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Implementation of Blended Learning in Higher Education: A Case Study of Adoption and Diffusion

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Implementation of Blended Learning in Higher Education: A Case Study of Adoption and Diffusion

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Abstract

Blended learning has the potential to provide learners with multiple advantages such as increased access to learning, increased flexibility, and enhanced learner engagement. The pedagogic method has been prevalent in higher education in recent years, especially since the COVID-19 pandemic. Despite the growth of interest in institutional initiatives, our knowledge about the adoption and diffusion of blended learning at the institutional level remains limited. Knowledge about adoption and diffusion processes at the university level is imperative for university leaderships to inform policy, provide appropriate support to teachers and other staff, and ensure and sustain positive and equitable student experiences.

Using an embedded case study method, the current study aims to understand user perceptions and beliefs of blended learning and describe the process of blended learning adoption leading to diffusion across a university. This study is guided by the Diffusion of Innovation Theory (DoI), and the Technology Acceptance Model (TAM). Participants were 407 students, 99 teachers, and six university executives who were involved in an institutional initiative employing blended learning in 2019. Data were collected through questionnaires, interviews, and focus groups. The questionnaires were administered to students and teachers. Interviews were conducted for teachers and the executives while focus groups were held for students. In addition, relevant university documentation was gathered and analysed for the purpose of data triangulation. In line with the convergent mixed method, the quantitative and qualitative data were collected in parallel, analysed separately, and were then merged.

The diffusion of blended learning was characterised as a multi-stage process that included agenda-setting, matching, redefining/restructuring, clarifying, and routinising. Results

revealed that in this case, there were some short comings in the matching stage, and this was a key reason for some of the issues encountered with the adoption and diffusion of blended learning. Several factors were associated with the process of diffusion, including Student Experiences, Teacher Beliefs and Attitude, Teacher Self-Efficacy, Teacher Support, Academic Disciplines, University Policies, and Institutional Readiness. Overall, while these factors played important roles in the process of diffusion, some factors were more important than others in certain contexts, and their roles were shifting. These results have implications for universities as they aim to prioritise strategic directions and build adequate support structures for teachers and students to use blended learning at the institutional level.

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Certification

I, Ramiz Ali, declare that this thesis submitted in fulfilment of the requirements for the conferral of the degree, Doctor of Philosophy from the University of Wollongong, is wholly my own work unless otherwise referenced or acknowledged. This document has not been submitted for qualifications at any other academic institution.

Ramiz Ali

30 August 2022

List of Names or Abbreviations

BL	Blended learning
MNU BS	The Maldives National University Business School
CETE	The Centre for Educational Technology and Excellence
DoI	Diffusion of Innovations theory
FA	The Faculty of Arts
FE	The Faculty of Education
FEST	The Faculty of Engineering Science and Technology
FHS	The Faculty of Health Sciences
FHTS	The Faculty of Hospitality and Tourism Studies
FLIS	The Faculty of Law, Islamic Studies
F2F	Face-to-face teaching
LMS	Learning management system
MNU	The Maldives National University
MNU SN	The Maldives National University School of Nursing
ORC	Outreach centre
PD	Professional development
TAM	Technology Acceptance Model
TPB	Theory of Planned Behaviour
TRA	Theory of Reasoned Action

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Publications and Presentations

The following list includes journal articles and conference presentations that arose from this doctoral program.

Journal Articles

Ali, R. (2023). Institutional adoption and implementation of blended learning: Differences in student perceptions. *Turkish Online Journal of Distance Education*. 24(1), 37-53.

Ali, R. (2019). Is blending the solution? A systematic literature review on the key drivers of blended learning in higher education. *Maldives National Journal of Research*. 7(1), 29-42.

Conference Presentations

Ali, R. (2021, November 28 - December 2). *Investigating implementation of blended learning in higher education through lens of diffusion of innovations* [Paper presentation]. AARE Conference 2021, Melbourne, Australia

Ali, R. (2021, October 4-5). *Challenges for university-wide blended learning implementation: A teachers' perspective* [Paper presentation]. International Conference on Teaching, Education & Learning, Istanbul, Turkey.

Ali, R. (2021, September 15-17). *University-wide blended learning adoption and implementation: A comparison of student perceptions across disciplines* [Paper presentation]. International Conference on Digital Technology in Education, Busan, South Korea.

Ali, R. (2021, May 13-15). *Understanding authority-driven adoption and diffusion of blended learning in higher education* [Paper presentation]. The Southeast Asian Conference on Education, Singapore.

Chapter 1: Introduction

Blended learning has been perceived as a promising mode of course delivery that can provide learners with multiple affordances, such as improved access to learning, increased flexibility, and enhanced learner engagement (Ozadowicz, 2020; Wang & Huang, 2018). The pedagogic method has substantially grown in popularity in recent years not only in higher education but also in K-12 learning. However, the literature suggests that our knowledge about adoption and diffusion of blended learning at the institutional level is limited (e.g., Anthony Jnr, Kamaludin, Romli, Raffei, et al., 2020; Mestan, 2019; Porter et al., 2014). This is problematic because the lack of understanding of blended learning at the institutional level would hinder university leaders from establishing essential mechanisms and support structures for teachers, and consequently, can result in inconsistencies and inequity in student experiences. Teacher support is essential, because blended learning significantly changes teacher practice where teachers need to understand not only the pedagogic principles of “blending” but also learn how to use technological tools such as learning management systems (Philipsen et al., 2019). In addition, despite the pervasiveness, still there is ambiguity in the literature about many aspects of blended learning such as what to blend and how to blend learning (Hrastinski, 2019) which could also result in variability in teacher practice and ultimately can hinder students’ learning experiences. Student experience has been identified as an influential factor that impacts teachers’ adoption of pedagogic methods such as online and blended learning (e.g., Mestan, 2019; Mirriahi et al., 2015). This suggests that teacher receptiveness to these pedagogic methods is closely tied to the effectiveness of these approaches in improving student experiences. In addition, knowledge about processes for diffusion at the institutional level can help university leaderships to prioritise policies and strategies which is critical to provide teachers with sufficient infrastructure, and pedagogical and

technological support to enable them to embrace blended learning (Porter et al., 2014). Specifically, understanding the role of factors in the innovation process of blended learning can help institutional leaders to enact enablers for diffusion and eliminate potential threats to the sustainability of blended learning.

This is a case study of adoption and diffusion that aims to understand user perceptions and beliefs of blended learning and describes the process of blended learning adoption leading to diffusion across a university. To achieve this, students, teachers, and the executives of a specific university are investigated because they are the three key stakeholders of a university who are involved in the changing of practices in relation to teaching and learning. This study is guided by the Technology Acceptance Model- TAM (Davis, 1989) and Diffusion of Innovations (DoI) theory (Rogers, 2003). The TAM is employed to explore the aspects related to individuals' adoption, while the DoI is used to understand how the process of diffusion occurred across the university. Understanding individuals' adoption is important to explore the diffusion process because the success and speed of diffusion is dependent on individuals' adoption decisions (Rogers, 2003). Using the TAM and DoI together, therefore, it is possible to explain why and how blended learning was adopted by individuals and how it was diffused across the university. This will also help us to identify the key factors related to students, teachers, and the institution and understand their roles in the innovation process which can be used as an entryway to diffuse blended learning at the university level. The following sections present the background, the aim and the research questions, the significance of the study, the research design, followed by a list of the key terms, and the thesis structure.

1.1. Background

Blended learning is defined as a combination of face-to-face (F2F) and technology-mediated instructions (Porter et al., 2014; Zhu et al., 2016). This combination is typically achieved by purposefully integrating various forms of digital media such as audio, video, discussion forums, and online quizzes with regular F2F instructions (Ibrahim & Nat, 2019; Rasheed et al., 2020). This integration complements student learning by offering more flexibility and enhanced learner engagement, making the overall learning experience richer (Helms, 2014). This is possible, because the integration of digital technology with F2F learning typically provides learners with additional opportunities to engage with subject content, peers, and teachers which is typically not the case with F2F or fully online learning alone (Helms, 2014; Mestan, 2019; Xu et al., 2020).

Consequently, these affordances have attracted teachers and educators to blended learning and the popularity of the pedagogic method has grown significantly in higher education in recent years, especially since the COVID-19 pandemic (Evans et al., 2020; Thabet et al., 2021; Thomas et al., 2022).

However, despite its prevalence, the application of blended learning has been highly variable amongst teachers (Ryan et al., 2016; Thai et al., 2020). Part of the reason could be that some key aspects of blended learning have been in contention. These include multiple aspects of blended learning that are directly related to teacher practice and student experiences, including definitional ambiguity (Lai et al., 2016), the proportion of the seat time (Müller & Mildenerger, 2021), and what to be blended (Hrastinski, 2019). In addition, the literature suggests that while some institutional initiatives of blended learning have been reported (e.g., Huang et al., 2021; Mestan, 2019), until very recently adoption has largely occurred at individual teacher level and many aspects related to adoption at the institutional level are being left at the fringe (Anthony Jnr, Kamaludin,

Romli, Raffei, et al., 2020; Porter et al., 2016). This potentially limits our understanding about blended learning adoption at the institutional level, such as the roles of key stakeholders (i.e., students, teachers, and executives), approaches for adoption and diffusion, and factors affecting diffusion approaches (Groen et al., 2020; Mestan, 2019; Porter & Graham, 2016). This could make blended learning implementation significantly difficult for university leaders and ultimately have a detrimental impact on teacher practice of blended learning as well as, student experiences.

Despite the limitations in research on institutional aspects related to adoption and diffusion of blended learning, some studies have made attempts to investigate it. These studies have examined, common issues universities encounter in transitioning to blended learning (Graham et al., 2013), institutional motivations, benefits, and challenges of transitioning to blended learning (Adekola et al., 2017), and the impact of institutional adoption of blended learning on student learning and the wider university community (Groen et al., 2020), among others. However, these studies shed relatively little light on the complex nature of the university-wide blended learning adoption experience. Vitrally, there is very little evidence about the strategies and processes of adoption: why and how universities facilitate blended learning adoption, and how the diffusion process may occur across a university (Antwi-Boampong & Anthony Jnr, 2021; Thomas et al., 2022). Recent calls, therefore, have been made for a greater understanding of diffusion of blended learning at the university level, specifically calls for strategies and processes of transitioning to achieve institutional blended learning (e.g., Antwi-Boampong & Anthony Jnr, 2021; Mestan, 2019; Porter & Graham, 2016). The current study addresses this gap in the literature by studying three stakeholder groups of a university – students, teachers, and executives, to understand a process of adoption and diffusion of blended learning at a university.

1.2. Aim and the Research Questions

The aim of the study was to understand user perceptions and beliefs of blended learning and describe the process of blended learning adoption leading to diffusion across a university. The study was guided by the following research questions:

1. What are the differences in perceptions of blended learning across the university?
2. How did the diffusion of blended learning occur throughout the university?
3. What were the roles of the factors affecting the adoption and diffusion of blended learning in the university?

1.3. Research Design

To address the research questions, this study employed an embedded single-case study design (Yin, 2009). Case studies allow us to investigate and retain the holistic and meaningful characteristics of real-life events (Yin, 2003). This case study draws on a dual-mode university in the Maldives where blended learning was adopted as the official method of instruction for all the flexible learning programs in 2019. Adoption and diffusion of blended learning at the university level involves a range of activities that are related to students, teachers, and the executives such as policy formulation, establishment of teacher support, and course delivery itself (Porter et al., 2014). Giving an in-depth focus on the beliefs and attitudes concerning blended learning of these three groups, makes it possible to unpack the nature of the events that occurred throughout the diffusion process. In the current study, this was achieved through collection and analyses of comprehensive qualitative and quantitative data.

For data collection and analysis, a convergent mixed method was adopted (Pluye & Hong, 2014). For quantitative data, a questionnaire was administered for students and teachers, to explore their overall perceptions of blended learning. For qualitative data, focus groups

were conducted for students, and interviews were administered for teachers and the executives. In addition, several university documentations that were related to the implementation of blended learning were gathered and analysed. The qualitative and quantitative data were collected in parallel, analysed separately, and then merged. In a convergent mixed method approach, two types of the data are complementary during data collection, analysis, or both (Pluye & Hong, 2014) and analysis for integration typically begins after the data collection process has been completed (Fetters et al., 2013). The analysis was underpinned by the Technology Acceptance Model (TAM), and the Diffusion Innovations theory (DoI). While TAM helped us to explain why and how individuals made adoption decisions, DoI was able to describe the diffusion process of blended learning across the university. As expounded previously, understanding individuals' adoption is important because the success and speed of diffusion is closely related to the adoption decisions of individuals (Rogers, 2003).

1.4. Significance of the Study

The findings of the current study will make theoretical and practical contributions to the academic understanding of blended learning adoption and diffusion. In terms of *theory*, we currently know relatively little about institutional aspects in relation to adoption and diffusion of blended learning (Anthony Jnr, Kamaludin, Romli, Raffei, et al., 2020; Porter et al., 2016), specifically, the approaches to diffusion. To fill this gap, this study identifies a set of factors that affect teacher adoption of general technology and applies them to Rogers' (2003) innovation process in organisations, to understand the role of these factors in each stage of the diffusion process and how their roles can be changed throughout the process of diffusion. This will enable us to understand the key areas on which to focus for adoption and diffusion of blended learning at the university level. In addition, this study highlights the importance and the role of the matching stage in the diffusion process of

blended learning, which is nearly non-existent in the current literature. Overall, this study can help us to better understand how the Diffusion of Innovations theory (DoI) can be applied to explore organisational behaviour in adoption and diffusion of blended learning. While DoI has previously been used to understand technology adoption, the application of DoI at the institutional level is rare (Turner et al., 2021). This study, therefore, sheds some light on how DoI can be operationalised at the institutional level, and expands the theory by applying it in a blended learning context at a university. In addition, this study brings a relatively unique perspective – adoption and diffusion of blended learning in a geographically dispersed nation – into the existing body of knowledge and expands our understanding of the use of technology in education in general, and specifically in blended learning.

For *practice*, in the post COVID-19 pandemic age, technology enhanced learning such as online and blended learning has been predicted to play a key role in higher education (Neuwirth et al., 2020), and universities will need strategies and frameworks to embed blended delivery in teaching (Megahed & Hassan, 2021; Müller & Mildemberger, 2021). Findings of this study can help universities to understand the roles of various factors in adoption and diffusion of blended learning and provide some guidance for universities to apply those factors to build support structures for teachers to use blended learning at the institutional level. Universities can also use these factors as a guide to prioritise the innovation activities and better understand the key areas to focus on, such as student experiences, university policies, and teacher support to facilitate diffusion of blended learning. It can also help universities to pave a way to provide learners with better learning experiences, specifically for those who are unable to attend regular on-campus teaching. In sum, it is expected that this study will contribute to the efforts of teachers and

leaders in higher education to provide learners with improved learning experiences and overall success through technology enhanced learning, specifically blended learning.

1.5. List of Terms

The following are the key terms used in the study. While other definitions may exist, the chosen definitions consist of the common elements that are frequently used in the literature.

<i>Adoption:</i>	A decision taken by an individual or a group to make full use of an innovation as the best course of action available (Rogers, 2003).
<i>Agenda-setting:</i>	Identifying a common problem within the organisation that typically initiates search for a potential innovation to solve the problem (Rogers, 2003).
<i>Blended learning:</i>	The combination of face-to-face and technology-mediated instruction (Porter et al., 2014).
<i>Clarifying:</i>	Making the meaning of the new idea clearer to the members of the organisation (Rogers, 2003).
<i>Diffusion:</i>	The process by which an innovation is communicated through certain channels over time among members of a social system (Rogers, 2003).
<i>Implementation:</i>	An innovation being put into use by an individual or a group of people (Rogers, 2003).
<i>Innovation:</i>	An idea, practice, or object that is perceived as new by an individual or a group of people (Rogers, 2003).
<i>Matching:</i>	Fitting an innovation with a problem identified from the organisation's agenda (Rogers, 2003).
<i>Perceived ease of use:</i>	The extent to which a user believes that using a specific application is free of effort (Davis et al., 1989).

<i>Perceived usefulness:</i>	The extent to which a user believes that using a specific application or system will increase their job performance (Davis et al., 1989).
<i>Redefining/restructuring:</i>	Bringing necessary changes to the innovation and/or existing structure of the organisation to fit innovation within the local context (Rogers, 2003).
<i>Routinising:</i>	The incorporating of an innovation into regular activities of the organisation and losing the foreign identity of the new idea (Rogers, 2003).
<i>Technology:</i>	An object or tool that is designed for instrumental action that reduces uncertainty in achieving a desired outcome (Rogers, 2003).

1.6. Thesis Structure

This thesis consists of eight chapters as mentioned below.

Chapter 1 presents an introduction to the thesis. The chapter starts with identifying the problem that motivated the undertaking of this study, following a brief background of the study. In addition, this chapter specifies the aim and the research questions, the research design, the significance of the study, and the key terms used in this thesis.

Chapter 2 covers the relevant literature related to this study. In this chapter, a definition of blended learning, the affordances of blended learning, and a description of how blended learning has been used in higher education are outlined. In addition, a description of how adoption leads to diffusion and factors affecting the diffusion of blended learning, including student experiences, teacher beliefs and attitudes, teacher support, academic disciplines, institutional policies, and institutional readiness are discussed.

Chapter 3 introduces the theoretical frameworks that guided this study, starting with the Technology Acceptance Model (TAM), followed by the Diffusion of Innovations (DoI)

theory. In this chapter, an overview of theoretical models along with a description of the relevant components of each of the models are presented.

Chapter 4 details the research design and methods of the study. The chapter starts with the methodological approach followed by a brief description of the research context and the case itself. In addition, a full and comprehensive account of the methods used in this study is presented, including methods of data collection, analysis, and relevant ethical considerations.

Chapter 5 presents the results of the questionnaires, the quantitative component of the study. In the first part of the chapter, results of the student questionnaire are presented while the second part highlights the results of the teacher questionnaire. Each part starts with a profile of the participants followed by a presentation of the quantitative findings.

Chapter 6 presents the results of the focus groups and interviews. The chapter begins with a description of the three levels of the organisation (students, teachers, and executives), followed by perceptions about blended learning. In addition, the perceived affordances of blended learning, challenges for blended learning, and the blended learning diffusion process that took place across the university are presented. In this chapter, the results from the analysis of the questionnaires and documentation are used to support the findings of the interviews and focus groups. At the end of this chapter, several factors that were important in the process of diffusion are identified.

Chapter 7 is the discussion of the thesis. This chapter merges the overall findings of both quantitative and qualitative results. In this chapter, the factors extracted in Chapter 6 are applied to Rogers' (2003) *innovation process in organisations* to unpack the important decisions that were taken by the university, and the key activities that took place throughout the diffusion process of blended learning.

Chapter 8 is the concluding chapter. This chapter presents an overview of the research, a summary of the findings and how they are linked to the research questions, the main implications of the study, its limitations, and suggestions for future research. Following this chapter, the list of references and the appendices are presented.

Chapter 2: Review of Literature

This chapter presents a synthesis of literature related to the current study. The aim of the study is to understand user perceptions and beliefs of blended learning and describe the process of blended learning adoption leading to diffusion across a university. The literature review begins with an overview about the nature of blended learning following the key affordances. In the subsequent sections, adoption of blended learning in higher education, how adoption leads to diffusion, and factors that affect implementation of blended learning are highlighted.

2.1. Blended Learning

Blended learning is frequently defined as a combination of technology-mediated and face-to-face (F2F) instructions (e.g., Dziuban et al., 2018; Zibin & Altakhaineh, 2018).

Traditionally, this integration involves F2F classroom activities with online learning and is often facilitated through a learning management system, such as Moodle or Canvas.

The nature of the integration varies but often involves F2F lectures followed by asynchronous online learning (Fresen, 2018), online lectures with F2F tutorials (Dey & Bandyopadhyay, 2019), or a mix of both the approaches (Evans et al., 2020). For Antwi-Boampong and Anthony Jnr (2021), the purpose of this integration is to produce optimal and flexible learning that enhances student learning experiences. Overall, the aim of blended learning is to enhance learning outcomes, improving both learner success and teaching delivery (Anthony Jnr, 2021a).

Blended learning has been interpreted broadly and many aspects of the pedagogic method are currently ambiguous (Dziuban et al., 2018; Evans et al., 2020). However, generally, it has been suggested that blended learning exists along a continuum, in between traditional in-class teaching at one extreme, and pure online learning at the other (Dey &

Bandyopadhyay, 2019). The integration of “various aspects of the two extremes is what yields the blend, which is located somewhere along the continuum” (Fresen, 2018, p. 228). The online portion of blended learning is commonly reported to be between 30 to 79% (Anthony Jnr, Kamaludin, Romli, Raffei, et al., 2020; Müller & Mildemberger, 2021), suggesting that blended delivery involves reduced F2F learner interactions. For Müller and Mildemberger (2021), blended learning encompasses all technology-integrated learning environments except pure online learning and pure in-person instruction. When it is defined, the concept of *purposeful integration* – personalisation of learning to cater to the needs of learners, is often highlighted to emphasise the quality of learning that can be associated with blended learning (e.g., Dziuban et al., 2018; Garrison & Kanuka, 2004; Hrastinski, 2019). Despite these characteristics, the definitional ambiguity of blended learning is a concern for many scholars (e.g., Dziuban et al., 2018; Evans et al., 2020; Ibrahim & Nat, 2019). Therefore, drawing on the literature, for the purpose of the current study, blended learning is defined as *the purposeful combination of F2F and technology-mediated instruction that improves learning outcomes, success, and teaching delivery*.

2.2. Affordances of Blended Learning

Blended learning is a pedagogic method with multiple affordances, and one of the central affordances is increased access to learning (Dziuban et al., 2018; Ożadowicz, 2020).

Providing increased access is critically important because high-quality education is not equally accessible for many students and remains a persistent challenge, especially for those who live in rural, remote or geographically dispersed areas (Ichou, 2018). Part of the reason is the limitations for students in those areas when attempting to access qualified teachers and essential learning facilities and resources at home and school (Downes & Roberts, 2018). Technology enhanced learning such as blended learning, however, can be instrumental to overcome these challenges by allowing students to access

quality teachers and learning resources from a distance (Crawford, 2017). For instance, in a blended music education project in Australia, designed for rural and remote students, the F2F component of the program was managed by teachers at a local school while the online workshops were conducted and webcasted by expert musicians from professional bands and orchestras (Crawford, 2017). This enabled the remote students not only to access quality music education but it also resulted in a significant increase in their interest in music and engagement in learning. Given the specialist nature of music education, it would be extremely difficult for such students to access quality music education, without blended learning (Crawford, 2017), as teachers and staffing of rural and remote schools in Australia remains a significant issue of concern (Downes & Roberts, 2018). In a similar study, in India, F2F learning was combined with digital audio-visual content to teach rural primary school children (Dey & Bandyopadhyay, 2019). Similar to the Australian study, students gathered at a learning centre near their living area and a local teaching assistant helped to manage in-class activities, while the online classes were carried out by expert teachers (from the city) through a synchronous online video conferencing system. This enabled the underprivileged students to access education and interact with qualified teachers, which would otherwise be unlikely to occur (Dey & Bandyopadhyay, 2019). Similar findings have been reported in higher education, emphasising the critical role of blended learning to increase access to learning for students even though they are unable to attend regular F2F classes (e.g., Dziuban et al., 2018; Ozadowicz, 2020; Wang & Huang, 2018). These studies suggest that increased access to learning is a significant affordance of blended learning that can enable remote and dispersed learners to access education despite being disadvantaged with limited facilities and resources.

A second key affordance of blended learning is increased flexibility, which is essentially, learning being freed from the limitations of time, place, and pace that allows learners to customise their learning processes (Thai et al., 2020; Vanslambrouck et al., 2019). A similar definition of learning flexibility was provided by Veletsianos and Houlden (2019), however, the authors extended their definition by adding a key benefit of the flexibility – enabling learners to access education without having to fully disrupt their existing lives. The demand for flexibility in learning is reflective of a digital society, one that is highly dependent on advanced technology (Dufva & Dufva, 2019), and expects that it can more readily fulfil individual learning needs and provides better support so people can adapt learning processes to their different life circumstances and stages (Müller & Mildemberger, 2021). While this flexibility is a characteristic of both blended and online learning, blended learning has been perceived to be more beneficial than fully online learning (Ranjan, 2020), due to concerns related to learner engagement, retention, and overall success of the later (e.g., De Freitas et al., 2015; Dhawan, 2020; Dumford & Miller, 2018). Unlike fully online learning, the F2F learning time in blended delivery is not entirely replaced by digital technology and as a result, any “quality” issues can be addressed through a combination of the best aspects of both the learning methods (Dziuban et al., 2018; Lightner & Lightner-Laws, 2016). In-person teacher to learner interactions are essential requisites in building teacher-student relationships and improving learner performance and success (Ferguson, 2020; Keis et al., 2017; Paechter & Maier, 2010). Finding the right balance while providing flexibility in learning is, therefore, vital because universities will be able to expand and maintain online and blended learning methods only if the F2F learning can be replaced with more flexible learning conditions without compromising student performance or experience (Müller & Mildemberger, 2021).

Due to the significantly diverse student populations in higher education, there are many reasons why flexibility might be highly valued. Flexibility of blended learning can allow learners to access education without having to fully disrupt their existing life commitments which would be likely to happen if they were studying in regular F2F learning environments. It is because flexibility is based on the so-called “anytime, anyplace” possibilities that learners are enabled to customise their learning processes to fit with their personal situations (Veletsianos & Houlden, 2019). In the U.S., for instance, for a group of MBA students with unpredictable work schedules such as military personnel and healthcare professionals, blended learning provided the flexibility to carry on learning while being employed fulltime (Lightner & Lightner-Laws, 2016). This study indicated that students enrolled in blended courses were provided with the flexibility to adjust their learning strategies throughout the semester, which resulted in better retention and success, compared to learning environments which were only F2F or fully online. In another related study in China, Wang and Huang (2018) used a blended learning method to provide flexibility for a group of fulltime teachers that had issues with attending F2F classes due to their work commitments and travelling issues. In this pilot study, remote students were able to participate in learning and interact with their teachers and peers, and those in blended learning had a learning experience equivalent to that of their F2F peers. These studies suggest that the flexibility of blended learning is valued in its own right and can make education more accessible because of the control and freedom that it provides for learners in terms of time, location and pace of learning which is often constrained in F2F delivery (Thai et al., 2020). Many other studies have reported similar findings that highlight how blended learning can provide the flexibility for fulltime working adults, people with unavoidable commitments such as family care, and those who are unable to commute between home and university on a daily basis to attend F2F learning (e.g.,

Míguez-Álvarez et al., 2020; Vanslambrouck et al., 2019). Providing learners with more control over their learning processes in terms of time, place, and pace of learning is vital if universities are to cater for the learning needs of the current generation (Müller & Mildemberger, 2021).

A third affordance of blended learning is enhanced learner engagement (Lima et al., 2021). Learner engagement has been widely regarded as an essential factor behind learner success in both F2F and technology-enhanced learning (Bond et al., 2020). Learner engagement is defined as the time and energy students employ within their learning community to achieve desired learning outcomes (Pye et al., 2018). This engagement consists of three dimensions: behavioural, cognitive, and affective (Bond, 2020). For Schindler et al. (2017), *behavioural engagement* is the extent to which students are actively engaged in learning, *cognitive engagement* is the degree to which students put in mental effort to master the subject content, while *affective engagement* is students' emotional reactions to learning. Relevant literature has shown evidence of technology enhanced pedagogical approaches, specifically the extent to which blended learning can optimise learner engagement (e.g., Broadbent, 2017; Northey et al., 2018; Raes et al., 2020). It is suggested that these benefits might stem from the increased opportunities for active learning, supported collaboration and other social interactions facilitated by the digital technology involved in blended learning (Pye et al., 2018). Compared to F2F learning, these affordances often facilitate more opportunities for learners to have enhanced interactions with the learning content, peers, and teachers (Tay, 2016) which are likely to motivate students to put more energy and effort into learning.

Enhanced learner engagement has been exhibited in different blended learning environments (e.g., Lima et al., 2021; Xu et al., 2020; Zimba et al., 2021). It is because the improved learner interactions facilitated by blended learning often provide learners

with multiple advantages, such as optimising learner collaboration that active learning can ultimately be achieved. In Brazil, for instance, several web-based learning materials such as Open Educational Resources (OER), animated videos, online discussion forums were combined with F2F instructions to optimise learner interactions (Lima et al., 2021). Results of this study indicate that the integration of learning technologies with F2F instructions provided students with more opportunities to actively interact with the learning environment, and as a result, based on student participation, learner engagement significantly increased, from 26.09% to 84.78%. Interestingly, in another lesson, when blended learning was replaced by traditional F2F learning, learner engagement decreased considerably from 82.61% to 19.57% (Lima et al., 2021), suggesting that blended learning has considerable potential to motivate students to invest more time and energy into their learning community. A similar effect of blended learning for learner engagement has been reported concerning social work educators in South Africa (Zimba et al., 2021) and English as a foreign language learners in Mexico (Xu et al., 2020), amongst others. These studies indicate that the opportunities for learner interactions and collaborations that blended learning creates using digital technology often open several avenues for optimised learner engagement, and consequently, improve learning outcomes and student success.

In sum, the literature suggests that the key affordances of blended learning are increased access to learning, increased flexibility, and enhanced learner engagement. Regarding increased access, by integrating digital technology with resources that are available at remote areas, blended learning can provide a pathway for the underprivileged to access quality education which might otherwise not be possible for many (Dey & Bandyopadhyay, 2019). While flexibility is a feature of both fully online learning and blended learning, the latter can provide learners with control over and freedom within the

learning process in terms of time, space, and pace without compromising the quality of learning, a compromise which often occurs with fully online learning. Regarding enhanced learner engagement, by integrating digital technology with F2F learning, blended learning often creates a learning environment that allows learners to have enhanced interactions and collaborations amongst individuals that can motivate learners to invest more effort and energy in their learning community. Overall, increased access to learning, increased flexibility, and enhanced learner engagement can optimise learning and learner experiences (Gao et al., 2020; Pinto-Llorente et al., 2017) and when teachers see the learning outcomes of their students improve with blended learning, they are more likely to adopt it (Antwi-Boampong, 2020) which would ultimately lead to diffusion at the institutional level (Kee, 2017). This may be a reasonable explanation for the growth of interest in blended learning in higher education that has been observed in the recent years. The following section presents a synthesis of the literature concerning the use of blended learning in higher education.

2.3. Blended Learning in Higher Education

Blended learning is no longer a new mode of course delivery and has been expected to grow further in popularity in higher education in the post COVID-19 pandemic era (Megahed & Hassan, 2021; Saboowala & Mishra, 2021). In the last two decades, it has been used at universities in nearly all the subject domains including language learning, education, mathematics, computer science, nursing, medicine, science and engineering, and business, to name a few (e.g., Baek & Jones, 2018; Gao et al., 2020; Johnson et al., 2010; Lightner & Lightner-Laws, 2016; Ozadowicz, 2020; Zibin & Altkhaineh, 2018). Many of the authors of these studies have shared their stories of success and the tremendous benefits of blended learning for teaching and learning (e.g., Baek & Jones,

2018; Chiu, 2021; Müller & Mildenerger, 2021). These studies suggest that there has been considerable interest in blended learning in higher education and the pedagogic method has the potential to cater for most of the subjects or academic domains, if not all.

