Overview of selected Digital Transformation (DT) Literature

Westerman et al. (2011) report the findings of a global study of how 157 executives in 50 large traditional companies are successfully leading DT. This study describes the elements of successful digital transformation and methods to evaluate firms' digital maturity. As per this study, senior executives around the globe are keen to digitally transform three key areas of their enterprise, which are 1) customer experience, 2) operational process, 3) Business model. The authors consider these three areas as the building blocks of DT. One of the key messages of the report is that successful DT does not happen bottom up, rather it is driven from the top.

Loonam et al. (2018) offers an exploratory overview of the successful implementation of digital technologies in traditional organizations. The authors review the evidence based on 10 case studies and propose actions required to successfully implement DT. The main message of this paper is that organizations seeking to implement DT must ensure that their customers become active participants in this process, even if this may open the management of the organization to external influences.

İnel (2019) examines the relative efficiency of DT among EU Countries based on data envelopment analysis (DEA). The input and output measures in this study are based on the Digital Transformation Scoreboard data (Digital Transformation Scoreboard, 2018) published annually by the European Commission. Though the focus of this study is to rank different countries with respect to DT efficiency, the methodology in the paper can also be used in the context of a firm level analysis of Australian chicken meat enterprises.

Li (2018) examines how digital technologies facilitate business model innovation in the creative industries. Based on the literature review and empirical work, this paper develops a holistic business model framework. The major conclusion of the paper is that the 'time scale' must be considered while evaluating new business model. Time consideration is important because what works in the short and medium term could have negative impacts in the long term.

Overview of selected Poultry Studies on Digital Uptake

Banerjee et al. (2014) this paper examines the technological feasibility of using body-mounted sensor technology for jump detection by hens in different noncage housing configurations.

Aydin et al. (2014) examines the feasibility of pecking sound detection system, which has the potential to be used as a tool to monitor the feed intake of chickens. Authors conclude that sound detection system has potential to be used as a tool to monitor the feed intake of chickens. This fully automated and non-invasive technology has the advantage that the measurements can be made continuously throughout the life span of a flock.

Connolly (2017) describes that farmers must farm data, not just chicken. The authors describes the benefits of the following 8 technologies in the chicken meat industry. 1) 3D printing prosthetics. 2) Robots doing the dirty work. 3) Drones. 4) Sensors. 5) Artificial intelligence (AI). 5) Augmented reality 6) Virtual reality (VR) 7) Blockchain 8) Internet of things (IoT).

Poultry World (2017) describes that the initial capital outlay is a major factor in the technology uptake, as is the recruitment of staff that can see the vision. Staff that are good with animals normally means poor with technology. Another major challenge is poor internet speeds on farm and the cost of continual development of technology.

So-In et al. (2014) this research focuses on the integration of wireless sensor and mobile system networks with a well-known sensor integration platform toward cloud offloading scalability services via a hybrid architecture used to collect sensing data, such as temperature, humidity, light intensity, and population density, for data analytics and then issuing on-time decisions to adjust the environmental behavior accordingly.

Park et al. (2014) discuss advantages and disadvantages of the established and emerging rapid detection and characterization methods of Salmonella in poultry and poultry products. This review paper describes the potential applications of different detection methods in the poultry industry.

References

Aydin A, Bahr C, Viazzi S, et al. (2014) A novel method to automatically measure the feed intake of broiler chickens by sound technology. *Computers and Electronics in Agriculture* 101: 17-23.

Banerjee D, Daigle CL, Dong B, et al. (2014) Detection of jumping and landing force in laying hens using wireless wearable sensors. *Poultry Science* 93(11): 2724-2733.

Connolly A (2017) Flocking to digital: The future of poultry technology.

Daniel S, Christopher AW and Luke B (2017) Digital Transformation of business models — best practice, enablers, and roadmap. *International Journal of Innovation Management* 21(08): 1740014.

Digital Transformation Scoreboard (2018) EU businesses go digital: Opportunities, Outcomes and Uptake. Reportno. Report Number|, Date. Place Published|: Institution|.

İnel M (2019) An empirical study on measurement of efficiency of digital transformation by using data envelopment analysis. *Management Science Letters* 9(4): 549-556.

Li F (2018) The digital transformation of business models in the creative industries: A holistic framework and emerging trends. *Technovation*.

Loonam J, Eaves S, Kumar V, et al. (2018) Towards digital transformation: Lessons learned from traditional organizations. *Strategic Change* 27(2): 101-109.

Park SH, Aydin M, Khatiwara A, et al. (2014) Current and emerging technologies for rapid detection and characterization of Salmonella in poultry and poultry products. *Food Microbiology* 38: 250-262.

Poultry World (2017) *Future of technology in the poultry sector*. Available at: https://www.poultryworld.net/Home/General/2017/1/Future-of-technology-in-the-poultry-sector-84008E/.

So-In C, Poolsanguan S and Rujirakul K (2014) A hybrid mobile environmental and population density management system for smart poultry farms. *Computers and Electronics in Agriculture* 109: 287-301.

Westerman G, Calméjane C, Bonnet D, et al. (2011) DIGITAL TRANSFORMATION: A ROADMAP FOR BILLION-DOLLAR ORGANIZATIONS Reportno. Report Number|, Date. Place Published|: Institution|.