

The Impact of Analytics Within the Institutions of Higher Education in New Zealand

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1. Introduction and literature

Analytics, as a suite of mechanisms for extraction and processing of data, has the capacity to transform massive and diverse amounts of data into meaningful and valuable information (Johnson, Levine, Smith, & Stone, 2010). As a core concept in Data Science, underpinned by the paradigm of Big Data that we have come to associate with modern business, analytics in higher education is still a relatively new field (Van Barneveld, Arnold, & Campbell, 2012). Notwithstanding, analytics represents an enormous opportunity for academic institutions struggling with operational and strategic imperatives associated with the changing landscape that has become indicative of the future of higher education (Bichsel, 2012; Daniel, 2015; Daniel & Butson, 2013; Siemens & Long, 2011). Its principal contribution lies in its ability to inform the development of predictive models (Wagner & Ice, 2012). As Siemens (2011) pointed out some time back, institutions of higher education need to engage with predictive analytics in order to meet the demands of a changing educational world. Similarly, an OECD report (2013) just two years later, also highlighted the potential of Big Data and analytics within the higher education sector to leverage this new evidence to better support decision-making about educational outcomes and performance. Today, analytics is seen as essential in the quest to perform analysis of student data through predictive models in order to examine students at-risk and hence provide the needed intervention (Adam et al, 2017; Sclater, Peasgood, & Mullan, 2016; U.S. Department of Education, 2012). This study explores the extent to which institutions of higher education in New Zealand are engaged with analytics and the likely impact analytics is expected to play on the quality of decision-making across various functional areas.

2. Method and procedure

An online survey was used to examine the impact of analytics in seven research-intensive public universities in New Zealand. Participants included senior executive responsible for executing operational and strategic initiatives, as well as individuals whose portfolios were related to the management of data and analytics (n=82). The questionnaire was derived from (Goldstein & Katz, 2005) framework for examining institutional use of analytics. In particular, the questionnaire included questions pertinent to functional areas across their institutions. The items were measured on a 5-point Likert scale (1=strongly agree, 2=agree, 3=neutral, 4=disagree, and 5=strongly disagree). The questionnaire was tested for reliability, revealing a high Cronbach's alpha of 0.90. Participants responded to open-ended questions at the end of some Likert scale items, elaborating their ratings on the Likert scale measure.

3. Results

3.1 Impact of analytics within higher education institutions

Participants reported the possible impact of utilising analytics in their institutions primarily in two principal categories of outcomes at the institutional level and functional level.

3.2 Institutional outcomes

To examine that how institutions are influenced by the use of analytic, participants were asked to indicate their agreement with statements related to the use of analytics. For instance, in response to the statement that ‘institution’s analytics capability is helping to meet strategic objectives’, a significant number of respondents (91%) reported that analytics can be utilized as mechanisms to achieve strategic objectives. Others (85%) mentioned that analytics can help and enable institutions to address main contemporary challenges facing higher education sector such as student diversity, student retention, governance and management, learning and teaching quality, funding. A summary of results on the potentials of analytics in achieving various outcomes is summarised in table1.

Table 1: Institutional outcomes from the use of analytics (n=82)

Outcomes	Supported n (%)	Neutral n (%)	Not supported n (%)
Meeting strategic objectives	68 (91)	5 (7)	2 (3)
Addressing major challenges	61 (85)	6 (8)	5 (7)
Institutional success in future	63 (79)	12 (15)	5 (6)
Decision-making improvement	32 (46)	25 (36)	13 (19)

Data also revealed that with the right forms of analytics decision makers can improve the quality of their decision-making on issues affecting institutions. From this study, it was apparent that respondents value the role and possible impact of analytics, particularly in achieving institution’s strategic objectives and addressing challenges facing the sector.

4. Conclusion and significance

This study has provided an overview of the influence of analytics within research-intensive public universities in New Zealand higher education. The key findings from this study suggest that institutions of higher education in New Zealand value the potential use of analytics. However, the use of analytics on a wide institutional scale across the sector is at early stages. There are a number of limitations with this study. Outcome of the study cannot be generalised across various units within an institution, since the key respondents were senior executive and those perceived to be closely working with analytics. As an emergent phenomenon in higher education, future work is required to develop a consolidated framework for the deployment and possible impact of analytics on teaching, learning and research.

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