Despite the prevalence of blended learning in higher education, until recently, the motivation for adoption has been largely realised at individual teacher or subject level rather than universities making collective decisions (Anthony Jnr, Kamaludin, Romli, Raffei, et al., 2020; Antwi-Boampong & Anthony Jnr, 2021; Porter et al., 2016). As such, we have little understanding about many aspects of institutional adoption and diffusion of blended learning such as implementation strategies and processes (Anthony Jnr, Kamaludin, Romli, Raffei, et al., 2020; Antwi-Boampong & Anthony Jnr, 2021).

However, in the last few years, specifically since the experiences of restricted physical teacher interactions caused by the COVID-19 pandemic, there has been a shift towards strategic implementation of blended learning and the calls for more attention to this issue are growing (e.g., Anthony Jnr, Kamaludin, Romli, Mat Raffei, et al., 2020; Antwi-Boampong & Anthony Jnr, 2021; Huang et al., 2021). The summary of literature presented in Table 1 clearly indicates this gap and suggests that despite their efforts, researchers fell short of fully focusing on processes and strategies of implementation and it is essential that these be made clearer for university leaders to make informed decisions for successful adoption and diffusion at institutional level (Thomas et al., 2022).

Table 1*Studies that Investigated Institutional Implementation of Blended Learning (BL)*

<i>Source</i>	<i>Aim/purpose</i>	<i>Methods & Participants</i>	<i>Implementation process</i>	<i>Context</i>
(Thomas et al., 2022)	Examined teacher perceptions about their universities' BL implementation status	Structural equation modelling; 270 teachers	Not described	Saudi Arabia, UAE, Qatar, Bahrain, Oman, and Kuwait
Antwi-Boampong and Anthony Jnr (2021)	Focused on the reasons why institutional BL was adopted and implemented	Case study; 12 management and academic leaders	Partially described*	Ghana
Al-Ayed and Al-Tit (2021)	Explored factors that affected BL strategy	Correlational study; 174 teachers	Not described	Saudi Arabia
Anthony Jnr (2021b)	Examined the impact of institutional pressure on teacher implementation of BL	Regression analysis; 188 e-learning executives and coordinators	Not described	Malaysia
Huang et al. (2021)	Focused on teacher experience of the institutionalisation of BL	Exploratory qualitative method; 10 academics and	Partially described**	Australia
Anthony Jnr, Kamaludin, Romli, Mat Raffei, et al. (2020)	Examined factors associated with university administrators' readiness to diffuse BL initiatives.	Partial Least Square-Structural Equation Modelling; 223 e-learning managers	Not described	Malaysia

Table 1 Continued.

Abusalim et al. (2020)	Explored the key aspects to be invested for the implementation of institutional blended learning.	Case study, 254 students	Partially described**	Jordan
Mestan (2019)	Investigated status of institutional blended learning implementation	Case study; 1598 students, and nine unit-coordinators	Not described	Australia
Ravenscroft and Luhanga (2018)	Focused on one faculty of a university's adoption	Case study, Students (sample)	Partially described*	Canada
Adekola et al. (2017)	Focused on developing a framework to transition into blended learning	Case study; 20 executives, teachers and learning support staff	Partially described**	U.K.
Porter and Graham (2016)	Examined factors influencing teacher adoption in institutional implementation of blended learning.	Survey method, 214 professors	Not described	U.S.
Porter et al. (2014)	Explored issues related to early implementation of blended learning in HE.	Case study; 11 university executives and administrators	Not described	U.S.
Graham et al. (2013)	Focused on developing a framework for institutional adoption and implementation of BL.	Case study; Six executives (one from each university)	Not described	U.S.

**Partially described*: The motive for adoption of blended learning, and the nature of adoption decisions.

***Partially described*: The motive for adoption of blended learning, how the adoption decision is made, and some of the internal mechanisms of the university to implement blended learning such as resource allocation and teacher professional development.

As shown in Table 1, some efforts towards understanding various aspects related to institutional adoption and implementation of blended learning have been undertaken in recent years. In these studies, however, most of the scholars fell short of describing the implementation process at all (e.g., Al-Ayed & Al-Tit, 2021; Anthony Jnr, 2021b; Anthony Jnr, Kamaludin, Romli, Mat Raffei, et al., 2020; Mestan, 2019; Porter & Graham, 2016; Porter et al., 2014; Thomas et al., 2022). Some of the studies that partly described the process did provide information such as the motive for adoption, how the adoption decision was made, and some of the internal mechanisms for implementation of blended learning such as resource allocations and teacher professional development (e.g., Abusalim et al., 2020; Adekola et al., 2017; Antwi-Boampong & Anthony Jnr, 2021; Huang et al., 2021; Ravenscroft & Luhanga, 2018). However, none of these studies have provided a full description of the events that took place throughout the innovation process. For instance, at a university in Ghana, blended learning was officially adopted in 2013 and after seven years, the university did not achieve its intended objective of being a fully-fledged blended teaching university (Antwi-Boampong & Anthony Jnr, 2021). The adoption motive was driven by the student learning needs such as the need for learning flexibility, and the management of the university made the adoption decision with minimal consultations with teachers, if there were any. However, it was not clear how exactly the adoption decision was made, if there were structural changes, infrastructure and resource acquiring, teacher training, and how blended learning was diffused across the institution, whether it was gradual or blanket (Antwi-Boampong & Anthony Jnr, 2021). In this context, the lack of details about the implementation process limits our understanding of the aspects that may have obstructed the university from achieving its objective of being a fully-fledged blended teaching institution. Many other studies such as Adekola et al. (2017) and Mestan (2019) provided similar types of information and failed

to provide the key details of the implementation process and how the process enabled or constrained the institutional efforts of embracing blended learning. These studies clearly indicate a gap in the literature about the institutional implementation of blended learning and show our limited understanding about institutional adoption that leads to diffusion. This is problematic because it could make the process of implementation significantly complex for university leaderships (Huang et al., 2021). It is vital for university leaderships to know the implementation processes of blended learning to be able to facilitate teacher adoption by providing them with necessary support that leads to diffusion (Antwi-Boampong & Anthony Jnr, 2021).

2.4. Adoption Leading to Diffusion

2.4.1. Adoption

Adoption is a decision taken by an individual, a group of people, or an organisation to make the full use of an innovation as the best course of available action (Rogers, 2003). Multiple theories and models such as the Theory of Reasoned Action – TRA (Ajzen & Fishbein, 1977), the Theory of Planned Behaviour – TPB (Ajzen, 1985), and the Technology Acceptance Model – TAM (Davis, 1989) have been proposed to measure how adoption decisions are made by individuals. TRA assumes that an individual's intentions to perform a given behaviour, in this case adoption of technology, is predicted by their attitude, and subjective norms — the beliefs that an important person or group of people will approve and support a specific behaviour (Ajzen, 1985). The TPB expands the TRA with an additional construct: perceived behavioural control — the extent to which one believes that the behaviour is under their control (Ajzen, 2011). TAM has stemmed from these two theories and presents two key elements: perceived usefulness — the extent to which a person believes that using an innovation will enhance their job performance, and perceived ease of use — the degree to which one believes that using the system will

be free of effort (Davis, 1989). TAM hypothesises that these two elements can predict and explain one's behavioural intentions to adopt general technology. Overall, these theories and models suggest that an individual's adoption decision is closely related to their beliefs and attitude and is often based on their personal judgement about the extent to which the technology would assist to perform a task better than the existing options. The literature indicates that a better fit of a technology with a task would result in better individual performance (Aldunate & Nussbaum, 2013; Mishra et al., 2014), and the more one believes that the technology helps them to perform better, the higher the likelihood of adoption (Razmak & Bélanger, 2018; Yoon, 2016). This suggests that adoption can be referred to as a decision of an individual to use an innovation and is determined by their beliefs and attitude about how much better the new innovation would assist them to perform a task than the existing options.

2.4.2. Diffusion

Diffusion is the process by which a technology/innovation spreads in a community over time and that occurs through certain communication channels such as interpersonal communications or mass media (Kee, 2017). For Rogers (2003), diffusion can include both active promotion and the organic spread of an innovation within a community. In both of these cases the essence of the diffusion process is the information exchange between the members of the community, and often individuals depend on subjective evaluation of the innovation that is conveyed to them by others who have already adopted it (Rogers, 2003) which is consistent with the previously mentioned theories/models: TRA, TPB, and TAM. This suggests that adoption is an antecedent of diffusion, and the process of diffusion can be gradual, depending on the effectiveness of the adoption communications that occur between the individuals.

Diffusion typically starts with one's adoption decision, followed by the conveyance of an evaluation of the innovation to other members of the organisation through communication channels (Rogers, 2003). Every time an innovation is successfully communicated to a new user by an existing adopter, the diffusion progresses (Rogers, 2003). To describe this effect, Kee (2017) used an analogy of spreading of a drop of coloured dye that could slowly diffuse and eventually change the colour of water in a beaker. This reflects the organic spread of innovations that Rogers (2003) postulates, whereby information about an innovation is transferred to new users through communication channels (verbal or written) by existing users, and gradually spreads the new idea within a social system such as an organisation or community. This indicates that adoption and diffusion have a causal relationship (Kee, 2017), which typically begins with one's adoption decision and continues the spread in a community through various communication channels. The rate of adoption is the speed with which an innovation is adopted by the members of a community which gradually leads to diffusion (Rogers, 2003). This speed can be affected by several aspects related to individual adopters (Liu et al., 2020; Tondeur et al., 2019) and the organisational environment (Groen et al., 2020). The following sections highlight key factors that can affect teacher adoption of blended learning that leads to diffusion.

2.5. Factors Affecting Adoption and Diffusion of Blended Learning

Teacher decisions regarding adopting technology enhanced learning such as blended learning are influenced by several aspects or factors which can be related to students, teachers, and the institutional environment (Huang et al., 2021; Porter & Graham, 2016). Understanding various factors that affect teacher use of online and blended learning has been an ongoing effort, because the key decisions in relation to classroom practices are generally made by teachers, hence, their support and uptake is essential to change

instructional practices at the institutional level (Porter & Graham, 2016). While the list of the factors that affect teacher adoption can be long, there are common aspects/factors that often emerge in the literature. Table 2 presents some of the common factors.

Table 2

Factors Affecting Teacher Adoption in Previous Research

<i>Aim</i>	<i>Method</i>	<i>Factors/aspects</i>	<i>Source</i>
Developing a model for institutional blended learning adoption	Case study	Institutional desire (student experiences), teacher attitude, institutional resources, supportive pedagogy, and institutional policies	Antwi-Boampong and Anthony Jnr (2021)
Understanding university teachers' adoption of learning technologies	Systematic review	Relative advantage, ease of adoption, availability, adopter typology, attitudes to change, control, pedagogic beliefs and practice, capabilities, bureaucracy, politics and purpose, and culture and discipline	Liu et al. (2020)
Exploring factors affecting academics' adoption of mobile technologies	Structural equation modelling	Social influence, facilitating conditions (e.g., network construction, technical support, appropriate resources), performance expectancy (e.g., usefulness), hedonic motivation, and habit	Hu et al. (2020)
Developing institutional framework for adoption of blended learning	Case study	Stakeholder expectations (student experiences), institutional culture, change agents, organisational preparedness, teacher support, management and organisation	Adekola et al. (2017)

Table 2 Continued.

Understanding barriers for teacher adoption of technology integration practices	Case study	Teacher beliefs and attitude, teacher support, teacher skills and knowledge, facilities and resources, and time	Ertmer et al. (2012)
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As illustrated in Table 2, factors that affect teacher adoption are diverse, and there are commonalities across various contexts even though the terminologies are rather different. For instance, student experiences were described as “stakeholder expectations” in Adekola et al. (2017) while for Antwi-Boampong and Anthony Jnr (2021), it was “institutional desire” to provide learners with better experiences. Likewise, institutional policies were identified by Antwi-Boampong and Anthony Jnr (2021), however, for Liu et al. (2020), it was “bureaucracy, politics and purpose”. Overall, despite the differences in terminologies, the literature suggests that factors affecting teacher adoption that leads to diffusion are related to either students, individual teacher, or the institution. Based on the literature presented in Table 2, a set of factors are identified as influential for teacher adoption of online and blended learning. These include student experience, teacher beliefs and attitude, teacher support, academic disciplines, institutional policies, and institutional readiness. Several studies have highlighted the critical roles of these factors in influencing teacher adoption and implementation of online and blended learning (e.g., Eickelmann & Vennemann, 2017; King & Boyatt, 2014; Tondeur et al., 2017; Webster & Gardner, 2019). The following sections detail the roles of these factors in institutional adoption and diffusion of blended learning. While many of the studies reviewed are about the use of general technology in the classroom, it is reasonable to relate them to blended learning, because the online component of blended learning requires teacher use of digital

technology (Brown, 2016), and teacher use of technology in the classroom significantly alters teaching and learning practices (Ertmer et al., 2012).

2.5.1. Student Experiences

Student experiences is a broad construct that involves multiple dimensions related to a student's "journey" throughout their university life. For Temple et al. (2014), student experiences are "the totality of a student's interaction with the institution" (p.3). Heron (2020) explained this definition and included all the aspects the academic life of a student in a university from the course application process right through the life beyond university. Smith (2020) had similar views and identified several sub-dimensions in student experiences, such as the application process, arrival and orientation, academic experiences, living experiences, and support services. Temple et al. (2014) divided student experiences into four broad categories; (a) the application experience – the interactions between the prospective students and the university, up to the point of arrival, (b) the academic experience – students' interactions with the university that are associated with their studies, (c) the campus experience – student life experiences on campus that are not directly connected with study, and (d) the graduate experience – the university's role in assisting students' transition to employment. These studies suggest that most of the services provided by a university centre is around the concept of "student experiences", meaning – helping students to succeed in university life and successfully transitioning to the workforce.

The main motivator behind many new policies and change initiatives in universities has been providing students with better experiences, highlighting the key role of "student experiences" in change practices in higher education. In the U.K., for instance, a motivation behind one university's transitioning to blended learning was to make the most "effective" use of online learning technologies to enhance student learning outcomes and

experiences (Adekola et al., 2017). In this study, students were described as the main stakeholders of the university and meeting their expectations in teaching and learning – allowing the young generations to get the benefits from using advanced technologies to supplement learning, was one of the drivers behind the university’s decision to undertake an enormous institutional change. In a similar study, in Ghana, one university’s desire to transition to blended learning was essentially for the same reason – to provide students with better learning experiences through instructional technology, where online learning materials were used to supplement F2F instruction which may potentially provide students with enhanced learning engagement (Antwi-Boampong & Anthony Jnr, 2021). These studies depicted just one dimension of learner experiences – academic experience, which may perhaps be the most common motivator for universities’ desire to undertake change initiatives such as adoption and diffusion of blended learning. When universities undertake change initiatives for teaching and learning, teacher instructional practices are often changed (Lim et al., 2019). Several studies have highlighted how student experiences can influence on teacher adoption of blended learning through institutional change initiatives (e.g., Mestan, 2019; Mirriahi et al., 2015; Porter et al., 2014). In sum, student experiences can be influential reasons behind universities’ decisions to implement new strategies for adoption and implementation of online and blended learning, and as a result, teacher adoption and use of blended learning can be increased.

2.5.2. Teacher Beliefs and Attitudes

Teacher beliefs and attitudes are internal constructs that guide teachers to use specific pedagogic practices (Hsu, 2016). Beliefs and attitudes that teachers hold can predict how they will practice teaching in their classroom, including the use of online and blended learning methods (Eickelmann & Vennemann, 2017; Liu et al., 2020). For Taimalu and

Luik (2019), teacher beliefs include three main types of beliefs: pedagogic beliefs, self-efficacy beliefs, and beliefs about the perceived value of using a technology for learning and teaching. The following sections review literature about these beliefs followed by the relationship between teacher beliefs and attitude.

One type of teacher belief is pedagogic beliefs. Pedagogic beliefs are teacher understandings, premises, and propositions about learning and teaching that they believe to be true (Tondeur et al., 2017). Pedagogic beliefs are a crucial type of belief that affect teacher use of technology-integrated teaching methods (Liu et al., 2020; Liu, 2011). Many studies have argued that teacher selection of technology and its integration into the classroom are highly influenced by the beliefs that teachers hold about teaching and learning (e.g., Aldunate & Nussbaum, 2013; Cephe & Yalcin, 2015; Eickelmann & Vennemann, 2017). This is because teachers generally select technology that aligns with their teaching strategies and their existing beliefs about “good” education (Tondeur et al., 2017). For instance, in China, using structural equation modelling, Huang and Teo (2021) investigated factors that affect English teachers’ integration of technology into the classroom. Results showed that teacher beliefs about teaching (in this case, a constructivist view) had a significant effect on their behavioural intentions behind using technology in English teaching. This study suggests that teachers’ existing beliefs about that which constitutes effective teaching can explain their thinking and shape their behaviours regarding the ways technology is used in their teaching. Many other studies have reported similar findings and highlighted the key role of teacher’s pedagogic beliefs in their decision making in relation to selection of pedagogic practices (e.g., Cheng et al., 2021; Liu et al., 2020; Liu, 2011; Taimalu & Luik, 2019). This suggests that teacher pedagogic beliefs can be a determinant influencing their use of online and blended learning methods.

The second type of teacher beliefs are self-efficacy beliefs. In a general sense, self-efficacy is an individual's personal judgment about their own capabilities in performing a specific task or action (Bandura, 2001; Narayanan & Ordynans, 2021). Teacher self-efficacy can thus be referred to as the teacher beliefs about their own capabilities in carrying out an instructional method or practice in a learning context that results in positive student outcomes (Lemon & Garvis, 2016). Previous research has revealed deep academic interest in understanding the nature of teacher self-efficacy and how this relates to teacher practice in the classroom (e.g., Heo et al., 2021; Kwon et al., 2019; Reid, 2017; Zee & Koomen, 2016). Many studies have found that teacher self-efficacy relates closely to their motivation, classroom management, and persistence in performing challenging tasks, amongst other factors (e.g., Aloe et al., 2014; Goddard & Kim, 2018; Kwon et al., 2019). This suggests that teacher self-efficacy can be a powerful factor that can influence teachers' instructional practices in general.

Teacher self-efficacy has been found to be a key aspect that influences teacher use of technology enhanced teaching methods such as blended learning. For instance, in the U.S., Kwon et al. (2019) investigated how teacher self-efficacy in using mobile computing devices explains their use in the classroom. Results of this study showed that self-efficacy is a vital predictor for teacher integration of mobile technology into their teaching practices. This suggests that teachers may not try mobile technology in the classroom if they do not believe that they have the capability to do it successfully. Similar results have been reported in other contexts, including online and blended learning environments (e.g., Cheng et al., 2021; Joo et al., 2018; Reid, 2017; Zee & Koomen, 2016), suggesting that unless teachers believe that they can produce desired results by using a pedagogic method and prevent potential detrimental outcomes of their actions, they would not likely adopt it. "The likelihood that people will act on the outcomes they

expect prospective performances to produce depends on their beliefs about whether or not they can produce those performances” (Bandura, 2001, p. 10). Therefore, it is reasonable to conclude that teacher self-efficacy beliefs about blended learning can have a significant influence on their behavioural intentions to adopt it.

The third type of belief is teacher beliefs about the perceived value of using a technology for learning and teaching. Generally, teachers use technologies and teaching tools that they perceive to be contributing to achieving their educational goals (Taimalu & Luik, 2019). For instance, in Italy, factors that affect secondary school teachers’ intentions to use technology in the classroom were explored (Menabò et al., 2021). The results of this study indicate that teacher beliefs about the value of using technology, specifically, perceived usefulness and perceived ease of use, had a strong direct effect on teacher adoption. This suggests that teacher beliefs about the perceived benefits of using a technology in teaching, for instance, helping teachers to explain a lesson, enabling students to learn new knowledge, and increasing learner collaboration, are associated with teacher adoption. This notion of “usefulness” has been validated by numerous studies that showed that the extent to which a technology or a pedagogic method is perceived as useful and superior to the available alternatives in achieving teachers’ educational goals can have a significant influence on their adoption (e.g., Armstrong, 2019; Cheng et al., 2021; Hsu, 2016; Liu et al., 2020; Wingo et al., 2017). This is because teachers generally want to provide their students with better learning experiences (Liu et al., 2020), and if they think a technology and/or a pedagogic method has the potential to achieve their teaching targets, they will likely adopt it (Cheng et al., 2021). This suggests that teacher beliefs about the perceived value of using blended learning can influence their behavioural intentions to use it.

Attitude is an individual's predisposition to either perform or not perform a behaviour (Ajzen, 1991). Alternatively, it is one's favourableness or unfavourableness towards performing a specific action (Mintz et al., 2020). Drawing on these definitions, teacher attitude to use blended learning can be referred to as a teacher's favourable or unfavourable behaviour towards using it in the classroom. One's attitude towards a specific behaviour has been "assumed to be a function of readily accessible beliefs regarding the behaviour's likely consequences" (Ajzen, 2020, p. 315). This suggests that whether it is positive or negative, a teacher's attitude to use technology can be moderated by their beliefs. This is because the formulation of attitude toward a behaviour is closely related to an individual's *behavioural beliefs*, which is one's subjective beliefs about the probability of performing a behaviour will lead to a specific result or experience (Ajzen, 2011, 2020). A wealth of literature has shown that teacher attitudes towards the selection of pedagogic practices are highly influenced by their beliefs about whether the consequences of using them will be positive or negative (e.g., Ertmer et al., 2012; Hamari & Nousiainen, 2015; Hsu, 2016; Lai & Jin, 2021; Liu et al., 2020; Scherer et al., 2020). This suggests that teacher beliefs can be antecedents of their attitudes, and teacher attitudes can play vital roles in their behavioural intentions toward using online and blended learning.

In sum, the literature suggests that "teacher beliefs" is a multifaceted construct that consists of three types of beliefs: pedagogic beliefs, self-efficacy beliefs, and beliefs about the perceived value of using a technology for learning and teaching and is an antecedent of teacher attitude. Teacher beliefs and attitude are important to consider in adoption of technology enhanced learning such as blended learning because both the constructs have been shown to be powerful predictors of teacher selection of pedagogic practices (e.g., Liu et al., 2020; Scherer et al., 2020; Wijnen et al., 2021), which means

the more positive beliefs and attitude a teacher holds toward a pedagogy, the higher the likelihood of adoption. As expounded previously, much of the reviewed literature in this section concerns the use of general technology in education, however, it is reasonable to relate those studies to blended learning as blended learning is a pedagogic method that requires a combination of technology-integrated learning with F2F instructions which significantly changes teacher practice (Dziuban et al., 2018). Overall, teacher beliefs and attitudes can play vital roles in influencing teacher intentions toward the selection of pedagogic practices such as blended learning.

2.5.3. Teacher Support

In a general sense, teacher support can be described as the mechanisms, systems, and procedures made available for teachers within a university or school (Adekola et al., 2017). For Wang and Zhao (2021), teacher support can be divided into two categories; (a) administrative support – support related to policy encouragement, facilities, and digital resources; and (b) colleagues’ support which provides technical types of assistance and encouragement. Singh and Billingsley (1998) included psychological rewards, as a dimension of teacher support, which refers to teacher beliefs about how well they are doing and the recognition they receive from others such as colleagues and administrators. These studies suggest that teacher support is a broad construct that involves multiple sub-dimensions such as facilities and resources, technological and pedagogical support, and rewards such as job recognition and financial incentives.

Teacher support has been identified as an essential aspect, specifically for the novice, in encouraging the use of technology enhanced learning such as blended learning (e.g., Hilliard, 2015; Thomas et al., 2022; Warsame & Valles, 2018). Blended learning involves purposeful integration of F2F instructions with online learning, which requires teacher

understanding of pedagogical principles of combining the two types of instruction along with intensive use of technology tools such as learning management systems (Philipsen et al., 2019). This suggests that blended teaching is significantly different from regular F2F teaching, and as a result, one who is good at F2F teaching may not necessarily be comfortable to deliver blended subjects and may need support to facilitate learning. Many studies have highlighted the areas of support that teachers need to use online and blended learning methods which include *pedagogical support* – support about learning and teaching processes, and *technological support* – support about technologies that are used in teaching (e.g., Janssen & Lazonder, 2015; Liang et al., 2013; Thomas et al., 2022). These types of support are necessary for teachers to use blended learning because, in addition to the know-how of using a range of technological tools, teachers need to know the pedagogical principles underpinned by the integration of F2F instructions with online learning so the integration can be “purposeful” and allow students to have optimal learning experiences (Brown, 2016; Lai et al., 2016). Philipsen et al. (2019) summarised this support need by expounding that “in-service teachers are not only required to have a thorough understanding of pedagogical theories and their teaching subject, but they are also expected to be—partially—proficient in online teaching” (p.1145). This support is, therefore, critical because it not only enables teachers to understand *how-to-use*, but also significantly contributes to enhancing teacher intention and the actual behaviour of using online and blended learning (Graham et al., 2013). Teachers who receive support from their institutions are less stressed and burnt out than those who receive little to no support (Hudson, 2012; Singh & Billingsley, 1998; Wang & Zhao, 2021), suggesting that teacher support is a vital aspect that can significantly influence teacher adoption of blended learning, that in turn leads to diffusion.

2.5.4. Academic Disciplines

Academic disciplines are distinguished based on the epistemological differences that they have between them (Arbaugh, 2013). One popular framework that distinguishes these differences is proposed by Biglan (1973) that includes three dimensions; (a) the existence of a dominant paradigm, (b) a concern with application, and (c) a concern with life systems. The ideas of hard/soft, pure/applied, and life/non-life subjects are developed based on these dimensions and are often used to distinguish the disciplinary differences between university subjects (e.g., Arbaugh, 2013; Fathema & Akanda, 2020; Salto, 2021). Some common academic disciplines include the natural sciences (e.g., chemistry, physics), engineering, medicine, nursing, the liberal arts (e.g., history, philosophy, and language), education, and business, to name a few. These subject disciplines have their own approaches towards knowledge development and their own cognitive purposes that can make each of the subject domains unique in relation to ways of thinking, acquisition of knowledge and competences (Vo et al., 2020). These differences are important for teacher practice because they can moderate the relationship between direct teaching, teacher facilitation, and perceived learner achievements (Arbaugh, 2013).

The specific academic disciplines with which a teacher is affiliated can affect their integration of technology in teaching and learning (Mercader & Gairín, 2020). This is because teacher affiliations with a subject discipline are often associated with their epistemological beliefs – teacher beliefs about the nature of knowledge and ways of knowing (Kang & Wallace, 2005), and teacher epistemological beliefs and their teaching strategies are closely related (e.g., Rott, 2020; Sengul et al., 2020). The literature suggests that teachers often perceive technology as a mediator that alters the traditional role of the teacher and can force them to change their epistemological beliefs, at least to some extent (Lai & Jin, 2021). Many teachers, however, may not view this as being complementary

with their ideal role as a “good” teacher, and as a result, “the new roles or ways of teaching associated with this may be seen by an individual as a threat to their identity” as a teacher (Shelton, 2014, p. 749). While some subject disciplines such as the medical sciences, the culinary arts, and engineering may require more F2F or direct instruction and supervision (Mercader & Gairín, 2020; Vo et al., 2020), online and blended learning methods generally limit F2F teaching and learning time (Dziuban et al., 2018). This may be a real concern for teachers in such subject disciplines, and consequently teachers associated with these disciplines may be technology averse (Al-Furaih & Al-Awidi, 2020). This suggests that depending on the subject discipline that a teacher is associated with, their intentions towards the use of blended learning can be varied.

Academic discipline has been identified as a factor that affects teachers’ behavioural intentions to integrate technology into the classroom. For instance, in the UK, 795 university teachers participated in a study that investigated the influence of institutional commitment and academic disciplines on teacher use of instructional technologies (Shelton, 2014). This study reported that PowerPoint presentations were used by less than half of the teachers in design and arts subjects while 86% of teachers in subjects related to education/teaching used them. However, Web 2.0 tools such as blogs and wikis were reported to be the most popular amongst design and arts teachers, whereas teachers in administrative, business, and social studies rarely used them. Even though this study does not draw a conclusion about the reasons why teachers of various subject domains chose a specific technology, it is clear that teacher selection and integration of digital technology into the classroom can significantly be varied depending on the subject discipline that they are associated with, and teachers may only choose technologies that align with their instructional requirements. Many other studies have highlighted a possible cause and effect relationship between academic disciplines and teacher use of online and blended

learning (e.g., Al-Furaih & Al-Awidi, 2020; Mercader & Gairín, 2020; Scherer et al., 2021). This suggests that academic disciplines are a vital aspect to be considered in the implementation of blended learning because it affects individual teacher adoption (Shelton, 2014), and consequently, the diffusion of blended learning. For institutional adoption and diffusion of blended learning, teacher uptake is essential (Porter & Graham, 2016), because generally, teachers are the primary decision makers in relation to curriculum implementation.

2.5.5. Institutional Policies

Institutional policies are strategies, frameworks, and processes that set institutional objectives and ambitions (White, 2007). University leaders form policy initiatives expecting to change organisational behaviours and attitudes (Brew et al., 2017). Policies are essential because they typically foreshadow changes in learning and teaching and are often used as a vehicle to drive broader changes in curriculum design practices (O'Connor, 2014). Universities design and implement a range of policies in relation to teaching and learning with the ultimate goal of improving the quality of education that they provide to students (Hénard & Roseveare, 2012). These may include adoption and implementation of pedagogic practices such as online and blended learning, assessment and evaluation of learning, use of student data for teaching and learning, and teaching quality assurance mechanisms (Brew et al., 2017; Hilliger et al., 2020; O'Connor, 2014; Porter et al., 2014), to name a few. Such policies provide guidance, frameworks, and support structures for the executives, teachers and students through whom the broader vision and mission of the university can be realised (White, 2007). However, according to Brew et al. (2017), operationalising policies at a university can be a complex iterative process and may not always lead to desired outcomes, because there may be many levels

within a university such as faculties, departments, and individual teachers who may have different academic practices and requirements. In addition, learning and teaching policies can be influenced by external factors such as quality assurance agencies and government policies (White, 2007).

Institutional policies are vital for adoption of university-wide blended learning (Graham et al., 2013). It is because institutional adoption is a complex process which involves “prerequisites” such as establishing physical infrastructure, providing teachers with necessary support, and fostering an institutional culture that generally embraces technology (Adekola et al., 2017; Porter & Graham, 2016). While these requirements are often facilitated through strategy and policy guidelines, and university policies can create a suitable environment for a smooth transition to blended learning, research suggests that issues related to policies can limit institutional adoption. These issues can include, but are not limited to, lack of institutional policies, and non/less alignment of policies with faculties, teachers, student needs and issues related to policy implementation (Anthony Jnr, Kamaludin, Romli, Mat Raffei, et al., 2020; Anthony Jnr, Kamaludin, Romli, Raffei, et al., 2020; Mestan, 2019; Porter & Graham, 2016). Clear policy guidelines that are aligned with the requirements of teachers and students can provide them with structure and support mechanisms. In the U.S, for instance, issues related to adoption and implementation of blended learning in higher education were investigated (Porter et al., 2014). In this multiple case study, after interviewing 11 university executives (i.e., associate provosts, deans), the authors reported that for the successful implementation of blended learning at institutional level, policies are essential because they can provide teachers with necessary structure and support. Many other studies have also highlighted the importance of institutional policies for technology-enhanced learning (e.g., Graham et

al., 2013; Habib & Johannesen, 2014; Ibrahim & Nat, 2019), suggesting that institutional policy is a key aspect that can affect adoption and diffusion of blended learning.

