 pages for the final-term case component). Exceptions to this list may be allowed if discussed beforehand with the instructor.

Your final grade will be calculated as follows:

Components and Weights

Individual Participation in class/group case discussions	18%
Group class presentation on assigned lecture topics	12%
Written Theoretical Draft submission (Group assigned topics: 4k words to be combined with final class project case submission)	12%
Written 48-hour Mid-term **individual** Case Analysis (15%);	15%
Written Group Case Reports (with clear demarcation of individual-linked contribution for group work: 10-12 pages: 15%)	13%
Final Term Presentation (15%) & Self-Developed Case Component (15%): 10-12 pages to be contributed as a group case to go with their revised Theoretical draft being finalized.	30%
Total	100%

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.

A+	90 - 100
A	85 - 89
A-	80 - 84
B+	77 - 79
B	74 - 76
B-	70 - 73
F	00 - 69

Communication and Feedback

Students who are uncomfortable in directly approaching an instructor regarding a course concern may send a confidential and anonymous email to the respective Area Chair or Associate Dean:

http://www.degroote.mcmaster.ca/curr/emailchairs.aspx

Students who wish to correspond with instructors or TAs directly via email must send messages that originate from their official McMaster University email account. This protects the confidentiality and sensitivity of information as well as confirms the identity of the student. Emails regarding course issues should NOT be sent to the Administrative Assistant.

Instructors are encouraged to conduct an informal course review with students by Week #4 to allow time for modifications in curriculum delivery. Instructors should provide evaluation feedback for at least 10% of the final grade to students prior to Week #8 in the term.

ACADEMIC DISHONESTY

It is the student's responsibility to understand what constitutes academic dishonesty. Please refer to the University Senate Academic Integrity Policy at the following URL:

http://www.mcmaster.ca/policy/Students-AcademicStudies/AcademicIntegrity.pdf

This policy describes the responsibilities, procedures, and guidelines for students and faculty should a case of academic dishonesty arise. Academic dishonesty is defined as to knowingly act or fail to act in a way that results or could result in unearned academic credit or advantage. Please refer to the policy for a list of examples. The policy also provides faculty with procedures to follow in cases of academic dishonesty as well as general guidelines for penalties. For further information related to the policy, please refer to the Office of Academic Integrity at:

http://www.mcmaster.ca/academicintegrity

Plagiarism detected in written material may be reported to those responsible for overseeing academic integrity. You may therefore wish to submit your written term paper to Turnitin.com or Grammarly to check for plagiarism before submitting it for marking. To see guidelines for the use of Turnitin.com, please go to:

http://www.mcmaster.ca/academicintegrity/turnitin/students/index.html

Missed Mid-Term Examinations / Tests / Class Participation

Where students miss a regularly scheduled mid-term or class participation for legitimate reasons as determined by the eHealth Office or MBA Academic Services Office, the weight for that test/participation will be distributed across other evaluative components of the course at the discretion of the instructor. Documentation explaining such an absence must be provided to the eHealth Office or MBA Academic Services Office within five (5) working days upon returning to school.

To document absences for health-related reasons, please provide the Petition for Relief for MBA Missed Term Work and the McMaster University Student Health Certificate which may be found on the DeGroote website at http://mbastudent.degroote.mcmaster.ca/forms-and-applications/. Please do not use the online McMaster Student Absence Form as this is for Undergraduate students only. University policy states that a student may submit a maximum of three (3) medical certificates per year after which the student must meet with the Director of the program.

To document absences for reasons other than health related, please provide a Petition to the eHealth Office or the Petition for Relief for MBA Missed Term Work and documentation supporting the reason for the absence.

Students unable to write a mid-term at the posted exam time due to the following reasons: religious; work-related (for part-time students only); representing university at an academic or varsity athletic event; conflicts between two overlapping scheduled mid-term exams; or other extenuating circumstances, have the option of applying for special exam arrangements. Such requests must be made to the MBA Academic Services Office or (for eHealth students) the eHealth Program Office at least ten (10) working days before the scheduled exam along with acceptable documentation. Instructors cannot themselves allow students to unofficially write make-up exams/tests. Adjudication of the request must be handled by the MBA Academic Services Office or eHealth Program Office.

