ADVANCEMENT OF INDUSTRY IN DATA-DRIVEN BUSINESS FIRMS

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ABSTRACT

Business Process Management (BPM) supports the management and transformation of organizational operations. This paper provides a structured guideline for improving data-based process development within the BPM life cycle. We show how Industry 4.0-induced tools and models can be integrated within the BPM life cycle to achieve more efficient process excellence and evidence-based decision-making. The paper demonstrates how standards of machine learning (CRISP-ML (Q)), BPM, and tools of design science research can support the redesign phases of Industry 4.0 development. The proposed methodology is carried out on an assembly company, where the proposed improvement steps are investigated by simulation and evaluated by relevant key performance indicators.

Keywords: Business Firms, Enterprising Energy, Entrepreneurial Intentions, Pioneering Goals.

INTRODUCTION

The decision-making methodology that is often adopted in business and management 1 studies, the outcomes of which are typically derived using linear statistical analysis with finite contextual factors, could suffer from prediction inaccuracy. This prediction inaccuracy may be caused by constantly shifting market circumstances, indicating that the environment in which businesses operate across sectors have intricate scenarios with ambiguous or inconsistent observations, which in turn, may contradict projected insights derived from historical data. Prior research has reported on such instances in sectors such as energy, healthcare, hospitality, media, and retailing, among others, and notably in business areas such as finance, human resources, marketing or entrepreneurship.

The outcomes of empirical analyses employing conventional statistical approaches such as multiple regressions and structural equation modeling may not adequately predict actuality and could be inappropriate in a specific scenario, which is why researchers have increasingly turned to complexity theory for guidance (Ellis et al., 2015). Prior studies involving uncertain and nonlinear scenarios have laid the foundation for "*complex adaptive systems*" a clear reference to the application of complexity theory to scientific investigation, with equivalent techniques such as fuzzy-set qualitative comparative analysis (fsQCA) or the Delphi method emerging in parallel. Note worthily, fsQCA has emerged as a highly objective technique for deriving predictive conclusions as the technique is based on a statistically-informed configurational approach, whereas the Delphi method is also constructive, but more subjective in nature because the method relies on a consensus among experts to reach predictive conclusions.

The fsQCA approach has a relative advantage in depicting the combinations of conditions that lead to the absence of an outcome, a positive outcome, and a negative outcome (Hirsch et al., 2021; Kothari et al., 2011; Patel & Sharma, 2020). Unlike other methodological methods, fsQCA is backed by Boolean algebra and configurational relationship, which distinguishes it from the rest of the analytical pack.

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As the call for the abolition of null hypothesis significance testing (NHST) around the world grows stronger, asymmetrical techniques such as fsQCA have become highly noticeable as a scientific method to reflect the usefulness or accuracy of an investigative framework in anticipating a specific outcome of interest (Young, 1996).

CONCLUSION

The growing importance of fsQCA has prompted to publish a technical note that discusses the foundational tenets of the technique, which guides interested researchers on how to employ the analytical method in their research. fsQCA, which is a form of configurational testing that focuses on Boolean algebra and set theory principles rather than the current prevalent research paradigm of combining matrix algebra with additive-based statistical methods, exemplifies the asymmetrical thinking of complexity theory. fsQCA accomplishes this by combining the reasoning and methodological rigor of case-oriented qualitative methods for capturing rich contextual information with variable-oriented quantitative methods that deal with a larger number of cases, resulting in much more generalizable analytical inferences. As such, although fsQCA accordingly sits somewhere "*midway between exploratory and hypothesis-testing research*" the method is not adequate to be used for the latter, but at most for the creation of "*propositions*" which determine the membership in certain configurations.

REFERENCES

Ellis, R.J.B., Embree, J.L., & Ellis, K.G. (2015). A Business Case Framework for Planning Clinical Nurse Specialist Led Interventions. *Clinical Nurse Specialist*, *29*(6), 338-347.

Hirsch, J.A., Moore, K.A., Cahill, J., Quinn, J., Zhao, Y., Bayer, F.J., & Lovasi, G.S. (2021). Business data categorization and refinement for application in longitudinal neighborhood health research: A methodology. *Journal of Urban Health*, *98*(2), 271-284.

Kothari, A., Hovanec, N., Hastie, R., & Sibbald, S. (2011). Lessons from the business sector for successful knowledge management in health care: A systematic review. *BMC health services research*, *11*(1), 1-11.

Patel, J.A., & Sharma, P. (2020). Online analytical processing for business intelligence in big data. *Big Data*, *8*(6), 501-518.

Young, A.P. (1996). Who sets the business agenda. *Journal of Nursing Management*, *4*(6), 347-352.

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