2.5.6. Institutional Readiness

Readiness to teach online can be broadly defined as the state of the preparedness of a university/school to teach online (Scherer et al., 2021). For Mukhula et al. (2021), readiness is having access and ability to utilise ICT to the benefit of a university.

Although these definitions are not necessarily about blended learning, they can be relatable because blended learning involves the integration of F2F instruction with online learning, and requires teacher and student use of internet access, along with a range of other digital technologies such as a learning management system. Research on institutional readiness to use technology and technology enhanced learning suggests that institutional readiness can be divided into two broad categories – *technology readiness*, and *teacher readiness* (e.g., Abusalim et al., 2020; Mukhula et al., 2021; Webster & Gardner, 2019). Technology readiness is largely related to the university's technological infrastructure such as the internet network, technological resources and facilities, and support structures such as technological support and professional development opportunities (Scherer et al., 2021). On the other hand, teacher readiness is related to a set of beliefs such as perceived usefulness, teacher self-efficacy beliefs, and a range of teacher skills and knowledge such as pedagogical and technological knowledge (Petko et al., 2018). Research suggests that technological readiness and teacher readiness are related to each other and have a recursive relationship between them (e.g., Petko et al., 2018; Saboowala & Mishra, 2021), suggesting that both teacher and technology readiness are essential to improve the institutional readiness to use blended learning.

Institutional readiness has been found to be a vital aspect that often affect teacher adoption of online and blended learning (e.g., Abusalim et al., 2020; Kaushik & Agrawal,

2021; Mukhula et al., 2021). This is because, to be able to provide students with consistent and equitable learning experiences through digital technologies, teachers not only need adequate technological facilities, resources, and tools such as computer hardware and software but also the knowledge and skills to use them, which is possible only if institutions have policies and procedures to cater for them (Adekola et al., 2017; Porter et al., 2016). In addition, institutional readiness for adoption of blended learning is often related to teachers' positive attitudes towards technology enhanced learning such as blended learning (Petko et al., 2018; Saboowala & Mishra, 2021), and the more a teacher is positive, the higher the likelihood of adoption (Eickelmann & Vennemann, 2017; Taimalu & Luik, 2019). Many studies have shown that teacher use of online and blended learning is greatly influenced by the institutional readiness to provide teachers with adequate support (e.g., Al-Furaih & Al-Awidi, 2020; Damerji & Salimi, 2021; Porter et al., 2016). Overall, institutional readiness involves technological readiness and teacher readiness and is crucial for teacher use of blended learning. In sum, several factors can affect adoption and diffusion of blended learning, including student experiences, teacher beliefs and attitude, teacher support, academic disciplines, institutional policies and institutional readiness. It is important for universities to focus on these aspects to enable teachers to adopt blended learning, in order for the diffusion to be relatively smooth.

2.6. Summary

Blended learning is the purposeful combination of F2F and technology-mediated instruction that improves learning outcomes and teaching delivery. Blended learning can provide students with multiple affordances such as increased access to learning, increased flexibility, and enhanced learner engagement. While some of these affordances such as increased access and increased flexibility can also be features of fully online learning,

blended learning has been perceived to be more beneficial than online learning due to concerns related to learner engagement, retention, and overall success of fully online delivery. Blended learning has been a popular method of delivery, especially, since the COVID-19 pandemic.

Despite the prevalence of blended learning, until recently the motivation for adoption has been largely realised at individual teacher or subject level, rather than universities making collective decisions. More importantly, the literature suggests that we still have little understanding about many aspects of institutional implementation of blended learning such as implementation strategies and processes. This can result in ambiguity surrounding effective implementation approaches, and consequently, university leaders may be unable to prioritise strategies and policies in key areas to support institutional implementation. These areas can include student experiences, teacher beliefs and attitudes, teacher support, academic disciplines, institutional policies, and institutional readiness.

Overall, this review of literature suggests that despite the perceived affordances, more understanding about institutional adoption and diffusion of blended learning is needed, specifically, how diffusion processes occur within universities. This signifies a gap in the literature that fits the aim of the current research.

In the next chapter, the theoretical framework used in this study is presented.

Chapter 3: Theoretical Framework

The aim of the study is to understand user perceptions and beliefs of blended learning and describe the process of blended learning adoption leading to diffusion across a university.

The chapter presents the theoretical framework used in this study, which comprises two conceptual models of technology adoption and diffusion.

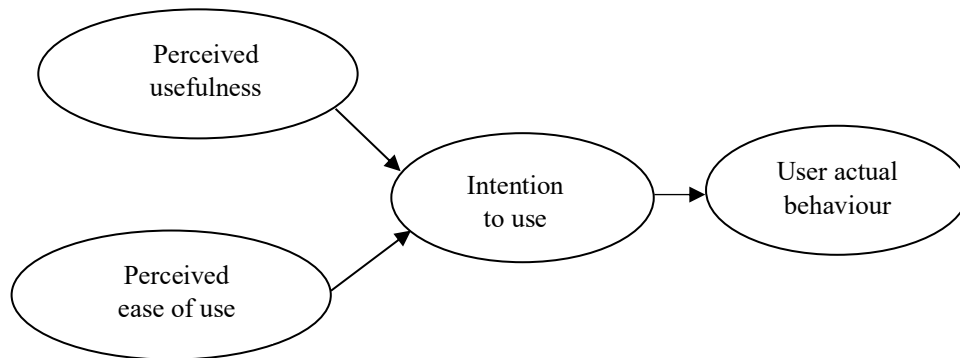
First, Davis's (1989) Technology Acceptance Model (TAM) was employed to explain why and how individuals make adoption decisions in relation to use of technology, specifically, blended learning. Second, Rogers (2003) Diffusion of Innovations theory (DoI) was used to describe the diffusion process of blended learning that occurred across the university. Understanding individuals' adoption is critical to explore the diffusion process, because the success and speed of diffusion is dependent on individuals' adoption decisions (Rogers, 2003). Using TAM and DoI together, therefore, it is possible to explain why and how blended learning was adopted by individuals and how it was diffused across the university. The following sections explain each of these conceptual models.

3.1. Technology Acceptance Model – TAM

TAM was initially introduced as a tool to predict and explain factors that influence user behaviour of adoption of information technology (Davis, 1985; Davis, 1989). However, the model has been found to have utility in understanding and explaining user adoption behaviour across a wide range of technologies (Davis et al., 1989; Gao et al., 2020; Park et al., 2012). According to Davis (1989), one's actual behaviour when using a technology is directly affected by one's intention of use, and the behavioural intention is determined by two key factors: *perceived usefulness*, and *perceived ease of use* (Figure 1).

Figure 1

Technology Acceptance Model – TAM (Adopted from Davis, 1989)



TAM is a widely used framework for explaining users' behavioural intentions to adopt technological innovations (Martín-García et al., 2019). As illustrated in Figure 1, TAM posits that "perceived usefulness" and "perceived ease of use" of a new technology are crucial in determining individuals' intentions to use that technology. Although the original TAM model (Davis, 1985) was inspired by the Theory of Reasoned Action - TRA (Fishbein & Ajzen, 1977), which holds that both subjective norm and attitude influence an individual's intentions to adopt, TAM deviated from TRA by excluding subjective norm from the model. However, later versions of TAM such as TAM2 (Venkatesh & Davis, 2000) and TAM 3 (Venkatesh & Bala, 2008), incorporated additional factors that could impact individuals' adoption decisions, including subjective norm, job relevance, system characteristics and social influence. Despite the widespread use of TAM2 and TAM3 in various contexts (e.g., Chen & Wu, 2020; Huang, 2015; van Raaij & Schepers, 2008), the current study adopts the original version of TAM. This is because the extended versions still retain the original model's theoretical foundation, even though they account for more factors to better explain perceived usefulness and capture social aspects of adoption, which is not the primary focus of this study. Moreover, the original TAM model is still commonly used in the literature to examine user behaviour in adopting new

technological innovations, including online and blended learning (e.g., Chang et al., 2017; Gao et al., 2020; Martín-García et al., 2019).

Although widely used, TAM is not without criticism. One limitation is that the model relies on self-reported data rather than actual system data (Bryan & Zuva, 2021). Self-reported data is generally abstract and less accurate in measuring system usage (Gonyea, 2005). Another criticism is at the institutional level, adoption of technology cannot always be measured solely based on perceptions of individual users (Ajibade, 2018). Guiding principles and frameworks often control technology usage at the institutional level (Heinze & Heinze, 2020), indicating that TAM may be more appropriate for understanding individual-level behaviour rather than organisational behaviour. A third limitation is “perceived usefulness”, a key element of TAM, is an abstract concept that does not fully explain social methods of adoption and technology usage (Malatji et al., 2020). This has led to the extensions of TAM by multiple researchers to include a range of other factors such as subjective norm, experience, job relevance, result demonstrability, amongst others (e.g., van Raaij & Schepers, 2008; Venkatesh & Bala, 2008; Wingo et al., 2017). Despite these limitations, TAM has been recognised as a robust tool that can explain user behaviour in adopting general technology and technology-enhanced learning, such as online and blended learning (e.g., Gao et al., 2020; Park et al., 2012; Villani et al., 2018).

3.1.1. The Components of TAM

TAM consists of two main constructs (Figure 1). First, *perceived usefulness* is “the extent to which a person believes that using the system will enhance his or her job performance” (Venkatesh & Davis, 2000, p. 178). Voluntary use of a technology is driven to a large degree by perceived usefulness (Davis et al., 1992). Second, *perceived ease of use* is “the

extent to which a person believes that using the system will be free of effort” (Venkatesh & Davis, 2000, p. 187). Davis (1989) claims that technological applications that are perceived as easier to use than the available alternatives are more likely to be adopted by users. Research that applied TAM has confirmed that *perceived usefulness* and *perceived ease of use* are two strong factors that can influence user behaviour in relation to technology adoption in general (e.g., Dumpit & Fernandez, 2017; Villani et al., 2018; Wingo et al., 2017). From these two determinants, *usefulness* can be more influential than *ease of use* in adopting digital technology. Thus, *usefulness* “should not be ignored by those attempting to design or implement successful systems” (Davis, 1989, p. 334).

TAM has been used to explain user perceptions and beliefs about technology enhanced learning such as blended learning. In a recent study, for example, Gao et al. (2020) investigated the relationship between students’ perceptions of blended learning and learner engagement. This study in which 347 students from multiple Chinese universities participated revealed that while perceived usefulness, and ease of use had an indirect effect on student use and the overall course satisfaction, perceived usefulness had a strong direct influence on students’ emotional and cognitive engagement in blended learning. This suggests that perceived usefulness of blended learning can have a significant influence on student use and efforts that they put into the learning environment. For teachers, Huang and Teo (2021) investigated the influence of technology-related policy and teacher beliefs regarding their adoption decisions amongst Chinese university teachers. This study in which 800 English teachers from 59 Chinese universities participated, showed that perceived usefulness and perceived ease of use had significant influence on teachers’ behavioural intention to use technology in the classroom. While this study was not specifically about blended learning, it is reasonable to relate to blended learning because the online component of blended learning requires teacher use of digital

technology (Brown, 2016), and teacher integration of technology into classroom significantly changes teacher practice (Ertmer et al., 2012). Several studies have reported similar findings, suggesting that “perceived usefulness”, and “perceived ease of use” are two key determinants of user adoption of technology enhanced learning such as blended learning (e.g., Martín-García et al., 2019; Menabò et al., 2021; Yoon, 2016). In sum, TAM is a reliable tool that can aid in understanding individuals' acceptance of blended learning and the factors affecting their adoption choices, making it appropriate for use in the current study.

3.2. Diffusion of Innovations Theory

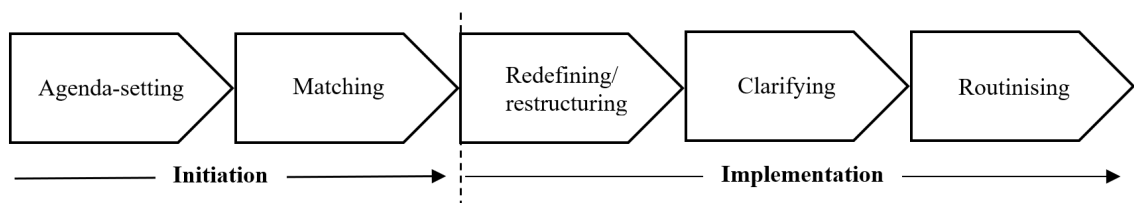
Diffusion of Innovations (DoI) theory (Rogers, 2003) explains why and how new ideas or innovations spread in a community. Diffusion is, according to Rogers (2003), the process of communicating an innovation through various channels in a social system. Innovation is “an idea, practice, or object that is perceived as new by an individual or other units of adoption” (Rogers, 2003, p. 12). Blended learning can be considered an innovation as it offers students novel opportunities for enhanced learning through the purposeful combination of face-to-face and online learning, outperforming fully face-to-face or fully online learning alone (Dziuban et al., 2018; Hrastinski, 2019). Innovations are context specific, and innovations that fit well within the norms and values of a social system often spread easily through supportive networks (Kunnari & Ilomäki, 2016). According to Rogers (2003), innovation in organisations typically occurs as a process that consists of a series of choices and actions. The process highlighted below explains how Rogers (2003) conceptualises the innovation process in organisations.

3.2.1. The Innovation Process in Organisations

In organisations, innovations are typically adopted as collective decisions and often in a process that can include several stages (Rogers, 2003; Zhai et al., 2018). These stages are agenda-setting, matching, redefining and restructuring, clarifying, and routinising (Rogers, 2003). According to Rogers, the first two stages can be classified as the *initiation sub-process* – decisions and actions are often related to conceptualisation and planning for the adoption. On the other hand, the last three stages are understood as the *implementation sub-process* where the decisions and events are generally related to putting the innovation into use within the organisation (Rogers, 2003, p. 421). Figure 2 illustrates the innovation process in organisations.

Figure 2

The Innovation Process in Organisations (Adopted from Rogers, 2003)



3.2.1.1. Agenda-setting

Agenda-setting is identifying a general problem in an organisation that typically creates a need for an innovation to solve a problem (Pronk et al., 2001; Rogers, 2003). This problem can be identified by an individual or a group of members of the organisation. Agenda-setting consists of two key activities; (a) identifying and prioritising an organisation's needs and problems, and (b) searching for an innovation within the organisation that can solve its problems (Rogers, 2003). In this stage, members of the organisation typically identify a performance gap within the organisation as part of recognising the organisation's needs and problems (Rogers, 2003). According to Rogers,

a performance gap is “the discrepancy between an organisation’s expectations and its actual performance” (p. 422). Identifying the performance gap may involve several activities such as having stakeholder meetings, conducting customer feedback surveys, and benchmarking the existing performance of the organisation (Dinwoodie et al., 2014; Zairi, 1992).

3.2.1.2. Matching

Matching is determining the feasibility of the innovation in solving the organisation’s problems which have been identified in the agenda-setting (Pronk et al., 2001; Rogers, 2003). In this stage, it is typical that the conceptual matching of the problems with the innovation occurs to see how well they fit by anticipating benefits and the problems that the innovation may encounter when it is implemented (Rogers, 2003). The anticipation is often based on a range of activities such as piloting the innovation, conducting stakeholder meetings, and gathering of user feedback (Turner et al., 2021) amongst other things. Based on the information collected through *matching*, the decision-makers may decide whether the innovation fits the needs of the organisation (Rogers, 2003). Furthermore, Rogers emphasised that the matching stage is a “reality test”, and “effectively matching an innovation with an organisation’s need is key to whether the new idea is sustained over time” (p. 423).

3.2.1.3. Redefining and Restructuring

Redefining and restructuring are bringing changes to the innovation and/or the organisational structure to better accommodate the innovation within the local context (Harriger et al., 2014; Rogers, 2003). In this stage, both the innovation and organisational structure are expected to change at least to some degree (Harriger et al., 2014). In this modification process, several activities can occur, such as tailoring the innovation to the

needs of the organisation, creating a new organisational unit for the innovation, redefining implementation job roles, recruiting personnel for implementation leadership positions, and developing strategies for quality management (Harriger et al., 2014; Rogers, 2003; Turner et al., 2021). The overall aim of the activities occurring in this stage is to align the innovation more closely with the needs of the organisation (Rogers, 2003).

3.2.1.4. Clarifying

Clarifying is ensuring that the meaning of new idea is becoming clearer to the members of the organisation (Harriger et al., 2014; Rogers, 2003). According to Rogers (2003), this stage occurs once the new idea is put into more widespread use in the organisation. In this stage, members of the organisation socially construct the meaning of the innovation (Harriger et al., 2014). Through various human interactions within the organisation, members gradually gain a common understanding of the innovation (Rogers, 2003). Typical activities occurring in this stage can include meeting with members in the organisation to answer their questions (Rogers, 2003), conducting staff training, distributing educational material such as flyers and brochures, and enhancing outreach (Turner et al., 2021). In this stage, innovation champions – individuals who throw their weight behind an innovation (Rogers, 2003), usually play a vital role to answer the questions of their peers, and the innovation gradually becomes embedded in the organisational structure (Rogers, 2003).

3.2.1.5. Routinising

Routinising is the final stage of the innovation process that occurs when the innovation becomes incorporated into regular activities of the organisation, and loses its “separate identity” (Rogers, 2003, p. 428). In this stage, the innovation is typically considered as part of the routine activities of the organisation (Rogers, 2003). However, the

routinisation may not be as straightforward as it might seem at first glance, because the sustainability of a new idea can be an entirely different story. Sustainability can be affected by many factors such as the level of grassroots participation in innovation decision-making, and the degree to which the innovation is reinvented (Rogers, 2003). In sum, the innovation process in organisations consists of five distinct stages in which a number of activities take place in each of the stages.

The literature suggests that DoI has been employed to explain the adoption of general technology and technology enhanced learning such as blended learning. The majority of these studies were, however, designed to explore how the attributes of innovations affect adopters' innovation decisions (e.g., Alajmi et al., 2018; Grgurovic, 2014; Yang & Lee, 2019), and the role of adopter categories – *innovators, early adopters, early majority, late majority, and laggards*, for adoption (e.g., Akman & Koçoglu, 2017; Huedo-Martínez et al., 2018). Despite the popularity of DoI, these studies indicate that it has been predominantly applied to understanding individuals' adoption, and the application of the theory at institutional level is relatively uncommon, a development which has been raised by many scholars (e.g., Templeton et al., 2009). Nonetheless, by using DoI, Janmaimool (2016) investigated the establishment of a community-based mangrove forest management plan in a town in Thailand, and Turner et al. (2021) explored the change process of moving community pharmacies from drug dispensing to a population health management model in the U.S. These studies suggest that, as proposed by Rogers (2003), the innovation process in organisations can occur as a process that includes agenda-setting, matching, redefining/restructuring, clarifying, and routinising. In an educational setting, Latip et al. (2020) examined how thematic learning was implemented in several primary schools in an Indonesian town. Results indicated that the use of thematic learning was adopted and diffused in line with Roger's innovation process in organisations which

included the previously mentioned five stages of the innovation process. These studies suggest that the innovation process can consist of multiple stages that can occur in a sequential manner, and that DoI can be successfully used to explain the innovation processes in organisations. Even though DoI has been identified as a robust tool to explain the change processes, research suggests that change processes may not always be straightforward and sequential (Dall’Alba & Sandberg, 2006; Hirsch et al., 2007), which suggests a possible limitation of the theoretical model. In addition, to the best knowledge of the author, there is almost no empirical evidence, if any at all, of DoI having been operationalised at university level to understand diffusion of technology enhanced learning such as blended learning. Despite these limitations, it is reasonable to use DoI to understand how blended learning is diffused across a university, because the stages of the innovation process can explain the key events and activities that occur in change processes in organisations (Templeton et al., 2009; Turner et al., 2021). According to Rogers (2003), DoI can capably be used to explore why and how innovations spread through various channels in organisations. In sum, by using DoI, it is possible to explain how adoption and diffusion of blended learning occur at a university.

3.3. Summary

TAM and DoI were employed to understand user perceptions and beliefs of blended learning and to describe the process of blended learning adoption leading to diffusion across a university. First, TAM was used to understand the factors affecting the adoption decisions of individual users. According to TAM, individuals’ adoption decisions are significantly influenced by two key factors, *perceived usefulness*, and *perceived ease of use*. Second, DoI is employed to explore the process of diffusion of blended learning across the university. According to DoI, innovation in organisations is a process that includes five stages: agenda-setting, matching, redefining/restructuring, clarifying, and

routinising. The use of these two theoretical models will assist in answering the research questions. TAM will provide insight into the factors that influence individuals' adoption of blended learning that leads to diffusion, while DoI will describe the diffusion process that took place within the university. Understanding individuals' adoption is crucial in exploring diffusion within organisations, as the success and rate of diffusion are dependent on individuals' adoption decisions (Rogers, 2003). In sum, by using TAM and DoI together, it is possible to investigate both the reasons and the manner in which blended learning was adopted by individuals and diffused throughout the university. TAM and DoI have been used together in the literature to understand adoption and implementation of technological innovations including online and blended learning (e.g., Al-Rahmi et al., 2019; Martín-García et al., 2019; Min et al., 2021).

In the next chapter, the methodology of the study is presented.

Chapter 4: Methodology

This chapter presents the methodological approach of this study. The aim of the study was to understand user perceptions and beliefs of blended learning and describe the process of blended learning adoption leading to diffusion across a university. The research questions were:

- (a) What are the differences in perceptions of blended learning across the university?
- (b) How did the diffusion of blended learning occur throughout the university?
- (c) What were the roles of the factors affecting the adoption and diffusion of blended learning in the university?

4.1. Methodological Approach

A case study method was adopted for the current study. Case study is an empirical inquiry about a contemporary phenomenon, “set within a real world context – especially when the boundaries between phenomenon and contexts are not clearly evident” (Yin, 2009, p. 18). In case study research, in-depth focus is given to the case/s, reflecting the researcher’s desire to cover a wide range of contextual and other intricate conditions related to the case/s (Yin, 2012). Thus, it can analyse complex qualitative research problems (George & Bennett, 2005). Amongst other methods of inquiry, for Yin (2009), case study is the preferred method when the research is guided by explanatory questions such as *how* or *why*, or when the researcher cannot manipulate the behaviour of those involved in the study, or the focus of the study is on a contemporary phenomenon. Baxter and Jack (2008) also recommend case study when the researcher wants to cover contextual conditions that are related to the phenomenon under study. The case study approach is appropriate for the current study because the research questions are explanatory, and the

study requires in-depth analysis of a wide range of complex events that occurred in the process of diffusion of blended learning. The case study approach provided an opportunity to unpack why and how blended learning was adopted, and how the contextual factors/aspects affected individuals' adoption that led to diffusion.

For the current study, a single case study method was adopted. For Yin (2009), one rationale for using a single case study method is the case being *representative* or *typical*. In this case, "the objective is to capture the circumstances and conditions of an everyday or commonplace situation" (Yin, 2009, p. 48). The current study is consistent with this rationale, as the study aims to capture the events that occurred in the process of adoption and diffusion of blended learning across a university. Lessons learned from this study would be informative, as *representative* or *typical* cases are believed to be informative about the experience of the average person or institution (Yin, 2009).

Earlier studies have adopted the case study approach to investigate blended learning in various settings. Truitt and Ku (2018), for instance, used a case study method to explore elementary school students' perceptions of using blended learning in the United States. Antwi-Boampong and Anthony Jnr (2021) conducted a case study in a Ghanaian university to investigate a model for institutional adoption of blended learning in higher education. Lai et al. (2016) also used a case study method to identify types of blending in a Hong Kong university and how blended learning supported student engagement and learning. These studies suggest that the case study method is appropriate to explore user experiences, beliefs of blended learning, and to describe individual and organisational practices of blended learning.

4.2. Research Design

A research design is a comprehensive plan of actions that helps a researcher to execute a research and answer the research questions (Durrheim, 2006). For the current study, an embedded single-case study design was adopted. Embedded single-case study designs are, according to Yin (2009), single case studies that involve more than one *unit of analysis*. For instance, having the executives, teachers, and students as units of analysis within the main case of the *university*. An embedded single-case study design is appropriate for the current study because having the three levels of the university: executives, teachers, and students as units of analysis, is needed to investigate the events that occurred at various levels at the university in the process of adoption and diffusion of blended learning.

The embedded case studies often include in-depth qualitative data that allow detailed study of the case, but also may call upon quantitative techniques that often lead to mixed methods of data collection and analysis (Yin, 2009). For case studies that use qualitative and quantitative data, the quantitative data often serves in two ways: (a) it allows for examination of behaviour or events that the case study attempts to explain, and (b) it can relate to an embedded unit of analysis within the broader case study (Yin, 2009).

However, according to Yin, in either situation, the qualitative data remain central to the case study. This approach was adopted for the current study, where the qualitative data were the main source of data, while the quantitative data were used to support the qualitative data and provide more details about the events related to the case and/or units of analysis.

4.3. The Research Context and the Case

The Maldives is an archipelago which consists of 1190 islands. For the convenience of administrative functioning, the islands are grouped into 20 atolls. In 2021, the population of the country was ~540,000 spread across the 185 inhabited islands (The World Bank, 2021). More than a third of this population live in greater Malé, the capital city. For the rest of the nation, most of the islands have a living population of 500 – 2000 with only basic services (i.e., health care and education), along with limited employment opportunities. Therefore, the island communities rely heavily on Malé and many of the islanders often relocate to the capital of the nation, while those who choose not to are often forced to travel to the city to fulfil their needs.

However, travelling to Malé is not easy. The main form of transport between the islands and the city is the sea, even though several domestic airports are operational. There is currently no public transportation system (i.e., ferry) to travel between Malé and the islands. Therefore, islanders typically travel to the city through private service providers, and often use more than one mode of travelling (i.e., speedboat and plane). This often involves significant travel cost and time. While it would take about 1-2 hours to travel to Malé from a near-by island by boat (this is only for about a dozen islands), for Southern, and Northern-most islands, it may take 2-3 days by boat. Even if one takes a speedboat and a plane, in most of the cases, it will take at least a half-day to travel to Malé from an island. Travelling becomes more difficult in the event of bad weather which is very common in the Maldives. Overall, travelling to Malé is a significant issue for most of the island communities.

Universal primary education, and secondary school education (Grades 8-10) are available in all the inhabited islands. However, higher secondary education (Grades 11 and 12), and

post-secondary education is limited in the islands. Therefore, to continue education beyond secondary schools, people of the small islands are often required to send their children to Malé or any regional facility where education is accessible. For post-secondary education, generally, again, the capital city is the only feasible option as all the higher education providers, including the Maldives National University (MNU) are based in Malé, despite some regional facilities being established. In the regional campuses, study options and learning facilities are relatively limited.

MNU is one of the two public universities of the country. It is a dual mode university – a university that offers both on-campus and flexible learning (i.e., blended learning) programs. MNU offers programs from the Foundation Level (Certificate IV) to doctoral studies and had an annual student population of over 9500 in 2018 (The Maldives National University, 2018). These students were registered at twelve academic units which consisted of six faculties, three schools and three centres (Table 3). In addition, at the time of data collection, the university had four regional campuses and 13 Outreach Centres (ORCs) in atolls/islands. ORCs are an administrative arrangement made by the university in collaboration with the respective local island/atoll councils to allow students of near-by-islands to gather for their compulsory face-to-face (F2F) component of blended courses. Typically, it is a classroom from the island school, thus no ORC is owned by the university. The university operations are predominantly centralised in Malé and running a course at a regional campus and/or ORC is at the discretion of the faculty heads. The researcher had been employed by the university to facilitate flexible learning programs, specifically blended learning between 2010 and 2018. Blended learning was trailed at some faculties/centres since 2010, and was eventually adopted as a potential innovation to solve the university's course delivery issues. This approach was seen as advantageous because it addressed both the geographical barriers to higher education and

some of the issues of fully online learning, such as questions about the quality. Blended learning achieves this through the purposeful combination of F2F and online instruction, which offers students new opportunities for improved learning, compared to either mode of learning alone (Dziuban et al., 2018; Hrastinski, 2019).

4.4. Method for Data Collection and Analysis

For data collection and analysis, a convergent mixed method was used. In convergent mixed method, quantitative and qualitative data are collected in parallel, analysed separately, and then merged (Fetters et al., 2013; Pluye & Hong, 2014). In this method, quantitative and qualitative methods are complementary to each other during data collection, analysis, or both (Pluye & Hong, 2014). For the current study, in line with the convergent mixed method, quantitative and qualitative data were collected in parallel, and the data analysis was carried out after the data collection was completed. For data analysis, the quantitative and qualitative data were analysed separately and were then merged.

4.4.1. Participants

Participants of this study were executives, teachers, and students at the Maldives National University (MNU) who were involved in the transitioning of institutional blended learning in 2019. For participant recruitment, a purposeful sampling method was used (Fetters et al., 2013). In the beginning of the second semester of 2019, all the blended learning courses, teacher lists and F2F class timetables were obtained from the university.

For the student recruitment, a course coordinator/lecturer was contacted to arrange a time for the researcher to meet the students in the class. For teachers, and executives, an email invitation was sent with the participant information sheet. Given the small size of the

university, and the limited blended teaching programs, in addition to the faculty heads, all the students and teachers involved with blended learning were invited.

A total of six executives including a member of the Chancellery, and five deans agreed to participate. In addition, 99 teachers and 407 students from nine faculties/schools/centres participated. Table 3 shows, how teachers and students were distributed amongst faculties.

Table 3

Number of Students and Teachers Participating in the Study

Faculty/School	BL Students		BL Teachers	
	Invited	Participated	Invited	Participated
Faculty of Education (FE)	187	70	15	15
MNU School of Nursing (MNU SN)	112	74	18	18
Faculty of Hospitality and Tourism Studies (FHTS)	188	111	16	10
Faculty of Arts (FA)	56	40	13	13
Faculty of Health Sciences (FHS)	18	18	4	3
Faculty of Law and Islamic Studies (FLIS)	80	39	31	21
MNU Business School (MNU BS)	57	45	9	6
Faculty of Engineering Science and Technology (FEST)	10	10	9	8
Centre for Edu. Tech. and Excellence (CETE)	-	-	5	5
Total	708	407	120	99

4.4.2. Quantitative Data Collection

4.4.2.1. Questionnaire Development

The purpose of the questionnaires was collecting information about student and teacher perceptions and attitudes about blended learning and supporting qualitative results. Two pre-validated questionnaires: Owston et al. (2013) for students, and Wanner and Palmer (2015) for teachers, were adapted (Appendix 1). From each of the questionnaires, however, some items were removed, and a few new items were added to fit the local context. For both the questionnaires, a five-point Likert scale was used to rate the items, except for the open-ended questions. The Likert scales were numbered between one and five; one for *strongly disagree* and five for *strongly agree*. The use of Likert scale data in the current study is justified by the Central Limit Theorem – CLT (Kwak & Kim, 2017). The general rule of using the CLT is based on the sample size being greater or equal to 30 (Chang et al., 2006). In the current study, the sample size was 407 and 99 for students and teachers, respectively which suggests that the distribution of the sample means will be approximately normally distributed whether the source population is normal or skewed. Many studies have used Likert scale data for analysis of variances (e.g., Norman, 2010; Schrum et al., 2020; Willits et al., 2016).

