

## Use of analytics and librarianship practices in Australian University libraries

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### Abstract

The higher education landscape is changing. The librarianship practices have changed radically due to technological changes. A university library forms part of a higher education institution and operates in a highly competitive environment. Analytics is having an increasing impact on decision making and performance within many organisations. However, a significant problem with this kind of application in the university libraries in Australia is still unfocused and not yet clear the impact analytics in university libraries. The existing research indicates a need for using analytics to support an organisation in building strategies and improving services. This research, therefore, is significant to explore the practical implications of how libraries can exploit analytics for increased service analysis and decision making. The purpose of this research is to identify the key factors that drive the relationship between the use of analytics and the librarian's attitude related to their decision-making. This study explores how does analytics impact on librarianship decision making practices. The research question, therefore, include: How does the use of analytics influence university librarianship practices? This study uses the Unified Theory of Acceptance and Use of Technology Theory 2 (UTAUT2) and Theory of Disruptive Technologies (TODT). This study uses qualitative methods with the multiple case studies paradigms to explore the research questions. This research conducted eighteen university libraries in Australia. Given the exploratory nature of the case study, this study gathers data via two methods – document analysis, and interviews. The NVivo 12.0 software is used to analyse unstructured data.

**Keywords:** analytics, decision making, university libraries, Technology

### Introduction

This thesis investigates the use of analytics in university libraries in Australia. It focuses on the present benefits of analytical tools and the librarians' intention to adopt analytics

technologies for librarianship practices in academic libraries. In recent years university libraries have adopted evolving data-driven approaches to improve services (Harper, Oltmann, & technology, 2017; B. Showers, 2015). The role of analytics is becoming more universal and affects how information is used, analysed and applied. As a result, organisations can lead, decide, measure, manage and optimise performance to achieve greater efficiency and benefits (Chandler, Hostmann, Rayner, & Herschel, 2011). Literature suggests that using analytics is one of the most powerful tools to construct librarianship practice, strategies and framework (Paul & Erdelez, 2013; B. J. I. Showers, 2014). The existing research in analytics for decision making is mainly focused on the benefits and challenges, while the practical implications of using analytics in enhancing the library industry remain quite unfocused (B. Showers, 2015). This research argues that more attention needs to be paid to this industry in implementing analytics technology to improve the decision making, apply new service model based on evidence for better student success and, demonstrate the library values to their stakeholders.

### **Problem Identification**

There has been an increasing interest in library analytics that can show the libraries' value in recent years (B. Showers, 2015). Factors found to be influencing analytics have been explored in several studies based upon other sectors. However, a significant problem with this kind of application in the university libraries in Australia is still unfocused. What is also not yet clear is the impact of analytics on changing university library librarianship practices. Libraries need to address how to make their data more useful, visible and accessible to demonstrate the library values and make better decisions. This study, therefore, explores the significance of analytics on the continuous changing of librarianship practices in university libraries in Australia.

### **Research Rationale Identification**

Recognising the growing demand for analytics, information technology (IT) firms quickly establish analytics and business intelligence (BI) positions (Liberatore & Luo, 2010). Researchers have shown an increased interest in analytics for decision-making processes and improved services for business organisations. Most studies in analytics have only

focused on the significance, opportunities for organisations and challenges of analytics. This research, therefore, is significant to explore the practical implications of how libraries can exploit analytics for increased service analysis and decision making.

### **Research Questions**

To solve the problems mentioned in the Problem Identification section, the following questions must be answered in this study: How does the use of analytics influence university librarianship practices? To address the primary research question, two research sub-questions are developed for this study. These are: (i) What factors influence librarian's attitudes related to consideration of the use of analytics for their decision-making? (ii) What are the librarians' perceived trust and perceptions on advanced analytics adoption in their everyday practices?

### **Research Objectives**

This study explored the potential purpose of using analytics in academic libraries that changes the librarianship practices. Therefore, the specific objectives of this study are:

- (1) To identify the key factors that drive the relationship between the use of analytics and the librarian's attitude related to their decision-making.
- (2) To understand the factors that could motivate the librarians to use analytics for stakeholder's collaboration.
- (3) To justify the theoretical components related to perceived trust and librarians' perceptions on advanced analytical tool's adoption in their everyday practices.

### **Research Significance**

The findings of the study allow the decision-makers to understand how the UTAUT2s components such as Performance expectancy, Effort expectancy, Social influence, Facilitating conditions, Hedonic motivation, Price Value and Habit are related to each other and possibly could be used to support librarians' perceptions on executing the advanced analytics in university libraries. The present study examines the influence of habit on

librarians' behavioural intention to use analytics in their institutions. The study considers using several existing theoretical aspects to fit the current research gap that helps understand professional librarianship practices in university libraries.

### **Theoretical Underpinning**

This study uses the Unified Theory of Acceptance and Use of Technology 2 (UTAUT2) (Venkatesh, Thong, & Xu, 2012) and the Theory of Disruptive Technologies (TODT) (Christensen, 1997). UTAUT2 theoretical concept motivates this research because UTAUT2 explains the relationship between the users and the factors influencing accepting the technologies. This study also uses the idea of disruptive technologies in university libraries that led us to link with the United Theory of Acceptance and Use of Technology Theory 2 (UTAUT2) theory and primary research question.