If a mid-term exam is missed without a valid reason, students will receive a grade of zero (0) for that component.

Missed Final Examinations

A student who misses a final examination without good reason will receive a mark of 0 on the examination.

All applications for deferred and special examination arrangements must be made to the MBA Academic Services Office or eHealth Program Office. Failure to meet the stated deadlines may result in the denial of these arrangements. Deferred examination privileges, if granted, must be satisfied during the examination period at the end of the following term. There will be one common sitting for all deferred exams.

Failure to write an approved deferred examination at the pre-scheduled time will result in a failure for that examination, except in the case of exceptional circumstances where documentation has been provided and approved. Upon approval, no credit will be given for the course, and the notation N.C. (no credit) will be placed on the student's transcript. Students receiving no credit for a required course must repeat the course. Optional or elective courses for which no credit is given may be repeated or replaced with another course of equal credit value.

Requests for a second deferral or rescheduling of a deferred examination will not be considered.

Any student who is unable to write a final examination because of illness is required to submit the Application for Deferred Final Examination and a statement from a doctor certifying illness on the date of the examination. The Application for Deferred Final Examination and the McMaster University Student Health Certificate can be found on the DeGroote website at http://mbastudent.degroote.mcmaster.ca/forms-and-applications/ Please do not use the online McMaster Student Absence Form as this is for Undergraduate students only. Students who write examinations while ill will not be given special consideration after the fact.

In such cases, the request for a deferred examination privilege must be made in writing to the MBA Academic Services Office of eHealth Program Office within five business days of the missed examination.

Special examination arrangements may be made for students unable to write at the posted exam time due to compelling reasons (for example religious, or for part-time students only, work-related reasons):

> Students who have religious obligations which make it impossible to write examinations at the times posted are required to produce a letter from their religious leader stating that they are unable to be present owing to a religious obligation.
> Part-time students who have business commitments which make it impossible to write examinations at the times posted are required to produce a letter on company letterhead from the student's immediate supervisor stating that they are unable to be present owing to a specific job commitment.

In such cases, applications must be made in writing to the MBA Academic Services Office or eHealth Program Office at least ten business days before the scheduled examination date and acceptable documentation must be supplied.

If a student is representing the University at an academic or athletic event and is available at an overlapping scheduled time of the test/examination, the student may write the test/examination at an approved location with an approved invigilator, as determined by the MBA Academic Services Office or eHealth Program Office.

In such cases, the request for a deferred examination privilege must be made in writing to the MBA Academic Services Office or eHealth Program Office within ten business days of the end of the examination period.

Note: A fee of $50 will be charged for a deferred exam written on campus and a fee of $100 for deferred exams written elsewhere. In cases where the student's standing is in doubt, the Graduate Admissions and Study Committee may require that the student with one or more deferred

STUDENT ACCESSIBILITY SERVICES

Student Accessibility Services (SAS) offers various support services for students with disabilities. Students are required to inform SAS of accommodation needs for course work at the outset of term. Students must forward a copy of such SAS accommodation to the instructor normally, within the first three (3) weeks of classes by setting up an appointment with the instructor. If a student with a disability chooses NOT to take advantage of an SAS accommodation and chooses to sit for a regular exam, a petition for relief may not be filed after the examination is complete. The SAS website is:

http://sas.mcmaster.ca

POTENTIAL MODIFICATIONS TO THE COURSE

The instructor and university reserve the right to modify elements of the course during the term. The university may change 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.

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

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. **If you plan to carry out research as part of this course that involves gathering and analyzing data from human subjects, please discuss this with your instructor well in advance of planning and implementing your study.**