The student questionnaire included 19 scale items and one open-ended response (Appendix 2). In the questionnaire, students were asked about their overall perceptions, affordances of blended learning, seeking technical support, and challenges that they face in engaging in blended learning. Students were asked to consider statements such as, “Blended learning is a useful way for me to complete university learning”, “My blended learning course allows me to study in my own time”, and “I am satisfied with the quality of the internet service available for me for my blended learning” (Appendix 2).

The initial teacher questionnaire consisted of 23 scale items and one open-ended question where they were asked about overall perceptions, affordances of blended learning, self-efficacy, teacher workload, professional development, and support. Teachers were asked to consider statements such as, “I am happy to use digital technology in my teaching”, “I have sufficient knowledge and skills required to use blended learning”, and “Blended learning involves more preparations than a regular course” (Appendix 3).

4.4.2.2. Questionnaire Validation

For both the questionnaires, face validation (Pourmomeny et al., 2018) and pilot test studies (Teixeira Rodrigues et al., 2016) were administered. For face validation, three university students who had some online learning experiences were asked to read each of the questionnaire items and explain to the researcher how they understood the statements. Likewise, three university teachers were asked to do the same for the teacher questionnaire. Secondly, both the questionnaires were sent to two professionals in the field, qualified researchers who hold PhDs in education, for their feedback. Following each of these steps, several refinements were brought to the wording of the questions, and the questions themselves, in both the questionnaires.

Following the face validation, a pilot testing was administered for both the questionnaires. For pilot testing, the final draft of the student questionnaire was sent to 20 university students who were enrolled in various blended/online learning courses. Out of 20 students, 17 students responded to the questionnaire. For reliability testing of the questionnaire, Cronbach’s alpha coefficient was calculated using SPSS. The Cronbach’s alpha coefficient for the 19 items of the student questionnaire was 0.91 suggesting very high reliability. However, given the small number of students who participated in the pilot study, Cronbach’s alpha coefficient was recalculated with 407 participants after the collection of data. The recalculated Cronbach’s alpha coefficient for the same 19 items

was 0.86, again showing high reliability. An alpha value above 0.80 in a scale indicates good internal consistency of the items (Gliem & Gliem, 2003). No subscales were identified in the questionnaires, as the purpose of the instrument was to capture student and teacher overall perceptions and attitudes towards blended learning and to support the qualitative results. No factor analysis was conducted because, despite some group comparisons, the questionnaire was not analysed quantitatively to test or confirm a model. Previous studies that investigated student and teacher perceptions about blended learning have established instrument reliability by reporting the Cronbach's Alpha coefficient for the whole instrument (e.g., Al Hassan & Shukri, 2017; Al Zumor et al., 2013; Aldosemani et al., 2019).

For pilot testing of the teacher questionnaire, the draft questionnaire that included 23 items was emailed to 20 casual teaching staff of MNU who had some background in blended teaching. Out of 20 teachers, 14 responded to the questionnaire. Using these responses, and as for the student questionnaire, the Cronbach's alpha coefficient was calculated for reliability testing for the 23 items. For these items, the initial Cronbach's alpha was 0.70 which can be considered as low. Therefore, based on the inter-item correlation matrix, the four items that had less correlation were removed, which improved the overall reliability of the questionnaire (Item 3, BL is new for me; Item 14, BL involves more work compared to a regular course; Item 18, I need more time marking BL students' work compared to a F2F course, and Item 21, the available resources to me to use BL are limited). After removing the problematic items, the Cronbach's alpha for the teacher questionnaire became 0.85, showing high reliability. Therefore, these 19 items were included in the final teacher questionnaire along with one open-ended question. However, and likewise with the student questionnaire, given the small number of teachers who participated in the pilot testing, the Cronbach's alpha was recalculated after the data

collection with all the teachers (N=99) who participated in this study, and using the same 19 items. The recalculated Cronbach's alpha was the same as for the pilot study ($\alpha=0.85$), showing consistency and high reliability. The purpose of the teacher questionnaire was the same as for the students' questionnaire; therefore, no subscales were identified.

4.4.2.3. Procedure for Administering Questionnaires

The student questionnaire was administered in a pen and paper format during the F2F classes, between weeks 3 and 9 of the second semester of 2019. After consultation with the faculty heads, this was believed to be more practical for the students as well as the faculties to facilitate the data collection. Students were met in-person by the researcher during their F2F classes and were allowed to ask any questions/clarifications that they may have about the study. Following that, the student consent form and the questionnaire were circulated, and the researcher waited at the entrance of the class until students finished responding to the questionnaire. Approximately a half hour was spent in each class to complete the questionnaire. Once the students were done with responding, the signed consent forms and the student responses were collected by one of the students and were handed over to the researcher. No teacher was present in the class during the questionnaire time. This process was repeated across the faculties.

The teacher questionnaire was distributed online using Google Forms during the same period as the student questionnaire. The questionnaire link along with the participant information sheet was sent via email to all the 120 teachers who were involved in blended teaching at the university at the time of data collection. The teachers were given four weeks to respond to the questionnaire. Approximately half of the teachers responded to the questionnaire within two weeks, therefore, a reminder email was sent to all the teachers in the beginning of the third week, and a final reminder was sent in the beginning

of the fourth week. A total of 99 questionnaire responses were received in the end of the fourth week.

4.4.3. Qualitative Data Collection

For qualitative data collection, focus groups were conducted for students, and one-on-one interviews were conducted for teachers and executives. Semi-structured questions were used for the focus groups and interviews. Semi-structured interviews are extensively used in qualitative research and are one of the methods to collect detailed responses in relation to a phenomenon (McIntosh & Morse, 2015). Semi-structured interviews allow the researcher to analyse context-specific information as forms of narrative (Flick, 2009). In addition, several university documents that were related to blended learning were also collected. Documents are considered as important sources of qualitative data that often complement other data collection methods such as interviews and observations (Flick, 2009).

4.4.3.1. Procedure for Focus Groups

Focus groups are a common and useful method of collecting data for case studies as they typically provide rich and extensive data (Yin, 2012). Focus groups are helpful to explore peoples' experiences and can be employed to explore not only what they think, but how they think and why they think that way (Kitzinger, 1995), and allow groups members to build on each other's thinking (Marrelli, 2008). Therefore, this method would be best for students as group members' comments can stimulate rich information about student perceptions and experiences of blended learning.

Initially, 75 students volunteered to participate in the focus groups, with 36 ultimately taking part (Table 4).

Table 4*Students Participating in the Focus Groups*

Faculty	Number of focus groups	Number of students
Faculty of Education	3	9
Faculty of Hospitality and Tourism Studies	1	3
Faculty of Arts	1	4
MNU School of Nursing	1	5
MNU Business School	1	2
Faculty of Engineering Science and Technology	1	4
Faculty of Health Sciences	1	7
Faculty of Law and Islamic Studies	1	2
Total	10	36

For organising focus groups, students were contacted via email, using the email contacts they provided. However, as most of these students lived on the remote islands and given the fact that they could meet on campus only during the F2F class time, it was quite difficult to find a convenient time for everyone. Despite this, to ensure student participation of all the academic disciplines, at least one focus group was arranged from each faculty. All the focus groups were held on campus, during the 2nd block class time, between 31st August and 26th September 2019.

As Table 4 shows, more focus groups were held for the Faculty of Education (FE), because at the time of the data collection, FE had more blended learning courses compared to the rest of the university. For each focus group, students were selected from the same course to ensure convenience in relation to the class schedules, and to allow students to comfortably share their thoughts in a group of familiar peers. Students were asked several open-ended questions such as, “What were the reasons you chose a blended learning course?”, “When you face a technical issue, how do you solve it?”, and “Would you take another blended learning course in future? Why?” (Appendix 4). Each focus

group lasted for approximately 60 minutes and was audio recorded. Students' verbal consent to record the audio was sought before the audio recorder was switched on.

4.4.3.2. Procedure for Interviews

Individual interviews allow a researcher to ask key respondents about the facts of a matter as well as their opinions about the events that occur (Yin, 2009). For the current study, teachers and the executives were the key personnel involved in adoption and implementation of blended learning. Therefore, it was decided that conducting one-on-one interviews would help the researcher to dig deep about the key events that occurred in the implementation process and explore their opinions about the events that occurred throughout the process.

The identified teachers were invited via email to participate in the interviews. Initially, 28 teachers volunteered to participate, and provided the researcher with their contact information, with 24 ultimately taking part (Table 5). For the interviews, teachers were included from all the faculties that offered blended courses at the time of data collection, in addition to the Centre for Educational Technology and Excellence (CETE). Teachers of CETE were included because they heavily engaged in the implementation of blended learning by providing support to individual teachers and faculties. All the teachers who agreed to participate in the interviews were contacted over the phone to arrange a convenient time and venue for them for the interviews.

Table 5
Number of Teachers Participating in the Interviews

Faculty	Number of teachers
Faculty of Education	6
Faculty of Hospitality and Tourism Studies	2
Faculty of Arts	3
MNU School of Nursing	3
MNU Business School	2
Faculty of Engineering Science and Technology	2
Faculty of Health Sciences	1
Faculty of Law and Islamic Studies	3
Centre for Educational Technology and Excellence	2
Total	24

Like the students, more teachers were included from the Faculty of Education, because the faculty had more blended learning courses compared to the rest of the university. In the interviews, teachers were asked a series of semi-structured questions, such as “What are your general feelings about using the blended learning approach at university?”, “Were there any reasons for you to continue using blended learning?” and “What are the preparations involved in a typical blended learning course?” (Appendix 5).

For the executives, a total of eleven executives, including the vice chancellor and the deputy vice chancellor (academic affairs), and all the heads of the faculties that offered blended courses were invited. Of the eleven, five faculty heads and one member of the Chancellery agreed to participate in the study. To organise interview times/venues the same procedure as for the teachers was used. Executives were also asked several semi-structured questions such as, “What are your general feelings about using the blended approach at the university/faculty?”, “Why do you think some faculties/staff do not want to use blended learning?”, and “How do you encourage those who do not use blended learning to adopt the modality?” (Appendix 6).

Interviews for teachers and the executives were administered between 18th August and 24th September 2019. All the interviews occurred at the university, and in person. Each interview lasted approximately for 50-60 minutes, and each was audio recorded.

Participant verbal consent was sought before the audio recorder was switched on.

4.4.3.3. Document Collection

For document collection, most of the documents related to blended learning adoption and diffusion were publicly available on the university’s website. Therefore, those documents were retrieved from the Internet. However, some internal documents such as the guidelines for conducting face-to-face classes for blended courses, and the new mandate of the newly established Centre for Educational Technology and Excellence (CETE) were obtained from the university. The internal documents were requested from the university in writing and subsequently the researcher was provided with a PDF copy of the requested documents. Table 6 shows the collected documentation. Documents are considered to be an important type of data in qualitative research that helps to ensure the consistency of the findings and make the findings of the study robust (Flick, 2009; Yin, 2012).

Table 6

Collected Related Documentation

Name of the document
1. MNU Strategic Plan 2013-17
2. The Organisational Structure of CETE
3. Guidelines for conducting face-to-face classes for blended courses
4. The Mandate of CETE
5. Timetables of blended courses, Semester 2, 2019
6. CETE training schedule 2019
7. The instructional design process of blended teaching
8. Guidelines for utilising government funding for paying tuition fees for undergraduate study programs (Ministry of Higher Education)

4.5. Methods for Data Analysis

4.5.1. Procedure for the Questionnaires

The aim of the questionnaires was to collect information about student and teacher perceptions and attitudes about blended learning and to support qualitative results. SPSS was used for the questionnaire analyses. Firstly, both the student and teacher data sets were imported from Microsoft Excel to SPSS, and using the De Vaus (2002) approach, both the data sets were prepared for analysis. To identify any data entry error or possible abnormality in data that may affect the accuracy of the findings, it is important to prepare the data set by defining data values, and identifying impossible out-of-range variables, missing data, and outliers, and follow this by completing a reliability test (De Vaus, 2002; Nolan & Heinzen, 2011). These steps were completed before the data were analysed.

For each of the data sets, descriptive statistics including frequencies and percentages were calculated for all items. In addition, for each of the questionnaires, one-way ANOVA, that included post-hoc analysis, was administered to explore the differences in perceptions in and among demographic groups (i.e., academic disciplines, employed and unemployed, city and the islands, study levels, years of teacher experience, etc.). The group samples were unrelated (the subjects in the groups were not the same) therefore, a One-way ANOVA is appropriate to compare three or more groups (Corder & Foreman, 2014).

Where appropriate, the key findings of the questionnaires were used to support the findings of the qualitative analysis. In addition, the responses of the open-ended question that were included in both the questionnaires were exported to NVivo for qualitative data analysis and were analysed along with the interviews, using thematic analysis.

4.5.2. Procedure for Interviews and Focus Groups

The focus groups and interview recordings were transcribed verbatim and imported to NVivo for coding. A combined theoretical and thematic analysis was conducted to code the data and identify the main themes. Technology Acceptance Model (TAM), and Diffusion of Innovations Theory (DoI) were used as the combined theoretical framework. For theoretical coding, from TAM, *perceived usefulness* and *perceived ease of use* were identified as the key codes. From DoI, the stages of the innovation process: *agenda-setting*, *matching*, *redefining/restructuring*, *clarifying*, and *routinising* were used as a priori codes.

Vaismoradi et al. (2013) approach was used for thematic analysis. Firstly, to become familiar with the data, the transcribed interviews were read, and the initial ideas were noted down using notes and memo functions in NVivo. Secondly, to generate the initial codes, the interview transcripts were read carefully, and ideas related to the research questions were highlighted and coded using the *code* function in NVivo. Each piece of the data was read and coded twice to ensure that no key information was missed out in the coding process. Thirdly, the codes were collated into potential themes, and the themes were checked against the research questions. Finally, the emerging themes were refined and named (including the priori codes/themes identified from the theoretical frameworks) that resulted in the final themes reported in this study.

4.5.3. Procedure for Documents

The purpose of the documents was to triangulate the data, and to support the findings of the questionnaires and the interviews. Therefore, all the documents were analysed using a directed content analysis approach (Hsieh & Shannon, 2005). With the directed approach, analysis starts with the findings of the research or a theory, as a guidance for initial

coding (Hsieh & Shannon, 2005). In line with this approach, the predetermined themes were used as guides to capture the relevant content from the documents. For coding, all the documents were carefully read, and relevant text excerpts were identified and coded based on the interview themes. Finally, the identified codes were linked to their respective themes to use for triangulation. When using a structured or directed approach for content analysis, only the relevant aspects from the documents should be chosen (Elo & Kyngäs, 2008).

4.6. Trustworthiness of the Study

Trustworthiness of qualitative studies can be achieved by debriefing, data triangulation, and conducting member checks (Flick, 2009; Shenton, 2004). In relation to debriefing, regular meetings were conducted throughout the research process with two research experts from the University Wollongong. In these sessions, the methods and approaches for data collection and analysis were thoroughly discussed, and proper courses of action were taken to maintain the credibility of data collection, analysis, and reporting. Second, data triangulation was achieved through the use of multiple methods and data sources (Heale & Forbes, 2013). In relation to methods of data collection, quantitative and qualitative data were collected and analysed. In addition, multiple sources of data (i.e., students, teachers, executives, and documentation) were gathered, analysed, and converged to answer the research questions. The final themes were verified with more than once source of data. Finally, for member checks, a summary of the findings was sent to three executives, and at least one teacher from each faculty who participated in the study. Generally, members were in agreement with the key findings of the study, and no changes were proposed by any members who participated in member checking.

4.7. Role of the Researcher

The researcher was previously employed by MNU before starting his PhD studies. The data was collected approximately two years after he left the university. Although a few of the teacher participants were former colleagues of the researcher, there was no sub-ordinary or formal relationship with the researcher at the time of data collection. To minimise the potential for desirability bias, confidentiality was explicitly assured (Larson, 2019), to the teachers both verbally and in writing before the interviews, even though the data collected did not include any personal or sensitive information. None of the student cohort was ever taught by the researcher.

4.8. Ethical Considerations

Addressing issues related to ethics is essential in any kind of research, as ethical principles protect participants from harm and maintain privacy and confidentiality (Orb et al., 2001). For the current study, prior to the data collection, formal ethics approvals were sought from the Human Research Ethics Committee of the University of Wollongong (number 2019/129) (Appendix 7), and the Maldives National University (Appendix 8). The key ethical considerations included gaining informed consent from the participants, minimising burdens for the research participants and ensuring participant confidentiality.

4.8.1. Informed Consent

Informed consent needs to be obtained for every research study (Houghton et al., 2010). For the current study, all the participants were asked for their voluntarily participation and informed consent was ensured. For students and executives, paper consent forms were signed. Student consent forms were signed at the research meeting held for them during the F2F class time at the university (Appendix 9). Signed consent of the executives was acquired before starting their interviews (Appendix 10). For teachers, the consent form

was created as part of the online questionnaire and their consent was sought electronically (Appendix 11). Each of these participant groups were provided with the participant information sheets (Appendix 12, 13, and 14) and the purpose of the research and the expectations of participating in the study were clearly explained to them. Those who signed paper consent forms were also allowed to ask the researcher about any questions that they had about the study before giving consent.

4.8.2. Minimising Time Burdens

Minimising burdens for the research participants was an important aspect considered throughout the data collection process. It was particularly important for the students, as most of them were travelling to Malé from an island for their F2F classes. Therefore, to minimise the time spent by students to complete the questionnaires, a master schedule for meeting the students was created about 10 days prior to the start of the data collection with the assistance of the faculties. Subsequently, respective teachers were contacted to communicate the schedule to them. The student questionnaires were completed at the university, during the first F2F class of the semester. This was believed to be the most convenient arrangement for students.

To save time for students, the student focus groups were conducted 3-4 weeks after the questionnaire, during the second F2F class. For the focus groups, the volunteering students were contacted to arrange a convenient time before they travelled to Malé for the second F2F class. As for the student questionnaire, focus groups were conducted at the university, during the F2F classes as it was the only way these students could meet the researcher. For the interviews, teachers, and the executives were contacted via email and a convenient time was arranged for each of them. Interviews for teachers and executives were administered at the university, during office hours. Participants were only required to respond to the questions that they were comfortable with, even though no sensitive

information was collected. Except for their time, no other commitments from the participants were required.

4.8.3. Anonymity and Confidentiality

Maintaining participant anonymity and confidentiality is one of the ethical principles of qualitative research (Houghton et al., 2010; Orb et al., 2001). For the current study, to maintain anonymity and confidentiality, all the participants were de-identified throughout the research process. For the questionnaires, individual participants were assigned a numeric from 1 to 407. For the interviews and the focus groups, each participant was de-identified using pseudonyms, and throughout the report, great care was taken to ensure that no interview excerpt or description of a scenario could identify a participant.

4.9. Summary

This chapter described the methodological approach of the study. The chapter began with highlighting the research aims along with the research questions, followed by the methodological approach. A case study method was adopted because this study requires in-depth analysis of a wide range of complex events that occurred in the process of diffusion of blended learning. A brief description of the “case” was presented, followed by the outlining of the research participants, data collection and analysis tools and procedures. In each of these sections, a justification of the decisions that were taken in relation to each of these aspects was provided. The chapter concludes with a brief description of the measures that were taken to maintain the trustworthiness of the study along with the ethical considerations.

The next chapter presents the qualitative results of the study which includes the questionnaire results of both the students and teachers.

Chapter 5: Quantitative Results

This chapter presents quantitative results, relating to perceptions and beliefs of blended learning. The chapter is comprised of two subsections. The first subsection (5.1) reports the key findings of the student questionnaire, and the second subsection (5.2) presents the results of the teacher questionnaire. Each of these sections begins with the participant profile followed by the results. The results predominantly include descriptive statistics along with some comparisons of means.

5.1. Student Questionnaire Results

5.1.1. Student Profile

A total of 407 students from eight academic disciplines participated. All the students were enrolled in blended learning courses in the second semester of 2019. While the proportion of students who completed the survey ranged from 37.4% to 100%, overall, 57.5% of the total students in blended courses took part in the study, suggesting a relatively good representation. For Baruch and Holtom (2008), a 35 to 40% response rate is adequate for organisational research. Table 7 shows the distribution of students amongst the faculties.

Table 7

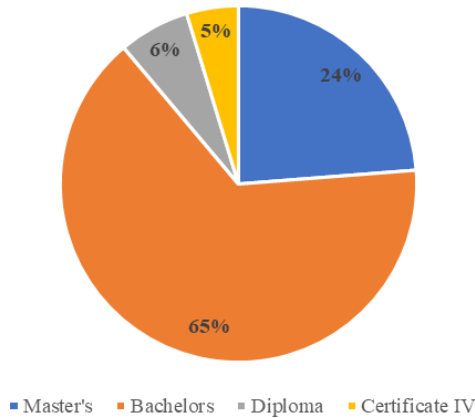
Number of Students and Their Distribution Amongst Academic Disciplines

Faculty/School	Enrolled BL students	Participated
Faculty of Education (FE)	187	70 (37.4%)
MNU School of Nursing (MNU SN)	112	74 (66.1%)
Faculty of Hospitality and Tourism Studies (FHTS)	188	111 (59%)
Faculty of Arts (FA)	56	40 (71.4%)
Faculty of Health Sciences (FHS)	18	18 (100%)
Faculty of Law and Islamic Studies (FLIS)	80	39 (48.8%)
MNU Business School (MNU BS)	57	45 (78.9%)
Faculty of Eng. Science and Technology (FEST)	10	10 (100%)
Total	708	407 (57.5%)

Students were enrolled in several blended learning courses, in various levels, from Certificate IV to master's degree. Figure 3 shows students' levels of studies.

Figure 3

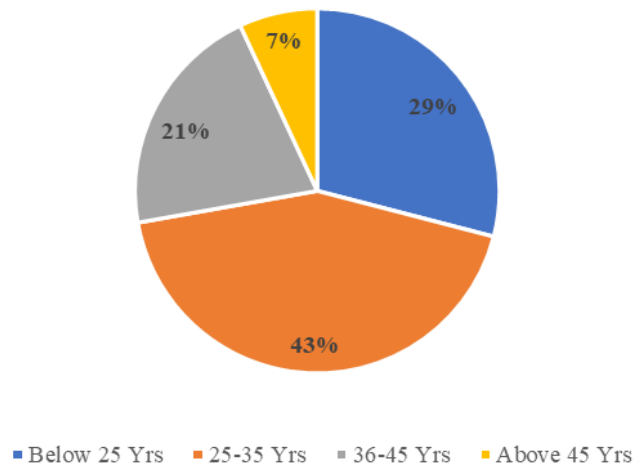
Students' Course Levels



Of the 407 students, 67.3% ($n = 266$) were female. At the time of data collection, most of the students lived in one of the islands (69.2%, $n = 277$), geographically separated from the capital city, Malé. Most of the students were mature-aged students (Figure 4) who had responsibilities such as employment and family along with their study commitments.

Figure 4

Students' Age Ranges



Of the 407 students, 84.1% ($n = 328$) were employed full-time, 4.1% ($n = 16$) were part-time employed, and 11.8% ($n = 46$) were not working.

5.1.2. Findings of the Student Questionnaire

This section presents the key findings of the student questionnaire. The results are related to students': (a) overall perceptions of using blended learning, (b) perceived affordances of blended learning, and (c) challenges that they encountered in engaging with blended learning, helping to answer the RQ One (What are the differences in perceptions of blended learning across the university?).

5.1.2.1. Overall Perceptions

As digital technologies are central to blended learning, students were first asked about their attitudes to using digital technologies. For the statement "I am happy to use digital technology in my learning", 52.7% ($n = 214$), and 40.4% ($n = 164$) responded with "strongly agree" and "agree", respectively. Only 3.4% ($n = 14$) responded that they are not happy while another 3.4% ($n = 14$) responded with "undecided". Results, therefore, indicated that overall positive perceptions of students of the use of general technology in learning.

When students were asked specifically about blended learning, similar positive results were found. These questions were predominantly based on the TAM, specifically *perceived usefulness*, and *perceived ease of use* of blended learning. In terms of the usefulness, a total of 74.9% ($n = 303$) believed that blended learning was useful for them to complete their university studies, while 11.6% ($n = 47$) did not agree with this. For the ease of use, of the 407 students, 63.6% ($n = 257$) felt that the flexibility provided by blended learning made learning easier for them, as compared to regular F2F learning. About one-fifth of the students (19.5%) believed blended learning was not easier for

them. Overall, results suggested that blended learning was perceived as useful and easy to use for students.

Following the questions related to the perceived usefulness, and perceived ease of use, students were also asked if they would take another blended learning course in the future. For the statement, “In the future, I would take another blended learning course instead of a F2F course”, a majority of students (58.6%) responded with “strongly agree”, and “agree”. Of the remaining, a little more than a quarter of the students (25.6%) responded to the statement with “undecided” while only 15.8% ($n = 64$) felt they would prefer regular F2F learning over blended learning. Despite some mixed views, results suggested that students were generally positive about the use of digital technology and blended learning.

5.1.2.2. Perceived Affordances of Blended Learning

Blended learning is a method of teaching with multiple affordances for students, including increased access to learning, increased flexibility, and enhanced learner engagement. Hence, students were asked about how they perceived these affordances. In relation to increased access, results showed that of the 407 students, 81.6% ($n = 328$) felt that blended learning allowed them to pursue university education while they lived on remote islands of the nation. In addition, 68.3% ($n=286$) felt that if they did not have blended learning, it would have been very difficult for them to participate in university learning. These results indicate that students believed that blended learning provides them with avenues for studying while being isolated on remote islands, which suggests increasing access to learning.

Flexibility was also perceived as a key affordance of blended learning. For the statement, “My blended learning course allows me to study in my own time”, 81.8% ($n = 333$) of

students agreed, while a small number of students (9.8%) disagreed. In addition, a similar pattern was found for the statement, “I mostly study in my spare time after my employment and/or family commitments” where 85.5% ($n = 344$) agreed, while 7.2% of students disagreed. For both the statements, the remaining students (8.4%, and 14%, respectively) responded with “undecided”. These results suggest that increased flexibility was also valued by students and was perceived as an affordance of blended learning.

Students were also asked about the learner engagement of blended learning, and one of the statements was about “feelings of isolation” during the semester while they were located at remote islands. Results showed that more than two-third of the students (67%) believed that they did not feel isolated, while 13.8% ($n = 55$) responded that they did. However, for the statement that directly asked about learner engagement, interestingly, students had mixed views. In this statement, “In my blended learning course, I get more engaged with learning compared to a F2F course”, just over one-third (33.8%) of the students felt that they were more engaged in their blended courses in comparison with regular F2F teaching. On the other hand, 41.4% ($n = 168$) responded that, compared to a F2F course, they did not engage more in their blended courses, while 14.9% ($n = 101$) responded as ‘undecided’.

Overall, results showed that blended learning was perceived to be providing students with increased access to learning and increased flexibility. Students also reported not feeling the sense of isolation during the semester while they carried on learning remotely, despite having mixed views about the level of learner engagement in blended courses.

5.1.2.3. Challenges for Students

In technology enhanced learning such as blended learning, students often encounter several challenges such as internet issues and challenges related to technical support.

Students were therefore asked about some of the common challenges that they encountered in engaging with blended learning, and issues related to the internet was one of them. For the statement, “I am satisfied with the quality of the internet service available for me for my blended learning”, 46.7% ($n = 190$) responded that they were satisfied, and 39.8% ($n = 162$) responded as unsatisfied, while the remaining 13.5% ($n = 55$) responded with “undecided”. The results suggest that students had mixed views and were generally unhappy about the quality of the internet that was available for them to use for learning.

Students were then asked about the technical support that they received, as the use of digital technology is central to blended learning and given the fact that most of these students lived at remote locations. For the statement, “It is easy for me to get Moodle-related technical support when I need it”, only 37.6% ($n = 153$) felt it was easy, and 35.6% ($n = 145$) believed it was not easy, whereas the remaining 26.8% ($n = 109$) responded with “undecided”. Similar results were found for another statement related to technical support, namely “If I log a Moodle-related issue, the university’s technical support team help me in a timely manner.” For this statement, 41% ($n = 167$) of students believed that technical support was provided in a timely manner. Of the remaining, 33.6% ($n = 137$) felt that they did not receive timely support, and more than a quarter of the students (25.3%) responded with “undecided”. This suggested that generally, students had relatively low positive perceptions about the technical support that they received from the university.

In the case of MNU, most of the students (69.2%) live at remote locations of the country, and are expected to travel to a physical campus, 3-4 times every semester for their mandatory F2F classes, in addition to the final exams. For most of the students, this involves significant financial implications. Therefore, students were asked if travelling to

a campus is expensive for them. A majority of the students (53%) felt that travelling is too expensive, while 29.3% felt that it is not expensive. The remaining 17.8% of students responded with “undecided”. Overall, issues related to the internet, technical support, and the travel cost were identified as challenges for students when undertaking blended learning.

5.1.3. Differences in Perceptions Amongst Students

To answer the RQ1 (What are the differences in perceptions of blended learning across the university?), perceptions were compared between various demographic groups based on categories such as faculty, gender, area of living, level of study and employment status. The differences between the groups were determined by the results of one-way ANOVA. For multiple group comparisons, a post-hoc analysis was administered.

Firstly, students’ overall perceptions were compared between the faculties. Results showed that compared to the rest of the university, students at the Faculty of Engineering Science and Technology (FEST) had overall higher positive perceptions about blended learning followed by the Faculty of Law and Islamic Studies (FLIS). FEST had the highest mean for 12 items out of 19 while FLIS had the highest mean for 5 items. On the other hand, overall, students from the Faculty of Hospitality and Tourism Studies (FHTS) had the lowest positive perceptions about blended learning followed by the MNU Business School (BS). Of the 19, for 14 items, students of FHTS had the lowest mean while BS had the lowest mean for four items.

Secondly, perceived affordances of blended learning (increased access to learning, increased flexibility, and enhanced learner engagement) were compared between the faculties. In relation to the increased access to learning, students were asked, “If I did not have blended learning, it would be very difficult for me to participate in university

learning”. The ANOVA analysis showed that there was a significant difference ($\alpha=.0001$) between the faculties. Post-hoc analysis was therefore administered to compare multiple groups to explore where the differences were. Results showed that there was difference at a significant level between FHTS and the remaining faculties except for BS, as well as between BS and the rest of the university except for FHS and FHTS (Table 8). It also showed that FHTS and BS had the lowest mean with 3.14 ($SD = 1.32$), and 3.16 ($SD = 1.16$), respectively.

Table 8

Multiple Group Comparisons: Increased Access

(If I did not have BL, it would be very difficult for me to participate in university learning)

Faculty		Mean	Mean Difference	Std. Deviation	Sig.
FHTS ($M = 3.14$)	FEST	4.67	-1.52905*	.50	0.003
	FA	4.18	-1.03739*	1.22	0.000
	FLIS	4.35	-1.21239*	.95	0.000
	MNU BS	3.16	-.02148	1.16	1.000
	FHS	4.11	-.96765*	1.10	0.015
	FE	4.31	-1.17667*	.94	0.000
	MNU SN	4.34	-1.20485*	1.08	0.000
MNU BS ($M = 3.16$)	FEST	4.67	-1.50758*	.50	0.008
	FA	4.18	-1.01591*	1.22	0.001
	FLIS	4.35	-1.19091*	.95	0.000
	FHTS	3.14	.02148	1.32	1.000
	FHS	4.11	-.94617	1.10	0.051
	FE	4.31	-1.15519*	.94	0.000
	MNU SN	4.34	-1.18337*	1.08	0.000

*The mean difference is significant at the 0.05 level.