### **Research Method**

This study is exploratory and interpretative in nature. This study used qualitative methods with the interpretive paradigm to explore the research questions. The qualitative approach is suitable for exploring a textual account of the complex human contact with its surroundings (Erlingsson & Brysiewicz, 2013). The qualitative method is suitable for this study. Because the purpose of the research is to explore textual accounts of the multi-part interaction between the university library staff and their perception of analytics in the librarianship practices that might lead to better decision making, demonstrating the value, developing the service framework measuring student success. The NVivo 12 Pro software is used to analyse unstructured data.

### **Conceptual framework**

An overview of key themes are linked to the study's conceptual framework.

### **Population and sample size**

This research conducted eighteen university libraries in Australia, including four Group Eight member universities, one Australian Technology Network (ATN) member library, five Innovative Research Universities member libraries, one Regional Universities Network library, and three Independent universities libraries. The university librarian was contacted via sending an email for an interview to collect the research expected data. Through snowball sampling, we recruited additional participants to receive answers to the research questions.

### **Ethical Considerations**

This project carefully followed guidelines set out in the Human Advisory Network (BCHEAN) of the RMIT Business College. Besides, the researchers focus on the ethical aspects of the design, review Informed consent 46 and conduct human research addressing by the National Statement criteria.

### **Informed consent**

A Participant Information Sheet/Consent Form was approved by the Human Advisory Network (BCHEAN). The Informed Consent form outlined the purpose of the study, scope, participants' involvement, digital recording, and the risks and disadvantages of taking part in the research.

### **Rigour of the research**

This research uses (Lincoln & Guba, 1985) 's four standards criteria such as Dependability, Credibility, Confirmability and Transferability those are widely used in interpretive research to build rigour.

### **Data Analysis Procedure**

Thematic analysis is a method where qualitative information is encoded (Boyatzis, 1998; Richards, 2020). Thematic analysis based on a conceptual framework is a tool for this study to analyse and interpret meaning patterns ('themes') within qualitative data.

### **Findings**

Based on these primary analyses, we can provide some valuable perspectives on these findings' theoretical and practical consequences. All participants involved in this study significantly outlined that; analytics has a significant influence in day to day library practices.

### **Performance expectancy and Effort expectancy - Strategic decisions are based on the university's strategic plan**

Research question to be investigated: Are the UTAUT2s Performance expectancy and Effort expectancy influencing the librarian's attitude related to the use of analytics for decision making?

Performance and Effort lead to an optimistic intention that influences behavioural intention (Venkatesh, Morris, Davis, & Davis, 2003). All participants mentioned the benefits of using analytics because this could help them make evidence-based decisions. However, significant decisions taken by the university library are based on the university strategic plans, and every library focuses on developing operation plans. Decision making at the strategic level is basically, and some would even say it's a gut feeling. Still, it is about coming up with an idea, testing the picture with the stakeholders, and then moving forward (GDU1).

### **Social influence**

"Social influence" refers to the impact of other people's beliefs on individuals' feelings and thoughts who considers being essential of the new systems (Venkatesh et al., 2003). This study confirms that the use of analytics is influenced by the other networks, such as stakeholders of the universities. Two participants specially acknowledged that looking at the International initiatives of libraries to understand what's happening in the sector is also an influential clue to make the decision.

### **Facilitating conditions.**

"Facilitating condition" influences behavioural intention to use a technology or technology (Venkatesh et al., 2012). The libraries don't always have the luxury data because of other pressures to take the time to get to collect as much evidence as they would like. Eight respondents (GAU1, GAU2, GAU3, GAU4, GBU1, GCU1, GDU2, GDU4) notably stated they

don't necessarily use analytics in many ongoing cases to make the decision. They use previous experiences and look at the international context. *Arguably, all the most important decisions we make, I think, are made without analytics. I mean, when you decide who you're going to marry, it's not analytics.*

### **Hedonic motivation- Analytics is still challenging**

"Hedonic motivation" is associated with fun or pleasure experienced in using technology as individuals (Ain, Kaur, & Waheed, 2016). This study identifies the hedonic motivational concept relating to the librarian's community's perception of analytics that originates fun and pleasure or faces challenges from using analytics, which impacts professionals' practices such as demonstrating the library values. Most members agreed that Analytics is still challenging.

### **Price value and Habits -Most of the libraries are facing skill shortages**

In a user technology, "Price Value" is also an essential factor as, unlike workplace technologies, users must bear the costs associated with the procurement of tools and services (Venkatesh et al., 2012). Hence, the study uses the price value component as Return on Investment (ROI) in advanced analytics at university libraries in Australia. The findings from this study indicate that libraries do not require a sophisticated analytics tool. To spend money and effort on sophisticated analytics tools, the decision always focuses on the return on investment. "Habit" relates to individuals' habitual or automatic behaviours using technology (Ain et al., 2016). This study finds that most university libraries in Australia haven't focused on analytical skills.

### **Discussion**

The fundamental findings from this research question highlighted by the respondents indicate that analytics greatly influences decision-making processes. However, other significant factors that influence librarians' decision-making practices are libraries' strategic plans, librarians' experience, customer feedback, staff feedback, open survey, other institutions' framework, and international context.

## **Limitations**

This research has had some limitations, including the lack of natural flow of interview discussion and s lengthens the outcome.

## **Conclusion**

Preliminary evaluation was conducted to prepare the data for assessing the measurement and structural models. Data screening and cleaning are considered essential stages before proceeding with the data analysis. The role of the library in promoting teaching, learning and study and the contribution it brings to the student experience are critical indicators of the library brings to the academic institution. The practical implications of the current study are noteworthy, especially for the librarians in the decision-making role at the academic libraries in Australia.



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