Based on the findings, we can conclude that the simulator training enhance operator skills, behaviour , performance, helped to reduce downtime, faster and more efficient startup and finally improve overall competency of staff.

5. Limitations, Conclusions & Future Outlook

The survey is limited to a small group of participants and is relatively small size for proper statistical analysis. The results are analyzed using the data captured before and immediately after the training. Post training survey data after a certain period of time is not considered due to very low response for emails sent to the individuals. Further the analysis is not capturing the capability of the OTS process models in executing the tasks and the competency of instructors.

The simulator can be used to verify the procedures and they can then be optimized, rewritten to insist on critical points. The operators are confident in executing the complex tasks, leading to product quality, skill improvement and one might see a reduction in human errors due to the competency based approach. By integrating the training evaluation models with the OTS, the instructor can easily measure each and every session without being depend on questionnaires and infer the results. This methodology can optimize the trainings delivered and improve future sessions.

A combination of skilled instructors, immersive simulation, cloud technologies coupled with up-to-date high-fidelity simulators and pedagogical course material are essential for ensuring the best possible training for the new and experienced operators in the oil and gas industry. The operators have to take objective based decisions based on real time data, strive to contribute process changes, and needs to be competent for the ever changing new cyber security protocols. The instructor role is changing due to new virtual & augmented technologies, automated and objective based decisions. They also need to be trained to update with the technology, which is often missing due to various organizational reasons. There are number of challenges in the development of exceptional workforce to sustain the business. Staggered industrial growth, retiring and ageing workforce, an influx of new workers forcing the organizations to get new hires quickly trained and competent in the current low oil price environment and simulation training continues to be the best among the available trainings for operators and most cost effective way.

6. References

ARC Insights-2007, T. Fiske, ARC Advisory Group, Maine. (www.arcweb.com/market-studies/)

Bishop, R.L. Herron, 2015. Use and misuse of the Likert item responses and other ordinal measures.

Down, D.F., & R. Mercer. "Applying marine simulation system to improve mariner professional development". PIANC, Port `95, TAMPA Florida, March 1995.

E. Salas., 2006. Design, delivery and evaluation of training systems. Handbook of human factors and ergonomics. Hoboken, NJ: Wiley and Sons, 472–512.

G. Tichon Jennifer & Guy M. Wallis, Stress training and simulator complexity, why sometimes more is less by, The School of Human Movement Studies, University of Queensland, Australia.

Meshkati, International Journal of Occupational Safety and Ergonomics (JOSE) - 2006, Vol. 12, No. 1, Page 79–93.

Raja-2010, Complacency and Bias in Human Use of Automation: DOI: 10.1177/0018720810376055.

Smith, 1983. Sampling Considerations in Evaluating Cooperative Extension Programs, University of Florida.

Surender kumar, Effectiveness of seafarers training, Doctoral thesis-2015, COMES, LSCM, UPES, Dehradun, India.

Stetz. M., Wiederhold, B.K. and Wildzunas, R., 2006. Usefulness of virtual reality stress inoculation training for military medical females. Cyber psychology and Behaviour.

Taro Yamane, 1967. Statistics, an Introductory Analysis, 2nd Ed., New York: Harper and Row.

T. Bullemer Peter -1997, A New Training Strategy: Design the Work Environment for Continuous Learning, Honeywell Advanced Solutions centre.

Tichon et al., 2003. Proceedings of the World Conference on Educational Multimedia, Honolulu, Hawaii.

Winfred, Winston & Pamela, Journal of Applied Psychology, The American Psychological Association Inc. 2003, Vol. 88, No. 2, Pages 234–245.

Wiener, 1989; Bainbridge, 1983; Wiener & Curry, 1980, Flight-deck automation: promises and problems.

www.sciedu.ca/jnep (Designing the simulation learning environment: Journal of Nursing Education and Practice)

www.aveva.com/engineer-procure-construct/simulation-and-training/ operator-training-simulators

www.kirkpatrickpartners.com/Our-Philosophy/The-Kirkpatrick-Model

www.taproot.com/ archives/699 & 6410

Yamnill. S. & McLean, G. N. (2001), Theories supporting transfer of training, Human Resource Development Quarterly, pages 195-208.

Y.F. Barnard, Veldhuis, G.J., & Van Rooij, J.C.G.M., (2001), "Evaluation in practice: Identifying factors for improving transfer of training in technical domains", Studies in Educational Evaluation, 27:269-290.