In relation to increased flexibility, students were asked to consider three statements. Of the three, one-way ANOVA analysis showed that there was no significant difference between the faculties for two statements, “My BL course allows me to study at my own speed” ($\alpha = .725$), and “I mostly study in my spare time after my employment and/or family commitments” ($\alpha = .104$). However, the third item, “My blended learning course

allows me to study in my own time” had some significant difference between the faculties ($\alpha = .0001$). Therefore, a post-hoc test was administered for this item to identify where the differences were. Results showed that the differences at significant level were between FHTS and four other faculties, FA, FLIS, FE, and MNU SN (Table 9).

Table 9
Multiple Group Comparisons: Increased Flexibility
(My BL course allows me to study in my own time.)

Faculty	Mean	Mean Difference	Std. Deviation	Sig.	
FHTS	FEST	4.40	-.76697	.52	.207
(M = 3.63)	FA	4.25	-.61697*	.95	.010
	FLIS	4.33	-.69197*	.80	.002
	MNU BS	3.80	-.16243	.98	.978
	FHS	4.00	-.36697	.75	.764
	FE	4.39	-.76134*	.73	.000
	MNU SN	4.39	-.75886*	.81	.000

*The mean difference is significant at the 0.05 level.

Overall, results indicated that there was a small but significant difference in perceptions amongst the faculties in relation to the flexibility of blended learning, and generally, FHTS and the BS had lower perceptions of flexibility as compared to the rest of the university.

For the learner engagement, students were asked to consider two statements “In my blended learning course, I get more engaged with learning compared to a regular F2F course” ($\alpha = .677$), and “In blended learning, I don’t feel a sense of isolation during the semester even though I don’t see my lecturers and classmates daily/weekly” ($\alpha = .312$). The one-way ANOVA analysis showed that there were no significant differences in perceptions between the faculties for any of these statements.

In relation to other demographic groups, gender was used as a variable, as gender can affect learner perceptions and experiences. One-way ANOVA was administered for all

the 19 items of the questionnaire, and the results showed, no significant difference between the two groups except for the item, “Travelling for F2F classes is too expensive for me” ($\alpha = .008$). Generally, travelling was regarded as too expensive more often by male students ($M = 3.70, SD = 1.35$) as compared to the females ($M = 3.32, SD = 1.30$).

Student perceptions were compared between those who live in Malé city and the islands. One-way ANOVA was administered for all the 19 items of the questionnaire. Of the items related to the TAM (perceived usefulness, and ease of use), only two items were found to be significantly different between the two groups, and both the items were related to the increased access to learning (the usefulness). For the item, “My blended learning course allows me to study while I live far from the university campus”, those who lived in the remote islands valued blended learning more ($M = 4.24, SD = 0.93$), compared to those who live in Malé ($M = 3.82, SD = 0.99$) and the difference was significant ($\alpha = .000$). The second item ($\alpha = .001$), “If I did not have the blended learning option, it would be very difficult for me to participate in university learning” showed similar results, and again, those who lived in the remote islands valued blended learning more ($M = 4.01, SD = 1.22$) compared to those who lived the city ($M = 3.57, SD = 1.30$).

It was, therefore, not surprising that when students were asked, “In the future, I would take another blended learning course instead of a face-to-face one”, those who lived in the islands were more willing to take another blended course ($M = 3.77, SD = 1.13$), compared to those who lived in Malé ($M = 3.33, SD = 1.29$). In relation to the challenges students encountered in blended learning, only one item was found to be significantly different ($\alpha = .0001$) between the islanders and the city, which was about the travel expenses. For the islanders, travel expenses were far higher ($M = 3.77, SD = 1.27$) compared to those who live in the city ($M = 2.73, SD = 1.18$). Overall, increased access to

learning was more valued by the islanders despite their perceptions that travel expenses were much higher for them compared to expenses for the city dwellers.

A large majority (88.2%) of the students were employed (either fulltime or part-time). Therefore, perceptions of these two groups were also compared in relation to perceived affordances (increased access, increased flexibility, and enhanced learner engagement), and intentions for future use. In relation to increased access, students were asked about two statements: “My blended learning course allows me to study while I live far from the university campus”, and “If I did not have the blended learning option, it would be very difficult for me to participate in university learning”. Of the two, there was no significant difference between employed and not working students for the first statement ($\alpha = .302$), while the difference for the second statement was significant ($\alpha = .0001$). For the second statement, part-time and fulltime employed students had relatively similar means ($M = 4.06$, $SD = 1.18$, $M = 3.99$, $SD = 1.21$, respectively), that were higher than the means for those who were not working ($M = 3.00$, $SD = 1.21$), suggesting that increased access was more valued by those who were employed.

Perceived increased flexibility was measured through three items, and interestingly, there was no significant difference between employed and not working students for any of the items ($\alpha = .560$, $\alpha = .725$, and $\alpha = .104$). Similar results were found for the two items that asked about enhanced learner engagement. The one-way ANOVA analysis showed that neither of the items about the learner engagement had a significant difference between the employed and not working students ($\alpha = .677$, and $\alpha = .312$).

Employed and not working students were compared in relation to their intentions to take a future blended learning course. For the statement, “In the future, I would take another blended learning course instead of a face-to-face one”, the results showed that there was

no significant difference between the employed students and those who were working ($\alpha = .108$). In sum, despite “perceived increased access” being an affordance that was more valued by the employed students, generally, employed and not working students had relatively similar perceptions about the perceived affordances of blended learning, and intentions to take a future blended course.

Student perceptions were also compared based on their level of studies: master’s, bachelor’s, and diploma and lower level. The results suggested that students in diploma and lower-level courses had high means for questions related to ease of use ($M = 4.04$, $SD = 0.90$, $\alpha = .011$), usefulness ($M = 4.26$, $SD = 0.83$, $\alpha = .022$) and intention of future use ($M = 4.04$, $SD = 1.06$, $\alpha = .035$) compared to bachelor’s students. However, there was no significant difference between bachelors and masters’ students in relation to ease of use ($\alpha = .764$), usefulness ($\alpha = .376$), and intention of future use ($\alpha = .941$); indicating that the overall perceptions of blended learning among bachelor’s and master’s students were quite similar, despite diploma and lower-level students holding more positive overall perceptions about blended learning.

5.1.4. Summary of the Student Questionnaire Findings

Results of the student questionnaire indicated that overall, students had positive perceptions about the use of digital technology and blended learning. Students perceived blended learning as a method that provides them with increased access to learning and flexibility even though they had mixed perceptions about the learner engagement of blended courses.

Results suggested that students encounter multiple challenges in engaging with blended learning, including issues related to internet access, technical support, and travel cost. Despite the challenges, results indicated that most of the students would take another

blended course in the future, suggesting that for students, the affordances of blended learning outweigh the challenges that they encounter in engaging with blended learning. Comparisons of student perceptions were made between various demographic groups in relation to the affordances of blended learning and barriers that they encounter. The results of one-way ANOVA analysis showed that despite students being generally positive about blended learning, students at the Faculty of Hospitality and Tourism Studies (FHTS) were most negative towards blended learning followed by the MNU Business School (BS), compared to the rest of the university. This suggests that a “one-size-fits-all” approach for the implementation of blended learning may not be suitable, and the academic disciplines may need to be taken into considerations by the university in the process of diffusion. Results also indicated that those who live in the islands were more receptive and willing to take another blended course in the future, as they felt it would be very difficult for them to pursue higher studies without blended learning. The other demographic groups such as employed/not working, and the various course levels, generally had very similar perceptions to each other about blended learning.

5.2 Teacher Questionnaire Results

5.2.1. Teacher Profile

Teacher participants were university teachers involved in blended teaching at the Maldives National University in the second semester of 2019. Teachers were distributed amongst nine Units, and of the 120 teachers who were involved in blended teaching, 99 participated (82.5%), suggesting a very good representation (Table 10). For Baruch and Holtom (2008), a 35 to 40% response rate is adequate for organisational research.

Table 10*Teacher Participants and Their Faculties*

Faculty	Teachers invited	Teachers participated
Faculty of Education (FE)	15	15 (100%)
MNU School of Nursing (MNU SN)	18	18 (100%)
Faculty of Hospitality and Tourism Studies (FHTS)	16	10 (62.5%)
Faculty of Arts (FA)	13	13 (100%)
Faculty of Health Sciences (FHS)	4	3 (75%)
Faculty of Law and Islamic Studies (FLIS)	31	21 (67.7%)
MNU Business School (MNU BS)	9	6 (66.7%)
Faculty of Engineering Science and Technology (FEST)	9	8 (88.9%)
Centre for Educational Technology and Excellence (CETE)	5	5 (100%)
Total	120	99 (82.5%)

Of the 99 teachers, 58.9% ($n = 56$) were female, and 41.1% ($n = 39$) were male. At the time of data collection, most of the teachers (65%) had less than two years of blended teaching experience, while 16.5% ($n = 16$) teachers had three to five years, and 18.6% ($n = 18$) had over five years of blended teaching experience.

5.2.2. Findings of the Teacher Questionnaire

The sections below present teacher questionnaire results. Teacher overall perceptions were explored based on TAM, specifically, perceived usefulness, and perceived ease of use of blended learning. Perceptions were compared between the faculties and based on teacher experience. These results are related to the RQ1: (What are the differences in perceptions of blended learning across the university?).

5.2.2.1. Teacher Overall Perceptions

Blended learning involves integration of digital technology with F2F teaching; hence, as with the students, teachers were first asked to rate the statement, “I am happy to use digital technology in my teaching.” Most teachers (62.9%) responded with “strongly

agree” while 26.8% (n = 26) responded with “agree”; indicating that overwhelmingly (89.7%) teachers were happy to use digital technology in teaching. Teachers were then asked specifically about blended learning that was based on TAM. Teachers were asked to rate, “Blended learning is a useful approach for me to use in teaching”, and “Using blended learning in teaching is easy for me”. Results indicated that teachers felt blended learning was useful (70.8%) and easy to use (59.8%). These results were seemingly reflected in their overall views about blended learning. For the item, “I would use blended learning in my future teaching even if I have other available options”, again, most teachers (58.7%) said they would opt for blended learning. Overall, teachers were relatively positive about the use of general technology and blended learning.

5.2.2.2. Affordances of Blended Learning

Increased access to learning and enhanced learner engagement are two key affordances of blended learning. In relation to the increased access to learning, teachers were asked how they felt about the statement, “Blended learning is a good way of teaching for those who cannot come to campus every day”. Results indicated that a large majority (87.6%) believed that it is a good way of teaching, while a small number of teachers responded with “undecided” (9.3%) and “strongly disagree” (3.1%). In relation to the enhanced learner engagement, teachers were asked to rate, “Blended learning helps my students to learn more effectively”. Results indicated that teachers had mixed perceptions. While nearly half of the teachers (48.9%) felt that blended learning helps their students to learn more effectively, close to a third (32.3%) responded to the item with “undecided”, and the remaining 18.8% of teachers did not agree. These results suggest that the level of learner engagement might be variable in blended courses and can depend on how blended learning is used by teachers and students.

5.2.2.3. *Barriers for Blended Learning*

Teachers often encounter multiple barriers in relation to technology enhanced learning such as blended learning. Teachers were therefore, asked to rate a number of statements about the common barriers that they encounter in three main areas – teacher workload, professional development and technical support.

In relation to workload, teachers were asked to rate three statements, specifically related to teaching preparation, ongoing course coordination, and online facilitation. For the item, “Blended learning involves more preparations than a regular course”, a large majority of the teachers (78.3%) felt that blended learning involved more teaching preparation compared to regular teaching. 6.2% of teachers did not agree and the remaining 15.5% responded with “undecided”. Similar results were found for the other two statements related to the teacher workload. 83.4% ($n = 80$) believed that blended learning involved more ongoing course coordination than a regular course, while 71.2% of teachers felt that they spent more time providing learning support to blended learning students compared to their regular F2F students. Overall, teachers felt that the blended teaching workload was higher compared to the workload for their regular F2F teaching.

Concerning professional development (PD), teachers were asked two statements, one of which was “PD opportunities are available for me to develop my skills of using blended learning”. For this statement, of the 99 teachers, only 42.2% teachers agreed, while 28.8% disagreed and another 28.9% responded with “undecided”. Teachers were then asked if the PD opportunities that were offered to them fit their needs. The results were quite similar to the previous statement and teachers had mixed views. Only 38.1% of teachers felt that the available PD opportunities fit their needs, and 32.9% disagreed, while the remaining 28.9% responded with “undecided”. Overall, teachers believed that the available PD opportunities to them in relation to blended teaching were not adequate.

For the third area, technical support, teachers were asked to rate two statements. For the statement, “It is easy for me to get support for blended learning from the respective Units/Sections”, a little over one-fifth of teachers (20.7%) felt it was easy to get support. Of the remaining, 41.3% of teachers believed it was difficult to get support, and 38.1% responded with “undecided”. In addition, teachers were asked if they thought their students get timely support from the university when they encounter technical issues. Again, most of the teachers (54.9%) felt they did not think their students received timely technical support from the university. Only 7.6% teachers felt that their students received timely support while 37.6% of teachers responded with “undecided”. Overall, results indicated that lack of technical support was a barrier for teacher use of blended learning.

5.2.3. Differences in Perceptions Amongst Teachers

The section below presents differences in teacher perceptions about blended learning. The results are related to the RQ1: (What are the differences in perceptions of blended learning across the university?). Differences in teacher perceptions were compared in relation to teacher overall perceptions, affordances of blended learning and the barriers for blended teaching. Like the student questionnaire, a one-way ANOVA was administered for all the 19 items of the questionnaire. For multiple group comparisons, a post-hoc analysis was conducted. Perceptions were compared using demographic variables – faculties and blended teaching experience.

In relation to the teacher overall perceptions, four items were asked (items 1, 6, 7, and 10). Of the four, items one and ten showed no significant difference between the faculties. Item one was about the use of general technology in teaching ($\alpha = .333$) and Item ten was about the intentions for future use of blended teaching ($\alpha = .108$). Items six and seven were about the TAM, specifically perceived ease of use, and perceived usefulness,

respectively. For the ease of use, teachers were asked to rate “Using blended learning in teaching is easy for me” and the results showed a significant difference between the faculties ($\alpha = .006$). However, the post-hoc results showed that perceptions between the faculties were relatively alike and the difference at a significant level was between FLIS and the CETE only (Table 11).

Table 11

*Multiple Group Comparisons for Teachers: Ease of Use
(Using blended learning in teaching is easy for me)*

Faculty		Mean	Mean Difference	Std. Deviation	Sig.
(M = 2.86)	FHS	4.67	-1.80952	.68112	.179
	FE	3.53	-.67619	.37306	.674
	FA	3.91	-1.05195	.41073	.218
	FEST	4.13	-1.26786	.45849	.141
	SN	3.39	-.53175	.35447	.853
	CETE	4.80	-1.94286*	.54914	.018
	MNU BS	4.17	-1.30952	.51084	.217
	FHTS	3.50	-.64286	.42399	.845

**The mean difference is significant at the 0.05 level.*

As shown in Table 11, FLIS tended to have lower positive perceptions ($M = 2.86$, $SD = 1.28$) in relation to ease of use of blended learning, compared to the teachers of CETE ($M = 4.80$, $SD = 0.45$). The results for the rest of the university were quite similar, with moderately high perceptions about the ease of use.

In relation to the usefulness of blended learning (Item 7), a one-way ANOVA analysis showed a very small difference between the faculties ($\alpha = .048$). A post-hoc analysis was therefore conducted to confirm whether this was the case. Results showed no significant differences in perceptions about the usefulness of blended learning (Table 12).

Table 12*Multiple Group Comparisons for Teachers: Usefulness**(BL is a useful approach for me to use in teaching)*

Faculty		Mean	Mean Difference	Std. Deviation	Sig.
(M = 3.48)	FLIS	5.00	-1.52381	.64592	.320
	FHS	3.47	.00952	.35378	1.000
	FA	4.18	-.70563	.38950	.674
	FEST	4.29	-.80952	.45673	.700
	SN	3.78	-.30159	.33615	.993
	CETE	4.80	-1.32381	.52076	.227
	MNU BS	4.17	-.69048	.48444	.885
	FHTS	3.50	-.02381	.40208	1.000

**The mean difference is significant at the 0.05 level.*

Overall, results showed that teacher general perceptions about blended learning were relatively similar across the university, despite the small but significant difference between the FLIS and CETE in relation to the ease of use of blended learning.

Teacher perceptions were then compared in relation to the usefulness of blended learning – another key aspect of TAM. In relation to the usefulness, teachers were asked to rate two items, one for increased access to learning (Blended learning is a good way of teaching for those who cannot come to campus every day), and one for the learner engagement (Blended learning helps my students to learn more effectively). One-way ANOVA results showed that teacher perceptions were quite similar across the university, and there was no significant difference for increased access to learning ($\alpha = .711$) and neither for learner engagement ($\alpha = .104$).

Teacher perceptions were compared between the faculties in relation to the challenges that they may encounter in blended teaching. First, three items were posited about teacher workload, and the one-way ANOVA analysis showed that there was no significant difference for two of the three items: “Blended learning involves more ongoing course

coordination than a regular course” ($\alpha = .267$) and “I spend more time providing learning support to blended learning students compared to a regular course” ($\alpha = .511$). However, the third item which was related to the teaching preparations noted a small difference ($\alpha = .039$). A post-hoc analysis was therefore administered to confirm the differences. The results showed that the differences between the faculties were very small, and were in fact, not significant (Table 13).

Table 13

*Multiple Group Comparisons for Teachers: Teaching Preparations
(Blended learning involves more preparations than a regular course)*

Faculty		Mean	Mean Difference	Std. Deviation	Sig.
(M = 4.20)	FHS	5.00	-.80952	.58475	.901
	FE	3.80	.39048	.32028	.950
	FA	4.18	.00866	.35262	1.000
	FEST	4.00	.19048	.39362	1.000
	SN	4.39	-.19841	.30431	.999
	CETE	5.00	-.80952	.47144	.734
	MNU BS	3.33	.85714	.43856	.579
	FHTS	4.70	-.50952	.36400	.895

**The mean difference is significant at the 0.05 level.*

Insufficient professional development (PD) was an issue for teachers, and they were asked two statements about PD. For item 1, “Professional development opportunities are available for me to develop my skills of using blended learning”, one-way ANOVA results showed a small but significant difference between the faculties ($\alpha = .017$). Again, the post-hoc analysis was administered for multiple group comparisons, and the results revealed that differences between the faculties were in fact too small to be significant (Table 14).

Table 14*Multiple Group Comparisons for Teachers: Availability of PD**(PD opportunities are available for me to develop my skills of using blended learning)*

Faculty		Mean	Mean Difference	Std. Deviation	Sig.
FHS (M= 4.67)	FLIS	3.67	1.00000	.65090	.835
	FE	2.67	2.00000	.66697	.081
	FA	3.27	1.39394	.68689	.528
	FEST	3.13	1.54167	.71395	.441
	SN	2.94	1.72222	.65765	.194
	CETE	3.80	.86667	.77016	.969
	MNU BS	3.00	1.66667	.74570	.393
	FHTS	2.60	2.06667	.69421	.085

*The mean difference is significant at the 0.05 level.

Another statement that related to PD was “The professional development opportunities that I am offered fit my needs”. The ANOVA results showed that there was significant difference between the faculties ($\alpha = .001$) and the post-hoc analysis revealed that the differences at a significant level were between FHTS, and FLIS, FHS, and CETE, even though the differences were relatively small (Table 15).

Table 15*Multiple Group Comparisons for Teachers: Suitability of PD**(The professional development opportunities that I am offered fit my needs)*

Faculty		Mean	Mean Difference	Std. Deviation	Sig.
FHTS (M= 2.30)	FE	2.67	-.36667	.41706	.994
	FLIS	3.62	-1.31905*	.39250	.030
	FHS	4.67	-2.36667*	.67248	.019
	FA	3.00	-.70000	.44636	.819
	FEST	2.88	-.57500	.48458	.957
	SN	2.78	-.47778	.40292	.957
	CETE	4.20	-1.90000*	.55954	.027
	MNU BS	3.00	-.70000	.52754	.921

*The mean difference is significant at the 0.05 level.

The final aspect in relation to the challenges was technical support. Teachers were asked if it is easy to get support for blended learning from the respective Units/Sections ($\alpha = .052$) and if their students received timely support from the university when they had technical issues ($\alpha = .269$). These results suggest that teacher perceptions were very similar and there was no significant difference in perception between the faculties in terms of technical support.

Finally, teacher perceptions were compared based on their blended teaching experience. As blended learning was quite new to most of the teachers, teachers were grouped into four relatively close groups – less than one year, 1-2 years, 3-5 years, and over five years. One-way ANOVA was administered to determine if there were significant differences in teacher perceptions between these groups. Results revealed that out of 19 items on the questionnaire, only four items had differences at a significant level between the groups (Table 16). These included two items related to teacher self-efficacy (items a and b), and two items related to TAM, specifically, perceived ease of use (item c), and perceived usefulness (item d).

Table 16

Differences in Teacher Perceptions Based on Blended Teaching Experience

Items comparisons	Group	Sum of Squares	df	Mean Square	F	Sig.
<i>(a) I can confidently use Moodle in my blended teaching.</i>	Between Groups	9.411	3	3.137	3.626	.016
	Within Groups	80.465	93	.865		
	Total	89.876	96			
<i>(b) I have sufficient knowledge and skills required to use BL.</i>	Between Groups	19.810	3	6.603	8.976	.000
	Within Groups	68.417	93	.736		
	Total	88.227	96			
<i>(c) Using BL in teaching is easy for me.</i>	Between Groups	19.148	3	6.383	5.101	.003
	Within Groups	116.357	93	1.251		
	Total	135.505	96			

Table 16 Continued.

<i>(d) BL is a useful approach for me to use in teaching.</i>	Between Groups	20.682	3	6.894	6.845	.000
	Within Groups	92.651	92	1.007		
	Total	113.333	95			

*The mean difference is significant at the 0.05 level.

The items in the Table 16 were compared between multiple groups, to confirm where the differences were. For the statement (a) that is related to teacher self-efficacy, (I can confidently use Moodle in my blended teaching), results showed that the perceptions of teachers across various groups were relatively similar, even though, a small significant difference ($\alpha = .026$) was found between the teachers with 1-2 years and 3-5 years of blended teaching experience (Table 17). Results suggested that teachers with 1-2 years of experience had low confidence in using Moodle ($M = 3.54$, $SD = 0.99$), compared to those who had 3-5 years of experience ($M = 4.31$, $SD = 0.79$).

Table 17

*Multiple Group Comparisons: Confidence in Using the Moodle
(I can confidently use Moodle in my blended teaching)*

Years of blended teaching exp.		Mean Difference	Std. Error	Sig.
Less than 1 year	1-2 years	.12500	.27515	.969
	3-5 years	-.64583	.33430	.222
	Over 5 years	-.44444	.32519	.523
1-2 years	Less than 1 year	-.12500	.27515	.969
	3-5 years	-.77083*	.26852	.026
	Over 5 years	-.56944	.25709	.127

*The mean difference is significant at the 0.05 level.

For the second statement that is related to teacher self-efficacy (I have sufficient knowledge and skills required to use BL), results showed that teacher perceptions about their level of blended teaching knowledge are relatively different between the groups (Table 18).

Table 18*Multiple Group Comparisons: Level of Teacher Knowledge/Skills**(I have sufficient knowledge and skills required to use BL)*

Years of blended teaching exp.		Mean Difference	Std. Error	Sig.
Less than 1 year	1-2 years	-.20833	.25371	.844
	3-5 years	-1.00000*	.30826	.009
	Over 5 years	-1.16667*	.29986	.001
1-2 years	Less than 1 year	.20833	.25371	.844
	3-5 years	-.79167*	.24760	.010
	Over 5 years	-.95833*	.23706	.001

*The mean difference is significant at the 0.05 level.

Results indicate that teachers with less than a year ($M = 3.00$, $SD = 1.07$), and 1-2 years of blended teaching experience ($M = 3.21$, $SD = 0.92$) had low perceptions about the level of knowledge and skills they had about blended teaching compared to those who had 3-5 years ($M = 4.00$, $SD = 0.73$) and over five years of blended teaching experience ($M = 4.17$, $SD = 0.51$). In sum, results suggest that teacher self-efficacy was low amongst those who had less blended teaching experience.

The items that are related to TAM were also compared between multiple groups, based on teacher experience. For the item related to ease of use (Using BL in teaching is easy for me), perceptions were different at a significant level between multiple groups (Table 18).

Table 19*Multiple Group Comparisons: Ease of Use in Terms of Teacher Experience**(Using BL in teaching is easy for me)*

Years of blended teaching exp.		Mean Difference	Std. Error	Sig.
Less than 1 year	1-2 years	-.46250	.33087	.504
	3-5 years	-1.31667*	.40200	.008
	Over 5 years	-1.12222*	.39105	.026
1-2 years	Less than 1 year	.46250	.33087	.504
	3-5 years	-.85417*	.32290	.046
	Over 5 years	-.65972	.30915	.150

*The mean difference is significant at the 0.05 level.

Results showed that teachers with less than a year ($M = 2.93, SD = 1.33$), or 1-2 years of experience ($M = 3.40, SD = 1.16$) had more negative views about the ease of blended teaching compared with those who had 3-5 years ($M = 4.25, SD = 0.68$) or over five years of blended teaching experience ($M = 4.06, SD = 1.10$).

The second item related to TAM (BL is a useful approach for me to use in teaching) showed results similar to that item regarding the ease of use. Results of multiple group comparisons of teacher perceptions about the *usefulness* of blended learning revealed a significant difference based on their blended teaching experience (Table 20).

Table 20

Multiple Group Comparisons: Usefulness in Terms of Teacher Experience (BL is a useful approach for me to use in teaching)

Years of blended teaching exp.		Mean Difference	Std. Error	Sig.
Less than 1 year	1-2 years	-.74468	.29760	.066
	3-5 years	-1.56250*	.36067	.000
	Over 5 years	-1.11111*	.35084	.011
1-2 years	Less than 1 year	.74468	.29760	.066
	3-5 years	-.81782*	.29046	.030
	Over 5 years	-.36643	.27817	.554

**The mean difference is significant at the 0.05 level.*

Results for the usefulness of blended learning were similar to the results for ease of use. Concerning, the usefulness, teachers with less than a year ($M = 3.00, SD = 1.36$), or 1-2 years of experience ($M = 3.73, SD = 1.01$) had more negative views compared with those who had 3-5 years ($M = 4.56, SD = 0.51$), or over five years of blended teaching experience ($M = 4.11, SD = 0.96$).

Overall, results suggest that, in comparison with teachers who had more blended teaching experience, those who were new to blended teaching were less positive about blended

learning, specifically, in relation to teacher self-efficacy, ease of use and usefulness of blended learning.

5.2.4. Summary of the Teacher Questionnaire Findings

Results of the teacher questionnaire revealed that overall, teachers were happy to use digital technology and blended teaching. In general, teachers felt that blended learning is useful and easy to use. Most of the teachers felt that they would choose the blended approach for future teaching even if they had other available options to use. However, results also suggested that teachers perceived blended learning as a method of teaching that involved more teacher work compared to regular F2F teaching. Teachers also felt that the professional development that was offered to them was inadequate. In addition, teachers were generally not happy about the technical support that was provided to them by the university in relation to the use of blended learning.

Teacher perceptions were compared between the teachers based on their faculties and blended teaching experience. Results suggest that teacher overall perceptions were generally similar across the university, despite the Faculty of Law and Islamic Studies (FLIS) having significantly low positive perceptions about the ease of use of blended learning compared to the Centre for Educational Technology and Excellence (CETE). There was no significant difference between the faculties in relation to the affordances of blended learning.

Teacher perceptions about the barriers for blended learning were also compared between the faculties. Results for the overall perceptions of blended learning were similar to the results for teacher opinions about the challenges that they encountered, and there was no significant difference between the faculties in relation to teacher workload and technical support. However, in terms of teacher professional development, teachers at the Faculty

of Health Sciences (FHS) were more positive while teachers at the Faculty of Hospitality and Tourism Studies (FHTS) were more negative compared to the rest of the university. For teaching experiences, results suggest that teachers with more blended teaching experience were more positive compared to the novice teachers. Overall, despite some significant differences, teacher perceptions of blended learning across the university were relatively positive and similar.

In the next chapter, the qualitative results are presented.

Chapter 6: Qualitative Results

This chapter presents analysis of the qualitative results. The results are based on thematic and theoretical analysis. The theoretical analysis was based on Technology Acceptance Model (TAM) and Diffusion of Innovations theory (DoI). Several themes emerged from the analysis of the focus groups and interviews, and all the sub-themes were collated into four main themes: perceptions about blended learning, perceived affordances of blended learning, the blended learning implementation process, and challenges that were encountered by the students and teachers. The relevant information, captured from the content analyses of the documents, was incorporated in the main themes where appropriate.

The chapter is organised into six subsections. Section 1 presents a description of each participant groups: students, teachers, and the executives. Sections 2 and 3 present perceptions about blended learning and perceived affordances of blended learning, respectively. Section 4 outlines the main challenges that were confronted by the students and teachers in relation to the use of blended learning, while section 5 describes the process of the implementation of blended learning. Finally, in section 6, the aspects that were found important for adoption and diffusion of blended learning are summarised and identified as key factors.

6.1. Participants of the Focus Groups and Interviews

Interviews were conducted for the three stakeholder groups of the university: students, teachers, and executives. The following sections present a description of each of these stakeholder groups.

6.1.1. Students

A total 36 students participated in the focus groups and each group was comprised of 2-7 students from the same faculty and the same course (Table 21).

Table 21

Student Focus Groups and Faculty Representation

Faculty/School	Focus groups & students
Faculty of Education (FE)	3 (9)
MNU School of Nursing (MNU SN)	1 (5)
Faculty of Hosp. and Tourism Studies (FHTS)	1 (3)
Faculty of Arts (FA)	1 (4)
Faculty of Health Sciences (FHS)	1 (7)
Faculty of Law and Islamic Studies (FLIS)	1 (2)
MNU Business School (MNU BS)	1 (2)
Faculty of Eng. Science and Technology (FEST)	1 (4)
Total	10 (36)

The students were diverse, and all of them were enrolled in blended learning courses. Course levels varied from Certificate IV to master's degree, and the course disciplines included education, science, business/accounting, nursing, health sciences, Islamic studies, hospitality and tourism studies, and liberal arts. At the time of data collection, all the students had at least one semester of blended learning experience. The majority of the students were over 25 years of age (71%), full-time employed (84.1%), and living on a remote island (69.2%).