COURSE SCHEDULE

eHealth 745 eHealth Innovations and Trends
Winter 2021 Course Schedule

WEEK	DATE	ASSIGNMENT	THIS WEEK'S READINGS & TEAM PRESENTATIONS**
1	Wed. Jan. 13	Class Outline, Schedule, Participation; Presentation topics. Lecture/Presentation: **Emergent Perspectives in Health IS/IT; Precision Medicine & Gene Therapy Cases 1a-1b;** **Note:** Virtual class at: https://mcmaster.zoom.us/j/95826039372	[1, 2] **Instructor's Lecture** **Case 1a: The Case of Lose It!** [**3**] **Case 1b: The Leadership of Future Health [4]** **Case Tutorial in Harvard Case Package***
2	Wed. Jan. 20	Tutorial on Big Data/Lecture: **Commercialization of Digital Health** **Cases 2a-2b;** **Note:** Virtual class at: https://mcmaster.zoom.us/j/95826039372	[5-6] **Instructor's Lecture** **Case 2a: 23andMe [7]** **Case 2b: Digital Health Technology Commercialization Strategies [8]**
3	Wed. Jan. 27	Tutorial on Policy Review **Digital Health Systems** **Case 3**; **Note:** Virtual class at: https://mcmaster.zoom.us/j/95826039372	[9-11]: **Group 1 Lecture** **Case 3: St. Joseph Mercy Oakland (SJMO): Digital Leadership in Health Care [12]**
4	Wed. Feb. 3	**Invited Lecture by Phillip Olla et al.** **Cases 4;** **Note:** Virtual class at: https://mcmaster.zoom.us/j/95826039372	**Topic COVID-19 and Health IT** Class Discussion following Presentation **Case 4:** EMRs: Utility & Usefulness from a Physician Resident's Perspective **[13]**
5	Wed. Feb. 10	Tutorial on Big Data: **Advances in Health Analytics** **Case 5;** *Group (1) Case 6 Presentation* **Note:** Virtual class at: https://mcmaster.zoom.us/j/95826039372	Health Data Analytics [14,15]: **Group 2 Lecture** **Case 5: Physician Intervention in Reducing Readmission and Tele-Health Solution [16]** *Case 6: Improving Access at VA - [17]*

6	Wed. Feb. 17	Tutorial on Strategies: **Digital Health Strategic Planning, Health IT/IS Project Management** **Case 7;** *Group (2) Case 8 Presentation* **Note:** Virtual class at: https://mcmaster.zoom.us/j/95826039372	Digital Health Project Leadership [18-20]: **Group 3 Lecture** **Case 7: PLM [21];** **Case 8: CAREFIRST [22]**
7	Wed. Feb. 24	Tutorial on Privacy, Security, Ethics & More; **Case 9;** *Group (5) Case 10 Presentation* **Note:** Virtual class at: https://mcmaster.zoom.us/j/95826039372	Security, Privacy Policy, Ethics & More (COVID-19) [23-25]: **Group 4 Lecture** **Case 9: [26]** **Case 10: THERANOS [27]**
8	Wed. Mar. 3	**Mid-Term** Case Analysis (48 hours) Due: All Group Theoretical Component Drafts for Feedback **Note:** Virtual class at: https://mcmaster.zoom.us/j/95826039372	One of the Previously Permissioned Cases Supervised by Instructor for McMaster Graduate Students.
9	Wed. Mar. 10	Tutorial on Future Health, AI & More; **Case 11;** Class Discussion *Group (4) Case 12 Presentation* **Note:** Virtual class at: https://mcmaster.zoom.us/j/95826039372	Future & Global Health [28-30]: **Group 5 Lecture** **Case 11;** [31] **Case 12: Jibo** [32]
10	Wed. Mar. 17	Tutorial on **Case Development** *Group (3) Cases 13a,b Presentation* **Note:** Virtual class at: https://mcmaster.zoom.us/j/95826039372	**Student Groups-Regrouping-Cases** Class Discussion **Cases 13a,b:** [33,34]
11	Wed. Mar. 24	**One-on-One Group Interactions w/TA** Group Discussion	
12	Wed. Mar. 31	**Student Case Projects (1, 2)** **Presentations I;** Class Discussions	
13	Wed. Apr. 7	**Student Case Projects (3,4,5)** **Presentations II;** Class Discussions	

**Class Schedule and Resources
The class will be delivered 100% in virtual mode via ZOOM as scheduled. While the quality of class and instructor interaction may be superior for physical classes, the COVID-19 situation has left us with little choice. Contact the instructor if you wish to participate even more in the class virtually. You will be e-mailed information necessary to link online with all your classmates. **Do not attempt to participate via cellphone** as this results in poor quality audio that can disrupt the class. **To participate verbally online you must acquire and use a headset,** since a normal microphone often results in unpleasant feedback sounds that disrupt the session. If this happens, your audio may be blocked by the instructor. Reasonable quality USB headsets (e.g. Logitech) are available from local stores. Text chat is also supported via keyboard input.