According to the university documents and the anecdotal evidence gained from the personal experience of the researcher, all the students had accessible computers with internet service on their islands that they could use for learning. Students travelled to either the main campus in Malé or a regional campus, 3-4 times every semester, for their

mandatory F2F classes. This travelling typically involved a plane and/or a speedboat with travel times of 30 minutes to four/five hours. Students often needed to use both the modes of travelling and it could take approximately a half-day to travel to a campus. During the F2F classes, many students rented a guesthouse (inexpensive hotel) in Malé, despite some lucky students having free accommodation with a relative or a friend. Students usually returned to their islands as soon as the F2F classes were over, to avoid excessive expenses and some potential issues that may have been raised by their employers. Therefore, most of the learning for these students occurred online through Moodle, the LMS of the university.

6.1.2. Teachers

A total 24 teachers participated in one-on-one interviews from all the faculties that offered blended courses at the time of data collection, in addition to the CETE (Table 22).

Table 22

Teacher Interviews and Faculty Representation

Faculty/School/Centre	Teachers
Faculty of Education (FE)	6
MNU School of Nursing (MNU SN)	3
Faculty of Hospitality and Tourism Studies (FHTS)	2
Faculty of Arts (FA)	3
Faculty of Health Sciences (FHS)	1
Faculty of Law and Islamic Studies (FLIS)	3
MNU Business School (MNU BS)	2
Faculty of Eng. Science and Technology (FEST)	2
Centre for Edu Tech. and Excellence (CETE)	2
Total	24

Teachers were full-time teaching staff employed across the university. At the time of data collection, all of them had taught at least one subject in blended mode even though most of them had less than two years of blended teaching experience. As non-teaching staff, teachers from the Centre for Educational Technology and Excellence (CETE) were included as they were heavily involved in a range of activities in relation to providing teachers with blended teaching support. At MNU, to teach a blended subject, teachers do not necessarily need prior training and/or experience in blended teaching. Teachers are typically given “on-the-job” training hence, many teachers learn about blended learning by teaching a blended subject which means, teachers may not know the fundamentals of blended learning when they start using it. All the teachers were provided with a desk, computers with internet access, printing facilities, and instructional design support.

6.1.3. Executives

Five faculty/centre heads (deans) who were associated with the implementation of blended learning, and a member of the Chancellery took part in the one-to-one interviews (Table 23).

Table 23

Number of Executives Participating in the Interviews

Faculty/School/Centre/Unit	Executives
Faculty of Education (FE)	-
MNU School of Nursing (MNU SN)	1
Faculty of Hospitality and Tourism Studies (FHTS)	1
Faculty of Arts (FA)	-
Faculty of Health Sciences (FHS)	-
Faculty of Law and Islamic Studies (FLIS)	1
MNU Business School (MNU BS)	-
Faculty of Eng. Science and Technology (FEST)	1
Centre for Educational Tech. and Excellence (CETE)	1
Central Administration (Chancellery)	1
Total	6

The executives are responsible for policy decisions and implementation of the policies across the university. Executives have regular meetings (i.e., Heads Meeting) where the general university policies are discussed. In these meetings, often the resolutions of the University Council are briefed by the vice chancellor. In addition, all the executives are ex-officio members of the Academic Senate which makes the key decisions in relation to academic matters of the university, such as adoption of blended learning.

6.2. Perceptions about Digital Technology and Blended Learning

The following sections present perceptions of students, teachers, and the executives about the use of digital technology and blended learning. The results are predominantly related to TAM, specifically, perceived usefulness and perceived ease of use. Results suggest that despite some mixed perceptions, generally, students, teachers and the executives were relatively happy about the use of blended learning, and students and teachers reported that they would use blended learning in the future because they felt that blended learning can help the remote communities to participate in university education. To improve the readability of interview descriptions, fictional names were used in the following sections to refer to the students and teachers while alphabetical letters were assigned for the executives.

6.2.1. Perceptions about Digital Technology

Blended learning typically involves intensive use of digital technology, hence students, teachers, and the executives were firstly asked what they think about the use of digital technology in learning. They were asked separately about blended learning. Results suggest that technology was perceived as a mediator that helps to facilitate learning.

Ayaz, a student who lived on a remote island, mentioned how technology could facilitate his learning.

“Using digital technology in education is very convenient for us to study. It enables us to retrieve learning content while we live away from the university campus.” (Ayaz, FE)

Nearly all the students who participated in the interviews had views similar to those of Ayaz. They linked the concept of technology to learning, and highlighted multiple aspects such as *convenience*, *easy communication*, and *browsing for information*, as affordances of digital technology. None of the interviewed students were against the general use of technology. The questionnaire results substantiated this finding as 93.1% of students responded that they were happy about the use of digital technology in learning. A small number of students disagreed (3.4%), while the same number of students responded with “undecided”. These results indicated that students were overwhelmingly receptive about the use of digital technology in learning.

Teachers had views similar to those of the students and were receptive in relation to the use of digital technology in learning, despite their reasons being slightly different. Athia, a pre-service teacher trainer, felt that with the advancements and pervasiveness of digital technology, proper teaching cannot occur without incorporating digital technology in teaching and learning.

“I think without incorporating digital technology, it (teaching) can’t be done properly. The world has progressed with technology, and the students we teach are very familiar with the latest technology tools.” (Athia, FE)

Lamya, a science teacher, had views similar to those of Athia, and elaborated more about how digital technology helps her to teach better. “... We can show instant videos and other graphics in the class to explain complex concepts to the students.” Maya was another teacher who had similar views, however, she emphasised learner access.

“I think using digital technology in teaching is very convenient for the students. ... I would say that technology makes learning easy for students and allows them to learn from anywhere they live.” (Maya, SN)

Whether it is the potential of digital technology to help teachers explaining complex concepts better, increasing learner access, or simply because the current generation of students are so familiar with technology, most of the teachers reported that teaching is more meaningful, and they can cater for students’ learning needs better when digital technology is incorporated in teaching. The survey results were consistent with these findings, with 89.7% of teachers indicating that they were willing to use digital technology for teaching.

The executives recognised the same benefits that the students and teachers did in relation to the use of digital technology. Like many teachers, the executives talked about how the digital technologies may afford easier teaching and increase learner access.

“I think integrating technology in teaching is very important. It’s useful, good, and especially for a country like a small island nation.” (Executive F)

“If we don’t use technology in teaching, and use only traditional methods of teaching, we would lose some opportunities. For example, the easiest and the fastest way of accessing to a library is through digital. Also, we can use digital media in some interactive ways.” (Executive B)

Some deans talked about the affordances of digital technology at length and highlighted several reasons why they liked using various forms of technology, the executive G being one of them.

“I’m in favour of paperless work... we have stopped giving students printed materials. ... the materials are provided through Moodle. Also, it’s very easy for our admin staff as students don’t hand-in their printed assignments to the office.... Even though they (students) are away from us we feel that

we have regular contact with them. So overall, I have a very positive outlook about the use of technology.” (Executive G)

Overall, the executives found the use of general technology beneficial for teaching and learning. Like the teachers, they felt that digital technologies can make teaching easier and effective while it may provide their faculties with other benefits, such as easing some of the administrative operations such as assignment submission. User positive perceptions about the use of general technology is important for adoption of blended learning because blended learning is a pedagogic method which requires the integration of digital technology with F2F instruction.

6.2.2. Perceptions about Blended Learning

Students, teachers, and executives were asked specifically about blended learning. Similar to the use of general technology, overall, all the three groups perceived blended learning as a good method of teaching, and their perceptions were in relation to the elements of TAM: perceived usefulness and perceived ease of use. For example, two students named, Meesha and Yasir were in the second year of their courses and were fulltime employed. Meesha and Yasir worked in two different islands, and both reported that blended learning was useful and easy to use, mainly because of the flexibility afforded by the learning method.

“I’m happy about it (the course) because blended learning allows me to study, allows the flexibility of studying while I look after my family, and work. So, I’m really happy about how the course is offered.” (Meesha, FA)

“We all have started our families and we have kids and other life commitments. So, the only way we can study now is doing it while we work (in the island). Having opportunity to study while we look after our families is very convenient for us.” (Yasir, FE)

Like Meesha and Yasir, most of the students liked blended learning because it allows them to study while living on remote islands. Another student named Mohamed, a schoolteacher and businessman, thought blended learning was useful not only for people who live at remote locations, but also for people who live a busy life like his. He elaborated how useful blended learning was for him by saying, “due to our daily schedules, it’s difficult to access the regular type of learning.”

In the Maldives, accessing higher education is an issue not only for people like Mohamed, but it is rather a common problem for the wider remote community. Aisha is another example of this, a schoolteacher who had worked more than 20 years at her island school, but never had the opportunity to study further until blended learning was introduced, because migrating to Malé had been the only possible option for many people of the island communities like Aisha to access higher education.

“I was looking forward for this opportunity for several years. I work in my island school, and we don’t have opportunities in the island for further studies. I can’t leave my job to attend classes held in Malé. So, I was very much looking forward for it (blended learning).” (Aisha, FEST)

Many students talked about the flexibility afforded by blended learning as a key reason why they felt blended learning is easier. Rabia, a registered nurse who lived on a remote island, explained that she can adjust work schedules to attend the F2F classes, and can arrange annual leaves for the exam period, so she can fully focus on the final exams. “We know the class time before hand, so we can adjust our work schedules Also, we can arrange our annual leave for the exam periods so we can study while we work.” This flexibility was a very important factor that makes blended learning easy for many students, as in the case of MNU, 84.1% of the students were fulltime employed.

Despite the positive perceptions and attitudes, some students felt that blended learning was not the best way of learning, specifically for some subject areas such as science.

Fathima, a secondary school teacher, exemplified this perception and explicitly mentioned that she was happy and satisfied with her blended learning course. However, for Fathima, blended learning was not the best way of learning for some of her subjects.

“...with blended teaching, we don’t see lecturers very often, so the difficulty is there Sometimes it’s a bit difficult to understand some science concepts in this way (in blended learning).” (Fathima, FEST)

As Fathima highlighted, students in blended learning courses at MNU have limited F2F interactions with their teachers and peers which typically occurs only 3-4 times a semester during the mandatory F2F class time. Therefore, students who prefer more in-person instructions, specifically, for subjects such as science and engineering, hospitality and tourism studies may require more hands-on practice (i.e., lab/kitchen tutorials), and may have some difficulties similar to those felt by Fathima. This suggests that students in some academic disciplines may value the practical component of teaching more, and there may be some distinct practices embedded within these subjects that are realised in teaching in different ways, some of which may fit with a blended design and others which may not, at least initially.

Overall, despite some students such as Fathima feeling that blended learning was not the best method for learning, generally, students felt that blended learning enabled them to study while they lived and worked on remote islands and thus, they were happy about it. Of the 36 students who participated in the focus groups, only four students felt that they did not like blended learning. Those who did not like blended learning reported that the reduced F2F instructions and the online component make blended learning difficult for them compared to regular F2F learning. Despite this small number of students, generally,

students reported that blended learning was useful and easy to use. This resembles the results of the questionnaire that showed 74.9% had positive perceptions about the usefulness of blended learning, and 63.6% of students felt the flexibility provided by blended learning makes learning easier for them compared to regular F2F learning.

As per the students, teachers were asked what they thought about blended learning.

Teachers highlighted the same benefits as the students and felt that blended learning was useful for those who could not attend for regular F2F teaching. Teachers also reported that blended learning is relatively easy to use, despite a small number of teachers feeling otherwise.

“I think blended learning is very useful for the Maldives. ... Our islands are very dispersed, and the students living in the islands cannot come to daily classes. If we do blended learning effectively it would be a huge advantage for the students.” (Fareed, BS)

“I personally believe blended learning is a very useful method of course delivery. That is why even in my fully F2F subjects, I use Moodle and online learning (as supplementary learning).” (Zoon, SN)

Like Fareed and Zoon, many teachers generally felt that blended learning is a good way of teaching, especially, for the Maldives. They believed that it could provide people who live on the remote islands with increased access to learning and increased flexibility to participate in university learning, which was almost impossible for those communities before blended learning was introduced. Therefore, teachers felt that blended learning is incredibly useful for the Maldives. These results validated those emerging from the questionnaire, which showed that 70.8% of teachers felt that blended learning is a useful method of instruction. These positive perceptions of teachers are important because teacher beliefs and attitude often affect individual teacher adoption decisions (Ertmer et

al., 2012). Thus, the likelihood of individual teacher adoption of blended learning is high when it is implemented by the university.

In addition to the usefulness, teachers also believed that blended learning is relatively easy to manage. Inaya, a teacher involved with blended teaching and staff training mentioned that blended learning is easier for her because it provides flexibility to arrange logistics in relation to course management.

“... (in blended learning) we usually we don't have regular classes. It makes easier for us to manage logistics. It provides flexibility. In this case, we can reschedule block classes if the weather does not allow us (to bring students from the islands to Malé).” (Inaya, CETE)

Fareed and Nasir were some of the other teachers who believed that teaching flexibility afforded by blended learning makes it easier to manage. For both Fareed and Nasir, blended teaching involves less work in terms of teaching preparation as it does not involve daily F2F teaching.

“I had a blended subject last semester ... and I realised how easy it was for me. It becomes easy if you do all the designing work before the semester starts, for example, producing all the materials and designing the whole online course page. In that case, the additional thing for you during the semester would be maintaining the weekly online interactions and providing feedback. That work can be quite flexible as well.” (Fareed, BS)

“It's much easier for me to teach blended courses compared to a regular course. That is if we compare class preparations for everyday classes and a pre-planned and organised block class preparations.” (Nasir, FA)

As Fareed and Nasir reported, not having daily F2F classes in blended teaching would allow teachers to have a degree of flexibility in managing their time. Many teachers such as Fareed tended to develop their entire Moodle course pages by the first week of the semester, and the course development could be even easier if the subject had previously

been offered in blended mode (which could be the case for many of the subjects at MNU). It would allow teachers to use the previous Moodle course page/learning materials with necessary modifications. In this case, throughout the semester, the teacher's role would predominantly be conducting 3-4 F2F classes and providing students with feedback for the asynchronous online learning tasks. This work can be quite flexible, as Fareed mentioned, and teachers can commit their time for other tasks during a week that can make blended teaching easier for them.

Many teachers had views similar to those of Inaya, Fareed, and Nasir. However, a very small number of teachers had mixed views about the ease of use of blended learning. For these teachers, aspects such as learning new technologies and online facilitation typically add more responsibilities to their plate, rather than less, making blended learning challenging for them.

“Blended teaching (is) not easy. Lecturers should prepare very well for (blended) teaching and must know how to use the technological tools.”
(Niyam, FE)

“I don't think it (blended learning) is easy because we need to monitor online learning, and give feedback for the online work too, so I feel the responsibilities of a blended teacher are huge.” (Hana, FA)

However, generally, teachers who participated in the interviews reported that blended learning is relatively easy to use. The questionnaire results corresponded with this finding and showed that for 59.8% teachers, blended learning is easy to use. In sum, teachers believed that blended learning is a good way of teaching in the Maldives, because it is remarkably helpful to reach the geographically dispersed students. Therefore, when teachers were asked if they would stop blended teaching in future, all of them said that they would not. Many of them justified their views by using phrases such as, “easy and convenient”, “a good solution for the current needs”, and “the most suitable method to

reach the wider community”. Results of the questionnaire were consistent with these findings that showed that most of the teachers (58.7%) felt they would use blended learning in the future even if they had other available options to use (i.e., fully F2F teaching).

As for the students and teachers, generally, the executives were also positive about blended learning. When the executives were asked about blended learning, similarly to the teachers they also pointed to the affordances of blended learning and described how useful the learning approach is for the Maldives.

“I believe blending learning is a very good opportunity ... The current generation of students have different characteristics.... Many students (prefer studying) while they work, look after families, and on top of that people are from geographically dispersed islands. So, they need some degree of flexibility in their learning.” (Executive A)

In addition to the increased flexibility, and how it improves learner access, some executives such as Executive B, talked about how the online component of blended learning can help students to maintain learner interactions throughout the semester. “We can maybe bring students for F2F classes (for block class teaching), but without the online component, we can’t ensure continuous learning throughout the semester.” These positive views of the executives are important because people with positive beliefs and attitude towards technology are more likely to adopt them (Hui-Fei & Chi-Hua, 2017), suggesting that the executives would be more receptive to blended learning that can have a positive effect on their decision making in relation to institutional adoption and diffusion of blended learning.

In summary, across the three participant groups, blended learning was generally perceived as useful and easy to use. Students, teachers, and the executives reported that blended

learning allows people who are isolated on the remote islands to pursue university education. In addition, despite a small number of teachers feeling that blended learning is not easy for them, overall students and teachers reported that the flexibility afforded by blended learning makes it easier for them to use. Most of the teachers and students, hence, felt that they would use blended learning in the future. These positive beliefs would play a vital role in the diffusion process of blended learning because teachers with positive beliefs and attitude towards blended learning often find more alignment of their pedagogic needs with blended learning, and as a result, become more receptive to integrate it in their teaching practices (Tondeur et al., 2017). Individual teacher adoption is vital for institutional implementation because teachers are the primary decision makers in relation to classroom practices hence, without teacher adoption, institutional adoption and diffusion may not be easy (Eickelmann & Vennemann, 2017; Scherer et al., 2020).

6.3. Perceived Affordances of Blended Learning

The students, teachers, and executives were asked about the advantages of blended learning. From the analyses, three key themes emerged: (a) increased access to learning, (b) increased flexibility, and (c) enhanced learner engagement.

6.3.1. Increased Access to Learning

Interview analyses suggest that a key affordance of blended learning is increased access to learning. Overall, all the three groups of participants believed that blended learning opens new opportunities for people who live on remote islands of the nation. Afiya, a student who worked at a school library in one of the islands, explained how blended learning helped her to study while she lived on her island.

“If this course was offered only in regular F2F mode, it wouldn’t be possible for me to join. This course was there as a regular course before, we knew it,

but I couldn't make it. I even didn't apply because I knew (that) it wouldn't be feasible for me." (Afiya, FA)

Afiya's experience was not uncommon for the remote communities of the nation. In some cases, people have been forced to wait for many years, as it is not possible for them to leave the islands despite their keen interest for further studies. Nasir, a schoolteacher is an example of a student who had to wait for nearly a decade for further studies. He said, "all those years they (the university) offered this course F2F, so I was unable to join." For Nasir, relocating in Malé was not an option, and he chose his life on the island over his further studies, which blocked him from accessing higher studies until blended learning was introduced.

Some students explicitly detailed why they were unable to join regular F2F courses for many years. Nadiya, a registered nurse explained.

"Because of blended teaching, I can study while I live in my island. Otherwise, I have to leave the job and come to Malé and rent a house and so on. I can't afford it financially." (Nadiya, SN)

As Nadiya mentioned, for most of the students, limiting access to education is generally related to the fact that they were not able to relocate to Malé to attend regular F2F teaching held on campus due to family, employment, and financial reasons. However, students who participated in the focus groups generally believed that blended learning offered a reasonable solution that allows them to study without needing to relocate themselves to the city. This finding was consistent with the results of the questionnaire that showed that 81.6% of students believed that blended learning allows them to pursue higher studies while they live far from the university campus.

When teachers were asked about the affordances of blended learning, increased access was a key point communicated by all of them. For both students and teachers, the

geographical dispersion of the nation was one of the main areas of concern, and teachers stressed how the geographical dispersion could limit the opportunities for regular F2F learning for the islanders. Abbas, a teacher who worked at one of the atoll campuses, shared some of his personal experiences.

“My wife is a student who is currently enrolled in a blended nursing course. ... as a senior nurse, she has a huge responsibility at the island hospital. For her, if she takes a no-pay leave for the duration or resign from her post, the risk is losing the job vacancy (by) the time she finishes her studies. And if she wants to attend a regular F2F course, the whole family will need to migrate to Malé.” (Abbas, FE)

As Abbas mentioned, for most of the remote communities of the nation, blended learning may be the only possible option to access university learning from the islands. Adil, a teacher who worked at another atoll campus explained this.

“In the campus region, ... it (blended learning) was the reason many of them (people who are employed) had chance to study further. Before the introduction of blended learning, they didn’t have the opportunity because they simply couldn’t afford leaving their jobs and going to Malé for higher studies.” (Adil, FE)

Overall, teachers felt that increased access to learning is a key affordance of blended learning, especially for people who live at remote locations. They believed that without having blended learning, it would not be possible for many people who were already employed on the islands to study further. As the F2F instructions of blended learning are typically reduced and, in the case of MNU, they are undertaken over some selected weekends, it is possible for those who live on the islands to manage learning without relocating to the city.

When they were asked about blended learning, the executives also highlighted the dispersed nature of the islands and how blended learning could help the university to increase learner access. Executive A felt that blended learning helps the university to fulfil its’ “obligations” of reaching the remote communities of the nation.

“I think the biggest advantage (of blended learning) is increasing access to higher education. MNU is a public funded university (has the obligation to deliver), and because of blended learning, the access can be increased. Also, due to the geographical dispersion of the country, it would be easier for us to reach students.” (Executive, A)

As Executive A highlighted, with blended learning, it can be easier for the university to reach the remote island communities of the nation. A large proportion of blended teaching can be managed through a learning management system such as Moodle. Thus, it is possible for students to participate in university education without relocating to Malé. Therefore, as a public-funded university, with blended learning MNU can extend its presence across the country and can be in a better position to work with the local communities by enabling them to access higher education.

In sum, students, teachers, and the executives perceived blended learning as a method of teaching that allows people who live at remote locations to access higher education. The consensus of these three groups was that to attend a university, relocating to Malé is a complex matter for the islanders. Consequently, it would be very difficult for them to access university education without blended learning. These perceptions about how students access learning are important, because how learning is accessed by students is related to their overall learning experiences, and student experiences can be remarkable influencers of adoption decisions by teachers (Dey & Bandyopadhyay, 2019; Liu, 2011).

6.3.2. Increased Flexibility

Results suggest that blended learning can provide students and teachers with increased flexibility. For students, this means being able to study while having multiple responsibilities such as family and employment. Meesha, a student of a library science course, is an example of this.

“I live on my island with my husband and my two children. Our family lives in a separate house. ... after doing the housework and other things for my kids, in my own time or in the evenings, I can study. I can do my studies without coming to everyday classes. That’s a huge convenience for me.”

(Meesha, FA)

As Meesha pointed out, blended learning typically does not require students to attend daily classes and can allow them to complete their course requirements largely through asynchronous online learning. This means that as for Meesha, those who are busy with family responsibilities and/or employment can study at their own time and pace, which can make learning possible for them, learning which otherwise may be unlikely to occur.

Another student who appreciated the flexibility of blended learning was Salim, a fulltime schoolteacher at an island school. Like Meesha, Salim also had a young family. Salim believed that he could not afford to leave his job at the island school for the “sake of learning” as he needed to provide for his family. He, therefore, needed flexibility in learning that could allow him to carry on further studies while he worked fulltime at his island school.

“I think for me as a working student, the way the course is very convenient and easy. We have families to look after so our life situation doesn’t allow us to leave our jobs and attend fulltime regular courses.” (Salim, FE)

Meesha and Salim were not isolated cases. In fact, most of the students expressed similar views. They felt that blended learning allows them to study while having fulltime

employment and family responsibilities. This is not a surprising result, because at the time of data collection, most of the students in blended learning courses were over 25 years of age (71%), who would likely have families, and 84.1% of students were fulltime employed. As highlighted by those students who participated in the focus groups, this student cohort, therefore, may need flexibility in learning. The survey results reflected this finding, that showed that an overwhelming majority of the students (85.5%) studied in their spare time after family and/or job commitments. This suggests that blended learning can provide students with increased flexibility by allowing them to study at their own time and pace.

When teachers were asked about the flexibility of blended learning, many of them echoed the same perceptions as the students and talked about how the flexibility of blended learning allows their students to study. Afza and Reesha were such two teachers who regularly taught blended subjects and knew the backgrounds of many students.

“For learners they can study while they work. They can also study while they live in the islands with their family. I think that’s the biggest advantage for the students.” (Afza, FE)

“Our blended learning course all the students are practicing teachers who work in the islands. Now they come to Malé like once a month for the (F2F) classes, (and) the reason we schedule classes for the weekend is for the student convenience as they work fulltime.” (Reesha, FEST)

As Afza and Reesha reported, blended learning would enable students to participate in university education while they live and work on the islands. This is because, at MNU, blended learning does not involve daily F2F teaching. Instead, most of the learning occurs in Moodle. Therefore, as Reesha pointed out, students can attend the F2F component of blended learning over three or four selected weekends every semester and can manage the rest of their learning at their own time and pace.

For some teachers, flexibility is important not only for their students, but also for themselves. They felt that not having daily F2F teaching in blended courses allowed them to manage teacher work more effectively. Nawaz was one of those who taught multiple blended subjects and was involved with volunteering. He felt that blended learning allowed him to manage his teaching from home at his own time.

“I can allocate time for online facilitations. That really makes it easy to manage teaching. It can be done from home during off-hours or even over the weekends. I believe it saves time, and I use my time more effectively with blended learning.” (Nawaz, FLIS)

As Nawaz highlighted, at MNU, teachers who teach blended subjects may have the flexibility of working from home as most of the learning for blended courses occur online. However, this perspective was not highlighted by many teachers. Their focus was the students, and how the flexibility of blended learning could enable busy individuals to participate in university education. In sum, teachers felt that blended learning is remarkably helpful for students to study while having family and employment commitments, because it can allow students to have the flexibility of managing their time. Similar to the students and teachers, the executives talked about how blended learning provides students with flexibility and enable them to study while having responsibilities such as family and employment in their remote islands.

“Now many of our students do study while they work and look after families. On top of that, people are from geographically dispersed islands. So, they need some degree of flexibility in their learning.” (Executive A)

“Students of the course (in my faculty) were all teachers currently working in various islands, so we can’t keep them here (in Malé) for fully F2F teaching, and that was the reason we started blended teaching.” (Executive C)

As the survey results indicated that at MNU, most of the students in blended courses were fulltime employed (84.1%) and lived on remote islands (69.2%). In addition, many students had families to look after. Therefore, as Executives A and C pointed out, this student cohort needed a degree of flexibility to manage their studies. For many students, the only possible times for studying were during the evenings and weekends after their employment and other unavoidable commitments. This flexibility was highly valued across the board and perceived to be an aspect that provides students with customised and better learner experiences. Even though fully online learning can provide the same level of flexibility, unlike fully online learning, blended delivery involves a F2F component which was perceived to be a bonus point for blended learning by teachers and the executives. Pedagogic methods that have the potential to provide students with better learning experiences are more likely to be adopted (Liu, 2011), suggesting that blended learning being perceived to be providing better student experiences can have a positive effect on teacher adoption.

6.3.3. Enhanced Learner Engagement

Results suggest that blended learning was perceived as a pedagogic method that provides learners with enhanced engagement. For several students, the online component of blended learning allows them to interact with peers throughout the semester even though they physically meet only 3-4 times a semester. Iram, a hospitality management student, explained how blended learning helped her to maintain learner-to-learner engagement.

“This year with blended learning I think we get the chance to keep contact with other students throughout the semester. We meet students in the F2F classes, also we have some online interactions with them. For example, we see what everyone does in Moodle, and we can easily share things with each other.” (Iram, FHTS)

As Iram explained, in blended learning, students are typically given the opportunity to interact with each other both in-person and online (through the Moodle). Even though at MNU the F2F meetings would be relatively fewer, throughout the semester students could engage with each other online, individually and in groups. These engagements were very important for the students such as Iram, as most of them were geographically separated at remote locations. Saleem, a student in an Islamic studies course gave a similar example and explained how he engages with peers through online discussion forums.

“For me, the forum is very interesting. Student contributions in the forums show how they learned the lesson and how they apply information. So, I get a chance to think from various viewpoints and it’s easier to understand. If I make a mistake (in a post), others correct me, for example. It’s an opportunity for us to get feedback from each other.” (Saleem, FLIS)

At MNU, online discussion forums could be one of the common types of weekly online activities given to students in blended courses. Through these discussion forums, as Saleem pointed out, students could ask questions, respond to each other, provide feedback and even identify the key areas to learn, which can be very similar to the learner engagement that can be observed in a typical F2F class. In addition, 3-4 times a semester, students in blended courses meet their teachers and peers in person and complete a range of learning activities in the class which may allow them to engage with learning.

In addition to the way they engaged with learning, many students appreciated how the different types of online activities provide them with more opportunities to interact with the learning content. Muna was one of them, a social worker who lived on a remote island. Muna believed that even though she did not physically meet her teachers and classmates every week, the online learning activities such as chats, forums, and other activities provided her with ample opportunities to engage with her studies.

“Despite the lecturers are not there with us, by reading and doing the online forums, we can learn a lot and that helps us to study for the final exams too. We do have weekly forums, sometimes online chats, and often it would be reading an article and summarizing it or answering a few questions about the reading.” (Muna, FHS)

In general, students felt that the types of online learning activities included in blended learning gave them enough opportunities to interact with their peers and teachers, even though they did not see them in person very often. In sum, students felt that blended learning can provide them with enhanced learner engagement.

Teachers had views similar to those of the students in relation to learner engagement in blended courses. Several teachers felt that their blended learning students engaged with learning relatively well. Hajar was one of them, a teacher of tourism and hospitality studies. She mentioned that maintaining learner engagement throughout the semester was a concern for her before blended learning was adopted by the university.

“I think my biggest satisfaction about blended learning is the increased learning engagement time. It had been always a concern for me not having enough time or a way to engage with students. But now with this model (blended learning), we get extra time and extra engagement, and I feel better (now).” (Hajar, FHTS)

As Hajar highlighted, with blended learning students can be provided with more avenues to engage with each other. The F2F classes of blended learning can allow students to experience in-person instruction while the online component typically enables them to continue learner interactions throughout the semester. The combination of these two modes of instruction, therefore, would provide students with additional opportunities for learner engagement, as Hajar pointed out.

Nasir was a language teacher who had views similar to those of Hajar. He felt that the online learning activities and feedback are purposefully integrated in blended learning. Therefore, students get more opportunities for learner engagement.

“In this type of learning, we give students (online) learning tasks far in advance, and they get enough time to do everything, students should get involved with the content very actively and we notice the (increased) students’ input. On top of that, we provide very focused and direct feedback to individual students so we can get students more engaged with learning.”

(Nasir, FA)

In sum, results suggest that blended learning was perceived as a method of teaching that allows students to have enhanced learner engagement. Students and teachers felt that the integration of online learning with F2F teaching allows learners to have more avenues for engagement, which was particularly beneficial for those who lived on isolate islands. Like increased access to learning and increased flexibility, blended learning which provides students with positive learning experiences with enhanced engagement would be likely to encourage for teachers to adopt the learning method, as student experiences are aspects that often affect teacher decisions regarding pedagogic method adoption (Dey & Bandyopadhyay, 2019).

6.4. Challenges for Blended Learning

Results indicate that throughout the stages of the innovation process, teachers and students encountered several challenges that could negatively impact on teacher adoption and ultimately the diffusion of blended learning. These included negative beliefs and attitudes, teacher low self-efficacy, increased teacher workload, policy issues, technical issues, and lack of readiness. The following sections describe each of these challenges.

6.4.1. Negative Beliefs and Attitudes

Results suggested that despite blended learning being perceived as a useful method of teaching in general, user negative beliefs and attitude was a challenge for some members across the three participant groups. For students, it was predominantly for those who were in subjects that had significant practical components. These included nursing, hospitality, science and engineering, and Quranic studies.

Faina was a nursing student, a registered nurse, who had previously completed a diploma in nursing in a regular F2F mode of teaching. Despite Faina being familiar with most of the clinical nursing skills, she felt that F2F teaching was better for nursing, explaining that she always wanted to see her “lecturer’s face” in the class, which she thought blended learning cannot do. Fathima, a science student who had similar views, compared her previous F2F course with her current blended one.

“During our diploma days, we never worry about the exams and other assignments because we can clear everything after the classes with the lecturers and the peers. But we don’t have that opportunity now. So, if I had any other option, I wouldn’t study a science course in this mode.” (Fathima, FEST)

Saleem was another student who was quite negative about blended learning. Saleem’s course involved several subjects that involve recitation of the Quran. These subjects required considerable guidance and demonstrations by the teacher, along with imitation and significant practice in the class. Saleem felt that blended learning did not allow him to do that properly. Thus, blended learning was not a good mode of delivery for him.

“I don’t think technical subjects like Quran can be taught like this way (by using a blended approach), because now we find the current method of teaching (is) not very effective.” (Saleem, FLIS)

As with the students, a small number of teachers had some negative perceptions about blended learning. Maya, a nurse educator was one who believed that blended learning was not a good way to train nurses, because she believed that nursing skills could not be taught properly using blended learning, especially basic nursing.

“I really can’t imagine how we can deliver nursing programs in blended format. I still think basic nurse training is only to be provided as regular F2F training.” (Maya, SN)

As Maya mentioned, several teachers and students had concerns about the use of blended learning, not necessarily for general teaching, but for some subject disciplines. These included predominantly subjects that involved significant practical components of teaching such as nursing, culinary arts, and engineering even though a small number of participants in other subject areas also raised their concerns. This suggests that teaching practices embedded in academic disciplines can be significantly distinct and teacher practices in the classroom can be reflected by these differences. The nature and knowledge creation of individual subjects can be different from each other, and this can have a direct impact on teacher pedagogic practice (Taimalu & Luik, 2019; Weisenfeld & Ott, 2011), suggesting that academic discipline can be an important factor to be considered in the implementation of blended learning at an institutional level.

Hana was another teacher who demonstrated strong opposition to blended learning.

Overall, Hana felt that at MNU, blended learning was not a good way of teaching, and she would never use blended teaching if the university did not “force” her.

“The reason I use blended learning is because they (the management) are forcing us, I don’t think I would use it, otherwise.” (Hana, FA)

Many teachers had reservations about using blended learning at undergraduate level, although they had no major concerns for using blended teaching for postgraduate

students. Aban, a preservice teacher trainer, is an example of a teacher who believed that blended learning was not suitable for undergraduate teacher training. Aban believed that blended teaching would hinder the production of good quality teachers.

“I believe blended learning is a good way of teaching for postgraduate students. However, I feel, for fresh school leavers, it wouldn’t be good, and I don’t think learning quality would be good.” (Aban, FE)

Similar to the students and teachers, some executives also showed negative attitudes towards blended learning. Despite the executives being generally positive, half of them felt that they would not offer undergraduate courses in blended mode. Executive G who enthusiastically said she had so much to teach in-person that only F2F teaching would be appropriate for lower-level courses. “Because F2F contact with students is needed to mould them with social and professional values...that is not possible in blended learning with reduced F2F time”, said Executive G, concluding her remarks with some justification.

In sum, some students, teachers, and executives had negative perceptions, even though the majority of these three groups were generally positive about blended learning. For students, the negative perceptions were more evident amongst those in disciplines such as hospitality and tourism, and science and engineering. For teachers and executives, generally, concerns were not necessarily about the broad concept of blended learning, but about offering lower-level courses in blended mode, as more F2F contact was perceived to be essential for students who were newly starting their university education. Even though negative beliefs were exhibited by a relatively small number of participants, it is an important aspect to consider, because beliefs and attitudes can predict user intentions to adopt online and blended learning methods (Ertmer et al., 2012; Scherer et al., 2020) which suggests that when some users across the three stakeholder groups of the university

have negative beliefs and attitudes, adoption and diffusion of blended learning can be hindered.

6.4.2. Teacher Low Self-efficacy

Results revealed that many teachers had low self-efficacy in relation to the use of blended learning, despite some teachers being relatively confident about their ability to teach blended subjects. Teachers who raised concerns about their self-efficacy of teaching blended subjects felt that their issues were not necessarily with blended learning as whole, but rather their abilities to manage the online component of blended learning which was delivered via Moodle. No teacher raised an issue of teaching the F2F classes of blended learning. This could be a reason why teachers referred to the Moodle tools when they were asked about their self-efficacy of blended teaching.

Aban was a teacher who worked in one of the regional campuses, and who typically managed only F2F subjects. With the adoption of blended learning, however, Aban was asked to teach some blended subjects. Aban said he had very little confidence of handling the online component of blended because he knew very little about Moodle.

“I really don’t know to mention any specific (Moodle) tool to learn because I don’t know how I can use them in my subject areas..., I don’t know Moodle, and I don’t think my colleagues at the campus would know either.” (Aban, FE)

Like Aban, many teachers referred to Moodle to talk about their self-efficacy of blended teaching and felt that they did not have adequate knowledge and the skills required to handle the online component of blended teaching. In fact, some teachers were not sure whether they had the ability to do simple things in the Moodle such as uploading learning materials, creating assignments and online discussion forums, and creating online quizzes which were essential to manage the online delivery of blended teaching. In such cases,

teachers could ask the CETE for assistance, and instructional designers provided help. Hana was an example who frequently asked CETE for support.

“I think there are so many good things we can do with Moodle, but I don’t know those things. For example, a staff member of CETE creates a quiz in Moodle (for me). I wouldn’t be able to change or correct a simple mistake, even a typo in the quiz, because I just don’t know how to do it.” (Hana, FA).

As Aban and Hana described, several teachers believed that they were not comfortable to teach blended subjects, because they lacked the ability to manage the online component of blended learning via Moodle. They felt that they needed to learn “how to teach”, despite some of them having decades of teaching experience. Lamyia, a science teacher, and Maya, a nurse trainer were examples of teachers who quantified their knowledge and skills in teaching blended subjects, and both the teachers scored themselves with 50%. Overall, many teachers did not regard themselves as having adequate knowledge and the skills required for blended delivery, such as designing for blended teaching and online facilitation, which was a concern for many teachers. This is a critical aspect to consider in the process of implementation, because teacher self-efficacy often influences their classroom practices (Kwon et al., 2019), suggesting that having teachers with low self-efficacy of blended learning means less likelihood of adoption.

On the other hand, some teachers were quite confident about their capacity to manage blended teaching. For instance, Nawaz, an Islamic studies teacher mentioned that managing the online component of blended learning in Moodle is as easy as using social media platforms.

“I’m very confident about the use of Moodle, I mean using like the Facebook or YouTube. I would say it’s as easy as like that.” (Nawaz, FLIS)

Like Nawaz, many teachers felt they did have the ability to manage the online component of blended learning. Again, no teacher had an issue with the F2F component. Nazim was one such teacher who had several years of blended teaching experience, and who often helped his colleagues to sort issues related to blended teaching.

“I can play with Moodle very confidently. For example, creating a course page from the scratch, uploading learning materials and activities are very easy for me. ... I can confidently use most of the Moodle tools, for example, wiki, forums, quiz, book, and so on.” (Nazim, CETE)

In sum, results suggest that several teachers were not confident about using blended teaching, specifically, managing the online component of blended learning in Moodle, while some teachers were quite the opposite. These mixed perceptions resemble of the survey results in which 45.4% of teachers responded with either “do not have sufficient knowledge and skills” or “undecided”, while the remaining teachers were “fine” with their abilities to teach blended subjects.

6.4.3. Increased Workload

Blended learning involves F2F and online teaching that requires teachers to commit their time for some specific duties, such as producing online learning materials and providing continued online support, that they may not necessarily be doing in regular F2F teaching. Therefore, teachers were asked about their workload in blended learning and the results suggest that many teachers perceived blended learning to be a method of teaching that involves more work compared to regular F2F teaching.

Niyam, a language teacher who often teaches both F2F and blended subjects explained why he thinks the teacher load increases in blended courses. He felt that in regular F2F teaching, he is more easily assured of students’ understanding. However, for blended

teaching, he needs to design the online activities in a way that students can self-explore and learn the content in the absence of the teacher.

“I spend more time for blended teaching. If it’s F2F teaching, I can just explain everything in the class, but if it’s online teaching I must think about how I can make students do the work..... design of online activities (must be) in a way that students can learn without major issues, so all these things require more time.” (Niyam, FE)

As Niyam pointed out, in a blended subject, in addition to the F2F component, students are expected to carry on self-regulated online learning throughout the semester. At MNU, this occurs while students are located at remote locations, and they typically have very limited F2F interactions with their teachers and peers. Therefore, teachers would require spending considerable time for planning and course designing to enable students to complete their learning tasks without having major issues. In a regular F2F class, however, as Niyam mentioned, one can directly ask students and ensure that students are learning what they are expected to learn.

Reesha was another teacher who had similar views to Niyam. Her main concerns were, however, related to the additional time that she needs to produce online learning material.

“If I compare blended and F2F teaching workload.... producing learning materials requires time.... and there are some more to do to facilitate the online component. ... in general, I feel more work is involved with blended teaching.” (Reesha, FEST)

As Reesha mentioned, producing online learning material can be a huge task for many teachers. At MNU, nearly all the subjects are originally designed for regular F2F teaching, and later converted for blended teaching. Therefore, many subjects may not have suitable learning material for the online delivery, specifically if the subject is offered in blended mode for the first time. Therefore, depending on the subject, some teachers

would require considerable amount of time and effort to produce teaching materials, in addition to other related work such as weekly online facilitation and providing online support for students. This was reflected by Zoon, a nurse educator who believed that she required much more time for blended teaching, specifically for the new subjects. “It takes a huge amount of time to find appropriate content for the topics and thinking about how I can turn them into learning activities.”

In sum, results indicate that blended learning involves more teacher work compared to regular F2F teaching. This finding is consistent with the questionnaire results that showed 78.3% of teachers believed that blended learning involves more teaching preparations, and 71.2% of teachers spend more time providing learning support to students in blended courses, compared to their regular F2F students.

6.4.4. Policy Issues

Results suggest that in the process of implementation of blended learning, teachers and students encountered multiple issues due to policy-related matters. These issues included a lack of a written strategy for blended learning, offering fulltime study loads for blended courses, and the intensive class structure for F2F teaching. While the lack of a written strategy can affect the implementation of blended learning in general, the remaining two issues would have a more direct impact on student learning.

Results suggested that at the time of implementation, the university did not have a written strategy/policy for blended learning. The document analyses revealed that the university did not even have a published strategic plan for the years 2018-19. The university’s previous strategic plan (2013-17) had some provisions for flexible learning, but not necessarily blended learning. It was highlighted as a strategic goal by mentioning “maximising access and educational opportunity to remote and international students

through innovative, flexible and high quality local and distance education” (The Maldives National University, 2013, p. 10). Executives and the teachers raised their concerns in relation to lack of a written strategy for blended learning.

“(Blended learning) policy documents per se, yes, not properly written or highlighted in the current guidelines.... still blended teaching hasn’t been properly integrated (within the existing policies).” (Executive, E)

As Executive E highlighted, except for the resolution of the Academic Senate that mandated blended learning, the university did not have a specific written policy for blended learning. Because of this, the university had limited clarity about what the implementation would look like, such as the critical infrastructure, maintaining consistency across the university, and issues around quality assurance of blended delivery.

Nazim was a teacher who was heavily involved with monitoring of blended learning implementation. He explained why the lack of policy documents can be problematic.

“Another issue is, as a university, lacking a strategy or a policy for blended teaching. All that we have is the general guideline that describes the (F2F class) structure of our alternative courses. But we don’t have any guideline that outlines the standards of blended courses, for example.”
(Nazim, CETE)

Similar to Nazim, for some other teachers, not having adequate policy guidelines that provide teachers and the faculties with detailed instructions about the implementation of blended learning was also a problem. Nasir, a teacher of another faculty with over five years of blended teaching experience, also reported that it was difficult to maintain consistency across the university and observed that “the main reason is lack of policy guidelines of the university.” The document analyses indicate that to fill the void, the CETE created a working document called *Block-mode to Blended Learning Conversion*

and sent it to all the faculties, which was a guideline that outlines an overview of blended learning and the steps of developing blended subjects, from the beginning to subject authoring. However, this guideline describes mainly the process of course design, but does not address issues such as sharing workloads in collaborative course development, and procedures for online facilitation. This issue was raised by Inaya, a teacher who collaborated with several teachers to develop blended subjects across the university.

“Currently we work collaboratively with other faculties to develop blended subjects, and I don’t think I can ask the SME (subject matter expert) to produce all the materials and send to me by a certain deadline. Because in their current workload, nothing is mentioned about blended teaching, so people interpret the current policy the way they like.” (Inaya, CETE)

Overall, results suggest that university policies are essential for the institutional adoption of blended learning. On one hand, a policy for blended learning prompted the implementation process and changed the teaching and learning practices of many students and teachers. On the other hand, the university not having detailed written guidelines/policies for the implementation was problematic for teachers and faculties to implement blended learning and maintain consistency across the university. This suggests that university policies can be influential in institutional implementation of blended learning and the effect of the policies can be positive or negative depending on how they play out.

A second issue related to policy was the university’s decision to offer fulltime study load to blended courses. Results suggest that 84.1% of students in blended courses were employed fulltime. Yet, this fact appeared to be not considered by the university, as fulltime study loads were offered for all the blended delivery programs. The *Course Timetables of Semester 2, 2019* show that all the blended courses were offered 60 credit points (typically four subjects) which is the fulltime study load of the university. Because

of this, many teachers believed that the quality of learning was compromised. Adil was one of those who believed that students in blended courses cannot study properly with the fulltime study load, and with frustration, he explained the reasons.

“We now offer fulltime study loads for all the (BL) courses. But each student can be a fulltime husband or a wife. A fulltime father or mother. A fulltime teacher or nurse. A fulltime student too. When we make all these things fulltime, I don’t think students can do it properly.” (Adil, FE)

As Adil pointed out, fulltime employed students may not find enough time to study four subjects a semester as they are typically expected to work 7-8 hours daily. In addition, a majority of the students were mature-aged students (over 25 years of age) who would likely have family responsibilities. Therefore, as the survey results showed, most of these students (85.5%) studied in their spare time after employment and/or family commitments. Therefore, a fulltime study load may significantly reduce the amount of time that students can devote for each of the four subjects, and ultimately hinder the quality of learning.

A third issue related to policies was, the intensive class scheduling for blended courses. This issue was, in fact, partially the result of offering fulltime study loads. Most of the students in blended learning courses live in remote islands (69.2%) which meant needing to travel to a physical campus for their mandatory F2F classes. In general, these students wanted to stay away from their islands for the shortest possible time. Therefore, the university typically scheduled each of the F2F meetings for the weekends, to be completed in 2-3 days with four subjects (in the Maldives, the weekend is Friday and Saturday). According to the *Guidelines for Scheduling Blended Classes*, every semester, students are expected to attend four F2F meetings. In general, these meetings are exceptionally intensive as teachers are required to cover a portion of each subject within

2-3 days. As a result, students and teachers often became extremely exhausted by the end of each of those meeting days. Aban, a teacher who worked at one of the atoll campuses, described how the classes were organised.

“Now we offer four subjects (fulltime study load), and 7 hours is allocated for each subject. That means, students have a total 28 hours of F2F learning (over the weekend). We normally start classes on a Thursday at 12pm and continue until 11pm. Then on Friday, we start at 7am and continue until 11pm again. Then again Saturday (the same pattern).” (Aban, FE)

As Aban described, all the subjects are taught one after another, and classes typically continue at a stretch, from Thursday afternoon to early evening of Saturday. This made learning so difficult for many students, and often negatively impacted many students, not only academically but physically and mentally too. Leena was an example of a student who could not concentrate, or understand concepts properly in the classes, in addition to feeling physically exhausted.

“It’s tiring and they teach so much on the same day so we can’t actually absorb them.... It would be four different types of subjects and having too intensive classes are very difficult. I get tired, and can’t concentrate ... can’t understand.” (Leena, FHS)

Leena was not an isolated case. Farah, a trained teacher felt that she was not sure if the F2F meetings were good or bad, but what she was sure about was how exhausting the classes were, and how difficult it was for her to learn during the classes.

“We can barely understand what happens in the classes, and we just stay there for the lecturer to finish the classes.” (Farah, FE)

In sum, teachers and students reported multiple issues that were related to university policies. Not having a detailed written policy guideline for blended learning made it difficult for teachers to implement it across the university and could potentially result in

uneven practices across the university. In addition, the university's decision to offer fulltime study loads to fulltime employed students, and the extremely intensive F2F class schedules were found to be hindering student learning, which can result in negative perceptions about blended learning by students and teachers. These findings suggest that university policies can have significant effects on student and teacher use of blended learning, and subsequently for its diffusion.

6.4.5. Lack of Readiness

Results revealed that teachers and students encountered multiple issues that were related to the lack of readiness of the university. Overall, students and teachers felt that the university needed better technological infrastructure and resources for adoption and diffusion of blended learning across the university.

Maya was a teacher who often taught various blended subjects in the main campus in Malé and some atoll campuses. She reported that the university was not ready to implement technology enhanced learning such as blended learning because the internet infrastructure was not satisfactory. With frustration, Maya described the issues with the university's internet network.

“Also, internet access is a problem. They have given wi-fi (not secured) to some classes, but it's very difficult to use, simply you can't play a YouTube video. Especially in the campuses, it's almost impossible. Even last time, students had to use their own internet like hotspots.” (Maya, SN)

Maya was not the only teacher who raised issues related to the internet. Hana, a language teacher also talked about this matter at length and said, “we don't have wi-fi in our classrooms, so I can't use Moodle in any of our F2F sessions. ... it's extremely important us having wi-fi now, especially for those who teach blended subjects.”

At the university, wired internet was connected to all the work and most of the classroom computers. However, as Maya and Hana described, secured wi-fi internet was not available in the classrooms at the time of data collection. Despite the possession of personal laptop computers and other mobile devices such as smartphones and iPads/Tablets by the students, due to the lack of the university wi-fi, the use of internet-based learning materials was extremely limited for teachers and students during their F2F meetings. Fareed, a teacher who wanted to use internet-based learning activities in his classes, mentioned this issue by saying “it is difficult to use a particular tool (in the class), say, Kahoot quiz.” The lack of institutional readiness, specifically in issues related to infrastructure such as the internet and digital resources, can be problematic for the implementation of blended learning. Having limited digital resources, such as online learning material production tools and limited internet access, can frustrate teachers’ use of blended learning, and as a result, they may oppose its use in their classroom practices, which may have detrimental effects on institutional adoption.

Similar to teachers, issues related to technological infrastructure were highlighted by students. Muna, a social work student who travelled to Malé for F2F meetings, also described how the limited facilities of the university hindered their on-campus learning.

“We spend extensive time here for the classes but there are no proper facilities provided for us from the faculty. ...we can’t use things like (university) computer facilities while we are here in Malé. Most of the computers in the lab are out of order, the internet may not be available.” (Muna, FHS)

As Muna mentioned, accessing computer facilities of the university was an issue for some students. Executive E raised this by saying, “it’s nearly five years since we have moved into this building but until now, our computer labs are not properly accessible for students.” This can be a significant issue for many students, specifically students such as

Muna who travelled to Malé for the F2F classes. During these classes, the university was the “home” for many students and most students rented motels or shared a friend’s room for sleep during their stay in Malé. Therefore, not having adequate internet access at the university could make it difficult for these students to carry on learning during the F2F class period.

In addition to the issues related to the internet network of the university, the lack of digital resources was also an area of concern for several teachers, and some executives. Fareed and Reesha were teachers who wanted to produce video learning material but were unable to do it because their faculties did not have the resources.

“Another thing is resources. If we want to make blended learning more effective, we should have proper resources to facilitate blended learning. For example, we need to produce video learning materials, and facilities for (better teaching). Currently, I can’t.” (Fareed, BS)

“We have been requesting from the very beginning, to enable us to use video lectures for blended learning, like live lectures or recorded ones, that are used by many universities..., but so far, no success.” (Reesha, FEST)

Like Fareed and Reesha, several teachers expressed their interest in using customised and high-quality video learning materials and simulations in their blended teaching. “We can find general videos from the internet, but we need to edit and contextualise them before using them” mentioned Maya, a nurse educator. However, the possibilities of doing it were generally limited, due to the lack of proper facilities at the university, such as a multimedia material production studio. *The organisational structure* of the newly established CETE included a dedicated section called *Media Development*, with the mandate of developing multimedia material for the teachers and faculties across the university. However, at the time of data collection, this function of the CETE was not activated. Executive C confirmed this by observing that “facilities are very limited, not

only at the faculty level, but also the university level.” The reason was provided by Executive B, who explained that “providing required resources for blended learning adoption is a challenge, because they are expensive ...and not affordable.” This suggests that the university had some financial issues, making it difficult to provide teachers and faculties with the necessary hardware, software, and the human resources that they needed to produce multimedia learning material as part of their blended teaching. Providing teachers with necessary resources is a type of teacher support which is essential to help teachers to effectively use online and blended learning (Porter et al., 2016). Therefore, a lack of teacher support, in terms of facilities and resources can negatively affect teacher use of blended learning.

Another area of concern was the lack of teacher readiness for blended learning. Several teachers admitted that, at the time of adoption, they were not prepared, not only mentally but skills-wise too. Hajar, a tourism studies teacher was such a teacher. Hajar said she had no prior training about online teaching so she could not even discern which areas of support she would need to commence blended delivery. Overall, Hajar was confused and anxious about blended learning and said she was still at the “exploration” stage.

Teachers being undertrained for blended teaching was a serious issue. Asima, a teacher who had some previous blended teaching experience, explained some of the consequences.

“I think one of the biggest barriers is lack of qualified people for blended teaching. Blended learning is combining online and F2F teaching, but we don’t know how to do it properly. What we do now is using or uploading the same material that has been prepared for F2F teaching.” (Asima, BS)

As Asima mentioned, many teachers had very little knowledge about how to combine F2F instructions with online learning. The university wanted to implement blended

learning relatively quickly and consequently had no time for teacher training prior to the official adoption. Afza, a teacher with three years of blended teaching experience raised her concerns.

“...Then there was a transition. ... we became instructional designers. I mean they told us we are instructional designers. But without giving us any special training. We never had additional knowledge about instructional design other than that we had learnt from our experience at then-COL. Literally, all that we have is the personal experience.” (Afza, FE)

Lack of teacher knowledge and skills in blended teaching led to several issues related to facilitation of blended learning. As Asima pointed out, many teachers thought uploading a PDF copy of a textbook chapter to Moodle, in some cases the entire textbook was all that needed to be done to provide students with learning material. Many teachers were not clear about how they could engage their students with learning while F2F instructions were reduced by a half. Afza, an experienced teacher, pointed to this and said, “our staff really don’t know what they are actually doing... I really feel that what we practice here is not really blended learning.”

Lack of student readiness also emerged as a barrier to blended learning. Many students felt that they were not ready for blended learning, mainly due to a lack of instructions and guidance about blended learning, specifically about the use of Moodle. Faiza, a library science student reported that it was a struggle for her to start using Moodle, because there was not any written guideline that could help them. Faiza explained:

“We started using Moodle without having any prior information. Even the first time I opened the page, I had no idea about how it works. It could have been better if we had something like an orientation. Or they could have given us the flyer that included how to sign-in. But we weren’t. We were just told to use the learning materials in Moodle.” (Faiza, FA)

Faiza was not the only student who raised concerns about the lack of student readiness. Another student named Fazla described a similar instance. “The first time, I still remember, I tried to upload a task to Turnitin, I got really lost. No proper guidance was given us.”

Blended learning was new to many students. However, sufficient guidance, such as how to login into Moodle, how to contribute to online discussion forums, and how to troubleshoot issues related Moodle and Turnitin was limited. Document analyses suggest that there were some flyers that included brief instructions about how to login into Moodle, however, comprehensive instructions such as step-by-step demonstration videos were rarely used. Therefore, as Faiza and Fazla explained, the first few months of blended learning were very stressful for many students, as students learned by doing trial and error.

Teachers also talked about students’ lack of readiness for blended learning. Nawaz, an Islamic studies teacher felt that most of his students were very unfamiliar with blended learning. Generally, teachers realised that students had limited knowledge of blended learning, and many of them made individual efforts to help students. Hamra was one such teacher who often provided some one-on-one guidance to her new students, mainly during the first few F2F classes.

“I sometimes need to explain almost to every student for example, how to login to Moodle, how to attempt weekly tasks and things like that. I think in the beginning of the semester, we need to conduct a dedicated Moodle training for students.” (Hamra, FA)

As Hamra pointed out, some teachers voluntarily tried to make the transition easier for their students. However, generally, lack of readiness was an issue and the university had limited plans to orient students to blended learning. In sum, results indicated that the

university was not adequately prepared for blended learning when it was officially implemented. The technological infrastructure, specifically internet access, was not sufficient for the implementation of blended learning at the institutional level. In addition, at the time of adoption, teachers and students were not fully equipped with the necessary knowledge and skills required for blended learning. This lack of readiness of teachers and students across the university may hinder institutional implementation of blended learning. Without adequate readiness, teachers and the students may encounter issues such as frustration and anxiety about blended learning. Being a new pedagogic method, it would likely be very difficult for them to tackle potential issues that they may encounter in using blended learning, and as a result, they may be inclined to abandon the idea of adoption.

6.4.6. Technical Issues

Results indicate that teachers and students encountered some technical issues, mainly related to accessing the Moodle. Fazla was a student, a mother, and a fulltime employee. Therefore, she often studied in the evenings and late at night after sending her children to bed. However, she often faced issues with accessing Moodle, due to regular IT maintenance work being conducted by the university.

“During the night, Moodle gets down. We cannot access the system during that time. ... many students work at the last minute (late night), ... But when we finish (the online task) and try to submit the task, the system gets inaccessible. It happens very often, usually from 12 am to 8.00 am.” (Fazla, FA)

The issue that Fazla reported was not an isolated case, but a common problem for many students. As Ilyas, another student mentioned, it occurred “very frequently especially after 12 am”, and often impacted students’ weekly online tasks and assignment

submission. Executive A, who was responsible for the oversight of the implementation of blended learning acknowledged the issue by saying, “yes, there is a particular time late at night that Moodle gets automatic updates and does the system backups, and so on.”

Despite the Moodle server update being an issue that could be addressed by the IT support team of the university, interviews with participants suggest that the university did not have a plan to change its server routines. Instead, students were advised about the server maintenance time, and to avoid the “last minute submissions” as mentioned by executive A. “I know many students use the Moodle late night for some reasons, even though we had informed students about this (server issues).”

Teachers also often encountered some technical issues. Teachers of the Faculty of Hospitality and Tourism Studies, the Faculty of Arts, the Faculty of Law and Islamic Studies, and the Centre of Educational Technology and Excellence, who all shared the same building often encountered issues with unknown electrical faults, specifically during rainy seasons. When this issue was encountered, the entire building went into a blackout, cutting off all the internet and telephone services for a few hours. Nawaz was a teacher who often experienced this, and who sometimes worked from home when he was unable to use the facilities at his office.

“In this building, very often the internet is disconnected. The entire (last) weekend was like that. We didn’t have internet at all, so I worked from home.... The internet issue is in fact related to the electric fault of the building.” (Nawaz, FLIS)

As Nawaz pointed out, the electric fault had been a problem since the university started using the building a few years back. The building was shared by multiple faculties therefore, all the staff and the students of those faculties were impacted every time the issue occurred. When it happened, typically, a staff member from one of the faculties

contacted the facilities management team, and subsequently the issue was attended to by technical staff. The faculties, however, sometimes waited for 2-3 hours or more, and teaching could be halted if a class coincides with the time of the blackout. Teachers, therefore, sometime left their offices and worked from home, as Nawaz mentioned, if they had urgent work to be completed. An executive who worked in the building acknowledged this issue and said, “I think the facilities management team is attending the issue.”

Overall, results revealed that students and teachers encountered some technical issues when using blended learning. Students often faced issues with accessing Moodle after midnight, due to network server maintenance. For teachers, the issue was mainly with four faculties/centres due to an electrical fault in a building which they shared amongst the faculties, that the university had been unable to resolve.

6.5. The Blended Learning Implementation Process

The results suggest that despite a small number of participants having mixed perceptions, overall students, teachers, and the executives perceived blended learning to be a good method of teaching that can provide learners with opportunities to participate in university education without needing to migrate from their islands, and the university decided to officially implement blended learning as a method of teaching. The implementation can be understood as a process that included five stages: agenda-setting, matching, redefining/restructuring, clarifying, and routinising. The following sections describe the key events that occurred in each of these stages.

6.5.1. Agenda-setting

Agenda-setting is identifying an issue within the organisation that often triggers search for a potential innovation to address the problem (Rogers, 2003). Interview analyses

suggest that the university had three key issues to set an agenda for blended learning.

These were (a) geographical dispersion of the nation, (b) inconsistent teaching practice of the flexible course delivery, and (c) the Government's Free Degree Program (FDP). The document analyses supported this finding and suggested that the adoption decision of the university was largely driven by these issues, specifically by the FDP.

Addressing the geographical dispersion of the nation was highlighted by the three participant groups. The consensus of the students, teachers and the executives was that blended learning is needed for the university to enable the remote communities to participate in higher education.

“I live very far from Malé. My family and everything are in my island. But because of this type of learning (blended learning), without leaving my family and the island, I am able to study.” (Afiya, FA)

“Due to geographical features of the country, those who live in the islands can't attend regular classes held in Malé.” (Nihal, FE)

“We offer the Bachelor of Science course only in blended mode... Students of the course are all teachers currently working in various islands, so we can't keep them here (in Malé) for the fully F2F teaching.” (Executive C)

As the participants pointed out, the Maldives is a country where approximately 65% of the population is located at remote islands. There is no regular public transportation system for commuting between the islands which makes regular on-campus teaching for the islanders nearly impossible. Therefore, to cater for the needs of these communities, finding an alternative method of teaching was a critical matter for the university.

Another key issue that contributed to setting an agenda for blended learning was related to the flexible course delivery, specifically the *block-mode* teaching. Block-mode is a course delivery method used at MNU which has reduced F2F time, typically by 1/2, with

no online support. Students usually travel to the campus over selected weekends, 3-4 times a semester for their F2F classes. The aim was allowing the remote students to participate in university education. However, in this method of teaching, there were some significant inconsistencies in teaching practice across the university. Executive E briefly mentioned the issue.

“In the last few years there were always some talks, I mean at policy level talks about using blended learning across the university. For example, some concerns were discussed (at Heads meetings) like lack of consistency in conducting block mode course across the university.” (Executive E).

As Executive E highlighted, inconsistency of the block-mode teaching was an issue and harnessing the flexible course delivery practices across the university was a priority for the university, which was supported by the document analysis. The key aim of the policy document that mandated blended learning, *Guidelines for Scheduling Blended Subjects*, was “maintaining consistency of flexible teaching across the university” (p.1).

The third and the final issue that led the university to set an agenda for blended learning was the Free Degree Program (FDP). FDP is a course fee funding scheme of the Maldives government that allows undergraduate local students to be exempted from course fees. However, to be eligible for the FDP, students are required to have continuous learning interactions throughout the semester, which was not the case with the block-mode courses. Therefore, the university had to find a solution for this urgent issue. An executive described the implications of the FDP for their flexible course delivery.