Some recorded videos and written materials on the case analysis may be available for viewing ahead of class sessions posted by the TA. Regardless, except for invited speakers, the materials to be discussed will be announced prior to class in the *Avenue* system as provided in this outline and tentative schedule, subject to changes. As you know, presentations that have occurred may be recorded for future online access. Journal articles and other material as listed should be accessible for purchase or download from online or other sources. Class attendance is mandatory; it is key to achieving a high participation grade. Except for special situations with the permission of the instructor, please be present on all classes, especially: 1) The first class of the term, 2) When your team is presenting, and 3) When you are expected to interact with the TA or Instructor over groups to TA/Instructor discussions on team case projects and/or the mid-term case examination for individual submissions. However, anyone who wishes to individually connect with the instructor/TA may do so via online appointment. The TA/instructor will try to accommodate all such requests to the best of their abilities.

The class will be organized into teams via "first in-first considered" basis on a self-filled spreadsheet to be shared by the TA to all class members. Each team will present a specific topic that has been assigned to the team members as per the outline schedule. All team members must collaborate to bring home the points given in the readings, organize and/or divide the material to be presented as related to their assigned topic(s), starting at the beginning of the class, for no less than one hour, followed by a fifteen to twenty minutes discussion, with questions lead by leaders of the other non-presenting teams.

When there is a team presentation scheduled for a particular week, the class will begin with their presentation, which will build on the topic initiated by the introductory lectures (during the first few classes). Note that **discussion marks are weighted substantially**, so everyone must participate through the discussions in order to achieve passing grades, with student participation recorded by the instructor each week. **Please note that class attendance does not count as participation unless you actually participate in the discussions; however, not showing in class without a specific excuse will penalize into your participation grade heavily**. All students are therefore expected to attend each class; moreover, they must review in advance the topic(s) and case(s) assigned for that week in order to be able to participate in the related case discussions which will follow the lecture(s) or team presentations. The case discussion of the evening will follow after a 15-minute break (that is, after the presenting team interacts virtually with the Instructor/TA for feedback on their presentation within that 15-minute break).

Note About Resources**: Textbook & the Harvard Case Package are mandatory to do this course and you are required to read all the references as listed. Information on where you can purchase a copy of the textbook and course package will be made available in the first class.

Resources**

Textbook (Required): Tan, J. *Adaptive Healthcare Management Information Systems, 4th Edition (with Olla, P. & Tan, J.)*, Jones & Bartlett, 2020

Case Package (Required):

1. Tan, J. Emerging Perspectives in Health Information Systems/Technologies (Health IS/IT): Chapter 1, pp. 3-23.
2. Snyder, J.M. with case scenario by Joseph Tan. Precision Medicine: Decoding the Biology of Health & Disease: Chapter 2, pp. 25-43.
3. Tan, J. with M. Dohan. The Case of Lose It! (**Case 1a**), pp. 186-188.
4. Tan, J. with J. Tan. The Leadership of Future Health! (**Case 1b**), pp. 387-388.
5. Tutorial I: Belaala, A., Terrissa, L.S., Zerhouni, N., Devalland, C. & Tan, J. Review on Big Data Analytics in Health Care (Technology Review I), pp. 44-67.
6. Moon, G. & Olla, P. Adoption and Commercialization of Digital Health: Chapter 3, pp. 69-80.
7. Olla, P. & Moon, G. Ginger.io (**Case 2a**), pp. 93-94.
8. Moon, G. & Olla, P. Digital Health Technology Commercialization Strategies (**Case 2b**), pp. 391-400.
9. Arshad-Snyder, S.A. Data in Digital Health Systems: Chapter 4, pp. 97-111.
10. Tan, J. with Tan, J. Digital Health Enterprise Software: SCM, CRM & ERP: Chapter 5, pp. 125-139.
11. Tan, J. with Olla, P. & Tan, J. Key Patient-Centric Technologies: EHR, COPE, CDS & PP: Chapter 6, pp. 151-166.
12. Tanniru, M., Weiner, J. & Garfield, M. St. Joseph Mercy Oakland (SJMO): Digital Leadership in Health Care **(Case 3),** pp. 413-424.
13. Lam, B. & Tan, J. The Impact of Electronic Medical Records (EMRs) on Clinical Workflow & Practices: Perspective of an MS, a Physician Resident in Ottawa **(Case 4),** pp. 403-411.
14. Mathew, P.S., Pillal, A.S. & Tan, J. Big Data, Geospatial Technology, IoT & Cloud Computing for Health Systems (Technology Review II), pp. 112-124.
15. Maheshwari, S., Shukla, A. & Tan, J. Decision Aiding & Predictive Systems: A Framework for Data Mining & Machine Learning for Health Systems Management**,** pp. 217-239.
16. Jones, J.S., Kazziha, S. & Tanniru, M. Physician Intervention in Reducing Readmission & Tele-Health Solution (Case 5), pp. 282-287.
17. Improving Access at VA (**Case 6** - Harvard Cases Package*)
18. Tan, J. & Pellizzari, D. Digital Health Strategic Planning & Strategies for Health Systems: Chapter 8, pp. 191-207.
19. Tan, J. with Olla, P. & Tan, J. Roles & Responsibilities of Health Systems Leaders & Managers. (Policy Review II), pp. 208-215.
20. Tan, J. with Olla, P. & Tan, J. Health IS/IT Project Implementation, Innovation Procurement & Services Management: Chapter 11, pp. 255-281.
21. Patients Like Me (PLM): Social Media in Public Health (**Case 7**), pp. 439-443.
22. CAREFIRST: The Integrate Care Model (**Case 8** - Harvard Cases Package*)
23. Arellano, A.M. The Role of Informatics in Public Health: Chapter 10, pp. 241-254.
24. Faught, C. Clinician Confidentiality, Privacy, and Ethical Issues in the Digital Age: Chapter 12, pp. 291-309.
25. Sood, S. & Tan, J. Health IT Standards Adoption in Health Systems. (Policy Review III), pp. 310-318.

26. Nyitray, C., Nixon, B., Simpson, G. & Tan, J. Theranos: Innovating an Industry Primed for Innovation (**Case 9**), pp. 427-437.
27. THERANOS INC.: Pivoting Consumer Health (**Case 10** - Harvard Cases Package*)
28. Lau et. al., AI & Social Analytics for Health Systems: Understanding Consumer Preferences in Healthcare Services: Chapter 13, pp. 319-340.
29. Panjamapirom, A. & Musa, P.F. Health Care Globalization Through Health Information Technology Enabled Initiatives: Chapter 14, pp. 343-365.
30. Olla, P., Biswas, R. & Tan, J. Exploring Healthcare Futures: Emerging Technology in Health Care: Chapter 15, pp. 367-386.
31. 23ANDME: A VIRTUOUS LOOP (**Case 11** - Harvard Cases Package*)
32. Jibo (**Case 12** - Harvard Cases Package*)
33. Extend Fertility: Conceiving the Market for Egg Preservation (**Case 13a,b** – Harvard Cases Package*)

References

- 10 Ways Technology Is Changing Healthcare (The Medical Futurist) 3Mar2020 https://medicalfuturist.com/ten-ways-technology-changing-healthcare/
- Dickson, B., *How artificial intelligence is revolutionizing healthcare* https://thenextweb.com/artificial-intelligence/2017/04/13/artificial-intelligence-revolutionizing-healthcare/, in *TNW*. 2017.
- Matthews, K., *6 exciting IOT use cases in healthcare* https://www.iotforall.com/exciting-iot-use-cases-in-healthcare/, in *IoT For All*. 2018, Internet of Things.
- NewGenApps, *Top 10 cloud computing examples and uses* https://www.newgenapps.com/blog/top-10-cloud-computing-examples-and-uses. 2017, newgenapps.
- Siwicki, B. Health 2040: A look into the future, Jan 30, 2019 https://www.healthcareitnews.com/news/health-2040-look-future
- Yourgenome, *Personal genomics: The future of healthcare?* http://www.yourgenome.org/stories/personal-genomics-the-future-of-healthcare (accessed December 17 2016). 2016, Yourgenome: Online