“.... but the issue was, with the FDP, the MQA (Maldives Qualifications Authority) didn't want us to do it (block-mode teaching), rather they wanted us to have weekly learning interactions. So, we had to change all our block-teaching subjects to blended teaching. Because that's the only way we can have weekly learning interactions.” (Executive F)

As Executive F mentioned, FDP increased the urgency of the implementation of blended learning as the university's block-mode teaching did not satisfy the requirements of the program, because weekly learning activities were typically not part of block-mode teaching. According to the *Guidelines for the Free Degree Program*, the courses "must be conducted in accordance with the guidelines of the Maldives Qualifications Authority" (p.5). This requirement could be fulfilled with blended learning, as the online component could allow students to have weekly learning, and teachers could monitor students while they were being isolated on remote islands. In addition, the pressure to satisfy the requirements of the FDP was doubled for the university as a large proportion of the students were enrolled in bachelor's degrees (65%), who were keenly looking forward to the course fee exemptions.

To set an agenda, the management of the university tabled the three issues for discussions at multiple forums such as the Heads Meetings and the Academic Senate. Executive E pointed to these discussions.

"In the last few years there were always some talks, ... about using blended learning across the university. Some concerns were discussed, for example, like lack of consistency in conducting block-mode courses across the university." (Executive E)

As Executive E pointed out, the course delivery issues at the university were discussed at the Academic Senate, which led to a resolution of the Senate that mandated blended learning for all the flexible course delivery programs of the university. In sum, the agenda setting was triggered by three key issues of the university, which are the geographical dispersion of the nation, inconsistent course delivery of block-mode teaching, and the FDP. To set an agenda for blended learning, the management discussed these issues at the Academic Senate, which led to the selection of blended learning as a potential innovation

for the issues. Having a strategic intent for blended learning and creating some policies to facilitate the adoption process was vital for the university because it could help the university to establish necessary infrastructure and support mechanisms for teacher and student use of blended learning which were essential for institutional implementation. It could also help the university to adequately “match” blended learning with the institutional needs. The following section outlines how the *matching* stage occurred.

6.5.2. Matching

Matching is fitting an innovation with problems identified from the organisation’s agenda (Rogers, 2003). Results suggest that in the case of MNU, as soon as blended learning was identified as a potential solution for the issues of the university, the senior executive decided to implement it. The document analysis confirmed this action, as the Senate ruling about the implementation of blended learning was communicated to the faculty heads by the Vice Chancellor with an internal memo. In this stage, teachers and the faculty heads were not given the opportunity to play with blended learning, to understand it better before it was fully implemented. An executive described how the matching occurred.

“All of a sudden, on one fine day with the introduction of free degree program, blended learning was started. They didn’t give us enough time to think about it.” (Executive D)

As Executive D mentioned, faculties were informed by the management that they were required to use blended learning from this point forward for their flexible course delivery. The document analysis suggest that the faculties were instructed by the VC to follow the *Guidelines for Scheduling Blended Subjects* from the second semester of 2019. The Academic Senate’s resolution was to be effective just one week after the approval, and the decision was communicated with the faculties on the third day of the approval. This

suggests that the faculties had less than a week to prepare for the implementation of blended learning which would be an immense time pressure for them to make the necessary arrangements for teachers to start blended teaching.

Many teachers shared Executive D's view that the process was sudden and unexpected. For instance, Haifa, a teacher from the tourism and hospitality faculty described how the decision of using blended learning was made.

“They (the management) informed us there was no option other than blended learning (for all the flexible learning programs). It was a pretty short notice, so honestly, it was a bit difficult in the beginning.” (Haifa, FHTS)

Haifa was not the only teacher who raised the issue of the role of management in choosing blended learning. Hana, another teacher who mentioned that if the management did not *force* her, she would not start blended teaching.

“The reason I use blended learning is because they (the management) are forcing us to use. I don't think I would use it, otherwise. My preferred method of teaching (is) fully F2F.” (Hana, FA)

In sum, the results indicate that the matching stage did not occur properly, if at all. In an ideal situation, members of the university specifically teachers, would be given adequate time to experiment with blended learning before it is fully implemented. However, the results suggest that in the case of MNU, the management of the university chose blended learning, and mandated this across the board almost immediately. Results indicate that there was no plan to allow teachers the time to play with blended learning, piloting, or gradual transition to blended learning.

6.5.3. Redefining and Restructuring

Redefining and restructuring is altering the innovation and/or structure of the organisation to fit the innovation with the local context (Rogers, 2003). In this stage, according to

Rogers, often both the innovation and the organisation are expected to change at least to some extent. Results suggested that at MNU, in this stage, blended learning was redefined, and the university was restructured.

In terms of redefining, the key features of blended learning were characterised through some policy changes which was mentioned by Executive A. “Some policies were created for this, some changes were brought to the existing assessment policy ..., there was a guideline (too) for the F2F class scheduling.”

As Executive A described, the university characterised the kind of blended learning that it wanted to be implemented across the board. This included, but was not limited to, determining the proportion of the F2F time, frequency of the F2F classes, and procedures for online facilitation. Some of these features are highlighted in the resolution of the Academic Senate that mandated blended learning.

“To have at least 50% of contact hours as in-class teaching; to have four face-to-face intensive classes for blended learning subjects...to have at least two weeks in between two face-to-face classes.” (The Maldives National University, 2019)

In relation to restructuring, the university brought a significant structural change to the university to cater for blended learning. This was pointed out by an executive who played a key role in the implementation of blended learning.

“.... But now due to a structural change brought within the university, those students started with then-COL are being diverted to their respective faculties, based on the subject disciplines, and now the (new) centre is given a different role.” (Executive B)

Executive B was mentioning the significant structural change of the university that occurred in the implementation process of blended learning. As part of this process, the

university changed the name and mandate of the then Centre for Open Learning (COL), established the Centre for Educational Technology and Excellence (CETE), relocated students of COL at other faculties, and re-appointed professional staff for the CETE. A teacher of CETE who closely worked with faculties described the new role of the Centre.

“The main role (of CETE) is executing the ID (instructional design) process across the university. ... We actually have various phases for this, we call it analysis, design, development, implementation and evaluation.” (Inaya, CETE)

As Inaya mentioned, the CETE was established with the new mandate of helping the faculties to implement blended learning. A resolution of the University Council confirmed this change, which indicated that the CETE was established on the 1st of January 2019 with the mandate of facilitating technology-integrated teaching across the university. The mandate included, but was not limited to, coordination and monitoring of technology-integrated teaching such as blended learning, instructional designing for the faculties, and designing and conducting teacher professional development programs.

In sum, results revealed that in the process of implementation of blended learning, both redefining and restructuring occurred. For redefining, the university identified the key features of blended learning that they wanted to be implemented across the university, such as the ratio of the F2F component and the frequency of the F2F classes. For restructuring, the university changed the name and mandate of the then Centre for Open Learning and established a dedicated new centre called CETE to provide necessary training and support for the faculties. This support was critically important for teacher adoption of blended learning because many teachers may not be very familiar with instructional technologies. Specifically, given the speedy manner of the implementation,

teachers may have needed pedagogic and technical support, and additional time to integrate blended learning into their teaching practice.

6.5.4. Clarifying

Clarifying is making the new idea clearer to the members of the organisation. It is a social process that occurs through human interactions (Rogers, 2003). Results suggested that at MNU, clarifying predominantly occurred through staff meetings and teacher professional development workshops.

For staff meetings, results indicate that when the university started the implementation process, various discussions occurred both amongst teachers, and between the teachers and the management. These discussions took place in the form of meetings and were reported as helpful to clarify many doubts that teachers had, specifically, for those new to blended teaching. Executive E described an example of this.

“Initially there were a series of meeting with some staff of CETE. They were new to us too. In that meeting our staff reaction towards blended learning was very negative. For example, we have a lot of practical sessions every semester. One of our staff asked the CETE member about this and asked how they can accommodate these practical sessions through blended learning.”

(Executive E)

As with Executive E’s faculty, generally, blended learning was relatively new to most of the teachers (65%) and as a result, many teachers had different views about blended learning. The survey results suggest that there were some significant differences in perceptions of blended learning between the subject disciplines, and those which offered more hands-on approaches to teaching or practical components had lower positive perceptions compared to the rest of the university. This may be because some subject disciplines such as hospitality and tourism, science and engineering may have subject-

specific requirements that may influence their perceptions of teaching and learning. Therefore, as Executive E pointed out, some teachers' concerns about being relatively uncertain about blended learning were reasonably justifiable.

Teachers reported that to address the issues around uncertainty, several meetings took place throughout the semester that were predominantly led by the staff of the CETE. Inaya, a teacher and a liaison of CETE confirmed this, and felt that she was able to clarify many questions and doubts that were raised by individual teachers through various meetings. These meetings were useful not only to minimise teacher anxiety, but also to identify the areas that needed to be addressed through professional development.

“I work as a liaison of some faculties. I visit the faculties and talk to the staff to clarify (their doubts) and know their needs. Based on the needs we conduct training, and after the training we do evaluation and take the training report, those kinds of things (are included in my role).” (Inaya, CETE)

As Inaya mentioned, staff meetings were helpful for the university to provide teachers with some clarity about what blended learning means to them and their teaching practice. Hana, a teacher who had less than one year of blended teaching experience, at the time of data collection, described how a meeting helped her to clarify some doubts about designing a Moodle course page which is part of blended teaching.

“Last semester I had a one-to-one meeting with a dean. In that (meeting) they explained to me how the Moodle pages should look like, how they allocate F2F hours and online and so on. They explained it to me on a piece of paper. I follow that as a kind of structure for my subjects.” (Hana, FA)

The second key activity that occurred in the clarifying stage was teacher professional development training. Document analysis indicated that with the implementation of blended learning, the university opened numerous in-house professional development

opportunities for teachers that were managed through the CETE. Haifa, a new teacher to blended teaching, confirmed this.

“There are many (PD) opportunities arranged by CETE. I think like monthly they run training about using Moodle and blended learning. In the beginning it was targeted for everyone. But now (participation in) some programs are on a voluntary basis.” (Haifa, FHTS)

As Haifa mentioned, targeted teacher professional development was one of the key activities that helped teachers to understand blended learning better. In the initial stages of the implementation, it was conducted for all the teachers who were involved in blended teaching, including teachers of the regional campuses. Inaya, a teacher actively engaged in running such training, pointed this out by saying, “nearly 40 scheduled trainings were conducted, including the ones conducted at the (regional) campuses.” *The CETE training schedule 2019* shows that 32 workshops were conducted for teachers, both fulltime and part-time, between February and October 2019 that covered a range of areas related to blended teaching, including Moodle basics, course design for blended teaching, online facilitation, and creating Moodle quizzes. These workshops were used not only to train the teachers, but also as a window of opportunity to build rapport with individual teachers. By “talking to them and listening to their concerns and requests” as mentioned by Executive A, the university took the advantage of clarifying the major concerns of teachers and persuading many of the new teachers to use blended learning, at least to some extent.

In sum, in the process of implementation of blended learning, the clarifying stage occurred. Clarifying was predominantly based on human interactions that occurred through meetings and professional development training. Through these activities, teachers were able to better understand what blended learning meant to them and their

teaching. The activities which occurred throughout the clarifying stage were important because many teachers had little to no experience of blended teaching and the clarifying, specifically of events related to professional development allowed the teachers to learn the fundamentals of blended learning. This was significantly helpful not only to clarify doubts that teachers had but also increase their self-efficacy of teaching blended subjects. Teachers with higher self-efficacy of technology are more likely to adopt blended learning (Kwon et al., 2019; Zee & Koomen, 2016) which suggests that the positive effect of the clarifying stage on teacher self-efficacy of blended learning can increase teacher adoption.

6.5.5. Routinising

Routinising is innovation becoming incorporated into regular functioning of an organisation, and the innovation losing its foreign identity in its new environment (Rogers, 2003). Results suggested that despite the data having been collected in a relatively early stage of the implementation (less than a year), faculties and teachers started considering blended learning as part of their daily routine. An executive described how blended learning was incorporated in their daily university routines.

“Now every semester we formally ask the faculties to send the subject information that they want to offer in blended mode to CETE. Our minimum timeframe for this is six months prior to the start of teaching the subject. CETE provides support to the faculties on a first-come-first-served basis.”
(Executive A)

As Executive A mentioned, from the second semester of the official adoption, faculties started following a pattern of activities in relation to the implementation of blended learning. These included faculties sending subject information to the CETE, individual teachers (i.e., subject coordinators) working with the CETE to develop online course

pages, and the CETE providing necessary training and support for teachers. Nazim, one of the instructional designers, briefly described how he typically works with a subject coordinator to convert a traditional subject to blended teaching.

“I contact the subject coordinator and discuss about the subject. In the meeting, I explain to them how the subject will be developed as a collaborative effort, for example, my role and their role. Then we draw a work plan and share with the subject coordinator. I think that’s the initial work.”

(Nazim, CETE)

As Nazim described, teachers and faculties started considering blended learning as part of their daily work at the university, indicating that blended learning was routinised across the university. In summary, the innovation process of blended learning can be understood as a process that consists of five stages, including, agenda-setting, matching, redefining/restructuring, clarifying, and routinising. These stages were identifiable in the participant interviews that constituted the data set for this part of the research, apart from the “matching”, which was almost absent.

6.6. Factors Identified from the Analysis

The interview analyses suggest that several factors can affect adoption of blended learning that leads to diffusion. These factors are the key aspects that were found to be influential in the analysis in relation to the diffusion of blended learning across the university. These included student experiences, teacher beliefs and attitude, teacher self-efficacy, institutional policies, teacher support, academic disciplines, and institutional readiness. Table 24 presents these factors and includes representative quotes or typical statements that illustrate how these factors were realised in the interview data.

Table 24*Factors that Affected Diffusion of Blended Learning*

Factor	Description	Factor realisation in the data
Student Experiences	All the aspects of a life of a student in a university from the course application process right through to life beyond university (Heron, 2020).	<p>“.....blended learning allows me to study, allows the flexibility of studying while I look after my family, and work. So, I’m really happy.” (Meesha, FA)</p> <p>“I was looking forward for this opportunity for several years... I can’t leave my job to attend classes held in Malé. So, I was very much looking forward for it.” (Aisha, FEST)</p>
Teacher Beliefs and Attitude	Teacher understandings, propositions, assumptions, judgments, and behaviour about pedagogic practices (Tondeur et al., 2017).	<p>“Blended learning is very useful for the Maldives. ... Our islands are very dispersed, and the students live in the islands cannot come to daily classes.” (Fareed, BS)</p> <p>“Blended teaching (is) not easy. Lecturers should prepare very well for (blended) teaching and must know how to use the technological tools.” (Niyam, FE)</p>
Teacher Self-efficacy	Teacher judgments and beliefs about their own capabilities of teaching (Taimalu & Luik, 2019).	<p>“I really don’t know to mention any specific (Moodle) tool to learn because I don’t know how I can use them in my subject areas..., I don’t know Moodle...” (Aban, FE)</p> <p>“There are so many good things with Moodle, but I don’t know those.... I wouldn’t be able to correct a simple mistake in a quiz because I just don’t know how to do it.” (Hana, FA).</p>

Table 24 Continued.

Factor	Description	Factor realisation in the data
Institutional Policies	Strategies and guidelines that determine institutional decisions and actions in relation to curriculum design and implementation (O'Connor, 2014).	<p><i>“We offer fulltime study loads for all the (BL) courses. But each student can be a fulltime husband or a wife.... a father or mother. ... a teacher or nurse. ... When we make all these things fulltime, I don't think students can do it properly.” (Adil, FE)</i></p> <p><i>“Another issue is, as a university, lacking a strategy or a policy for blended teaching.... We don't have a guideline that outlines the standards of BL.” (Nazim, CETE)</i></p>
Teacher Support	Mechanisms, systems, and procedures made available for teachers within the university (Adekola et al., 2017).	<p><i>“I contact the subject coordinator and discuss the subject. ... I explain how the subject will be developed as a collaborative effort.... we draw a work plan....” (Nazim, CETE)</i></p> <p><i>“There are many (PD) opportunities ... I think like monthly they run training ... In the beginning it was targeted for everyone...” (Haifa, FHTS)</i></p>
Academic Disciplines	The main fields of study taught at a university such as education, business, science, and engineering (Vo et al., 2020).	<p><i>“I really can't imagine how we can deliver nursing programs in blended format. I still think basic nurse training can only be provided as regular F2F training.” (Maya, SN)</i></p> <p><i>“I don't think technical subjects like Quran can be taught like this way, because now we find the current method of teaching (is) not very effective.” (Saleem, FLIS)</i></p>

Table 24 Continued.

Factor	Description	Factor realisation in the data
Institutional Readiness	The overall preparedness of a university to implement teaching and learning methods (Scherer et al., 2021)	<p><i>“Also, internet access is a problem. They have given wi-fi (not secured) to some classes, but it’s very difficult to use, simply you can’t (even) play a YouTube video.” (Maya, SN)</i></p> <p><i>“Another thing is resources... For example, we need to produce video learning materials, to facilities for (better teaching). Currently, I can’t (due to unavailability).” (Fareed, BS)</i></p>

Student Experiences were found to be important, and teachers and the executives were very focused on providing students with improved access to learning and increased flexibility, specifically for those who lived at remote locations. Literature indicates that student experiences were often taken into consideration in individual teacher adoption, and by institutions that were intending to support change practices in teaching and learning (e.g., Lima et al., 2021; Xu et al., 2020).

Teacher Beliefs and Attitudes were generally positive toward blended learning because teachers felt that blended learning opened learning opportunities for many students who lived and worked in isolated islands which would otherwise be unlikely to occur. Positive beliefs and attitudes increase individual teacher uptake of pedagogic practices (Liu et al., 2020; Tondeur et al., 2017), and as a result, would facilitate a smoother diffusion.

Teacher Self-efficacy in using blended learning was relatively low, despite some teachers feeling quite confident in their knowledge and skills regarding teaching blended subjects. Teacher self-efficacy has been found in research literature to be a powerful

predictor that can explain the extent of teacher use of blended and online learning (e.g., Cheng et al., 2021; Zee & Koomen, 2016), suggesting that low self-efficacy would have a significant negative impact on teacher adoption and ultimately on the diffusion of blended learning.

Institutional Policies initiated the diffusion process and were helpful to provide necessary infrastructure and support mechanisms for teachers and students, however, inadequate written policy guidelines for blended learning were found to be problematic for teachers and faculties to implement blended learning. This concurs with the literature which argues that institutional policies impact on infrastructure and teacher support regarding the use of blended learning (Porter & Graham, 2016; Porter et al., 2016).

Teacher Support mechanisms, including professional development and technical support were established however, generally, teachers and the executives felt that the support available for teachers was not adequate. Support can affect teacher beliefs and attitudes, teacher self-efficacy, and the overall teacher readiness, hence, is a key element for successful implementation of blended learning (Porter & Graham, 2016; Porter et al., 2016).

Academic Disciplines were found to be impacting on adoption decisions of teachers and faculties. Some academic disciplines such as nursing, and hospitality and tourism studies were relatively hesitant to adopt blended learning. Literature suggests that academic disciplines are closely related to teacher epistemological beliefs, and can thus affect teacher adoption of pedagogic practices (Mercader & Gairín, 2020; Shelton, 2014).

Institutional Readiness to use blended learning was an important aspect identified by the teachers and executives. Generally, the overall preparedness of the university to implement institution-wide blended learning was inadequate. Institutional readiness is

vital to accelerate the implementation process of blended learning at the institution level (Porter & Graham, 2016).

Overall, there were several key factors that impacted on institutional adoption of blended learning that led to diffusion. In the following chapter, Chapter 7, these factors will be applied to the process of innovations in organisations (Rogers, 2003) to understand how diffusion of blended learning occurred across the university.

6.7. Summary

The results revealed that students, teachers, and the executives were generally positive about blended learning. Even though some students and teachers had mixed views, blended learning was perceived to be a teaching method that can provide learners with increased access to learning, increased flexibility, and enhanced learner engagement. In addition, results suggested that teachers and students were encountered by several challenges in using blended learning. These included, negative beliefs and attitudes, teacher low self-efficacy, increased teacher workload, policy issues, technical issues, and lack of readiness.

For the process of blended learning implementation, results suggested that the implementation occurred as a roughly sequential process that included five stages: agenda-setting, matching, redefining/restructuring, clarifying, and routinising. The *agenda* for blended learning was quite strong and was triggered by multiple important and urgent issues that were related to student learning. Results, however, suggest that the *matching* stage did not occur effectively because teachers were not given adequate time to experiment with blended learning before it was fully implemented, predominantly due to the time constraints that the university had. In the stage of *redefining/restructuring*, the characteristics of blended learning were defined along with some structural changes

that were brought to the institution, such as the establishment of the CETE to coordinate blended learning across the university. The *clarifying* stage was based on human interactions that occurred through meetings and professional development. Finally, in the *routinising* stage, teachers and faculties started considering blended learning as part of their daily work, suggesting that the innovation process of blended learning was completed, despite the process having occurred in a relatively short period of time, as short as 6-8 months.

While the process of diffusion was generally smooth and completed, results indicate that there were multiple factors that affected the diffusion process (Table 24). The effect of these factors on teacher adoption that leads to institutional diffusion can be positive or negative, depending on how individual factors emerge in the process of innovation. In the following chapter, Chapter 7, these key factors are applied to the process of innovation to understand the roles of these factors and how they behaved in each of the five stages of the diffusion process.

Chapter 7: Discussion

The aim of the study was to understand user perceptions and beliefs of blended learning and describe the process of blended learning adoption leading to diffusion across a university. The results suggested that the diffusion of blended learning was affected by a range of factors as identified in Table 24 (Chapter 6), and the events that occurred during the diffusion of blended learning can be understood as a process that included five stages – Agenda-setting, Matching, Redefining/Restructuring, Clarifying, and Routinising. Stage models may not always accurately explain organisational changes and change processes are often iterative (Dall’Alba & Sandberg, 2006), which suggests that some of these stages may have common features and less distinctive boundaries between them. Despite this, the application of Roger’s (2003) innovation process in organisations helped us explore how the events came together as a process of change which altered a course delivery practice across a university. Understanding change processes at the institutional level is vital for university leaders to prioritise institutional strategies and policies and establish essential support structures for teachers and students (Anthony Jnr, 2021b). In this chapter, the key factors which affected the diffusion of blended learning are applied to Roger’s (2003) innovation process in organisations to understand their roles in each stage of the process and how these roles change. This will allow us to realise the key aspects and events that impacted on adoption decisions of teachers and the executives and how those decisions affected the diffusion of blended learning at a university level.

7.1. Agenda-setting

Agenda-setting – identification of a common problem within an organisation, is the first and foundational step in Roger’s diffusion of innovation theory (Rogers, 2003). Agenda-setting consists of two sub-dimensions: (a) identifying and prioritising an organisation’s

problems and needs, and (b) searching for an innovation within the organisation (Rogers, 2003). In the process of innovation, agenda-setting is critical because without observing a strong agenda within an organisation, diffusion of innovations are less likely to be successful (Rogers, 2003).

In the first part of the agenda-setting stage, *identifying and prioritising an organisation's problems and needs*, the university's motivation for setting an agenda for blended learning was largely affected by the factors *Student Experiences* and *University Policies*. In relation to student experiences, it is important universities find ways to expand educational access. Specifically, it is critical that people who are not able to easily access education, such as those who live at remote locations be able to study at a university without needing to migrate and be able to continue working so that their university studies might disrupt their normal lives as little as possible. In the current study, the university was motivated to provide students with better experiences in terms of increased access, flexibility, and enhanced learner engagement, specifically for the remote island communities of the nation. This is not an uncommon practice. In fact, other universities have considered alternative modes of delivery, such as blended learning, to better suit students who want to engage with study (e.g., Adekola et al., 2017; Antwi-Boampong & Anthony Jnr, 2021). The literature suggests that blended learning can provide students with increased access to learning, increased flexibility, and enhanced learner engagement (Crawford, 2017; Dziuban et al., 2018; Gao et al., 2020). A second factor that impacted this part of the agenda-setting was *University Policies*, specifically, a resolution of the Academic Senate to adopt blended learning. University policies are generally informed by learner experiences and often shape change initiatives in teaching and learning practices such as blended learning. In some contexts, the imperative to transform educational practices is prioritised because of educational policies of governments. In the current

study, the Maldives government's Free Degree Program (FDP) was an imperative that enormously influenced the university's decision to accelerate setting the agenda for blended learning. Even though the FDP was a policy of the government, it was directly related to all the undergraduate degree courses. Hence, it was very quickly embedded within the policies of the university to improve educational access with course fee exemptions. While the university was already contemplating the adoption of blended learning, the FDP came through and acted as a catalyst in the process of innovation. Government policies and programs can be powerful influences behind organisational change initiatives in universities (Gornitzka, 1999; Guan et al., 2015). Overall, identifying the issues related to the university's course delivery was impacted by the university's desire to provide students with better learning experiences, and the need was prioritised through a university policy related to the FDP. It is not an unusual key objective for teachers and university leaderships to change pedagogic practices and adopt blended learning to provide students with better learning experiences (e.g., Antwi-Boampong & Anthony Jnr, 2021; Dey & Bandyopadhyay, 2019).

In the second part of the agenda-setting stage, *searching for an innovation within the organisation*, the search for an innovation within the university was affected by the factor, *Beliefs and Attitudes*, which was predominantly beliefs and attitudes about the perceived affordances of blended learning to solve the issues identified in Part A of the agenda-setting. Beliefs and attitudes, specifically teacher beliefs and attitudes are vital because beliefs and attitudes predict teacher behaviour towards integrating technology enhanced learning such as blended learning into their classroom practices. In this study, it was mostly the beliefs and attitudes about the perceived usefulness of blended learning in improving access, learner engagement, and overall success of people who lived on the remote islands of the Maldives. In technology adoption, perceived usefulness often relates

to individuals' feelings that an innovation will solve a problem or fulfil a need of users (Hui-Fei & Chi-Hua, 2017; Teo, 2014). In the current study, this feeling was held by a group of senior executives who were very positive about the potential of blended learning to improve the university's flexible course delivery and attract many new students to the university. In addition, many teachers expressed their positive beliefs about the usefulness of blended learning to improve learner access and engagement which could enable students to learn better. This is possible because blended learning purposefully integrates digital technology with F2F learning, which can allow students access to learning and active participation while being isolated at remote locations (Crawford, 2017).

Considering the affordances of blended learning is not an uncommon practice amongst teachers and university executives, which often leads to adoption. The literature suggests that blended learning can afford to provide learners with increased access to learning, increased flexibility, and enhanced learner engagement (Dziuban et al., 2018; Gao et al., 2020). Overall, it was the beliefs and attitudes in relation to the potential of blended learning to support student learning at a distance, while students would still have periodic F2F meetings with teachers, which addressed both the issues of increased access to higher education and improving the learner experiences. In sum, while the university's motivation for setting an agenda for blended learning was driven by the factors, *Student Experiences* and *University Policies*, the search for an innovation as a potential solution for the needs of the university was largely affected by *Teacher Beliefs and Attitude*. In general, a strong agenda for blended learning was identified and the agenda-setting stage occurred relatively well which helped the university to move to the next stage of the diffusion, matching.

7.2. Matching

Matching – conceptually aligning the innovation with the organisational issues, is typically planned, and designed, and in this stage, members of the organisation anticipate the benefits and problems that the innovation will encounter when it is fully implemented (Rogers, 2003). The anticipation of the benefits and problems is often based on a range of activities such as piloting the innovation, conducting stakeholder meetings, and gathering user feedback, amongst other things (Turner et al., 2021). Based on the information gathered through such activities, the organisation typically decides whether the innovation fits the needs of the organisation or not (Rogers, 2003).

The matching of blended learning with the issues identified in the agenda-setting stage was predominantly impacted by two factors: *University Policies* and *Academic Disciplines*. In relation to university policies, unlike prioritising blended learning and prompting the innovation process in the agenda-setting, the *University Policies* take on a different role in the matching stage which was “fast-tracking” the process of diffusion. University policies are often informed by government educational policies and some practices in universities can be impacted by the policy changes of their governments. In the current study, it was the government’s FDP becoming a policy of the university which created an immense time pressure for the university to implement blended learning as quickly as possible, to enable students to access the fee-free courses. This role of the policies drastically reduced the implementation period of blended learning which hindered the university from allowing adequate time in the matching stage. Not having sufficient time to think and act creatively about organisational problems negatively affects innovation and behaviour of organisations (Amabile, 1988; Maqbool et al., 2018). In the current study, it was the reduced time in the matching stage which resulted in skipping the key activities of the “matching”, such as proper teacher consultations and piloting of

blended learning, that ultimately had a detrimental effect on teacher alignment of blended learning with their teaching needs. Pedagogic methods that are non-aligned with teaching needs are unlikely to be adopted by teachers (Tondeur et al., 2017). Therefore, the FDP becoming a part of the university policies was significant, because it was a big contributor not only to mandate blended learning, but also to implement it very quickly, which had an overall negative impact on the process of diffusion. Government policies and programs can have a significant influence on organisational change initiatives in universities (Gornitzka, 1999; Guan et al., 2015), and institutional policies often shape educational transformations, institutional change initiatives, and teaching and learning (O'Connor, 2014; Porter et al., 2014). Overall, unlike the *University Policies* having a positive effect on the agenda-setting, the effect of this factor was largely negative in the matching stage due to the mounted time pressure of the FDP, and consequently, the matching did not occur properly, if at all.

A second factor that affected the matching stage was *Academic Disciplines*, which in fact, was a negative effect caused by the result of the less occurrence of the matching.

Academic disciplines have their own manners of knowledge construction and cognitive purposes that can make each of the subject domains unique in relation to ways of thinking, acquisition of knowledge and competencies (Vo et al., 2020). Academic disciplines have distinctive approaches to knowledge and therefore focus on different pedagogic approaches and learning activities (Lim & Richardson, 2021). This suggests that while some of the disciplines may find online and blended learning more suited to their subject requirements and way of teaching, others may find the opposite. In the current study, it was the subjects which offered more hands-on teaching such as hospitality and tourism studies, and engineering which had more reservations about the use of blended learning, while other academic domains such as liberal arts were more

receptive to it. Generally, students in academic disciplines such as hospitality and tourism studies and engineering master content and apply theories by completing various practical elements, while some other disciplines such as education and liberal arts tend to use non-linear knowledge construction, iterative and reflective practices (Lim & Richardson, 2022; Vo et al., 2020). These differences are related to teacher epistemological beliefs; teacher beliefs about the nature of knowledge and ways of knowing (Kang & Wallace, 2005), and teacher epistemological beliefs and their teaching strategies are closely associated (e.g., Rott, 2020; Sengul et al., 2020). This suggests that the reduced F2F teaching of blended learning and students being heavily reliant on virtual learning may not be the ideal way of teaching for those in academic disciplines which offer more hands-on teaching, and consequently would lead to a rejection amongst those teachers. Especially, in the current study, given the fact that teachers were not given the opportunity in the matching stage to “play” with blended learning to conduct the reality testing – allowing enough time for teachers to learn and determine the benefits and problems that they may encounter in individual subject domains in relation to the use of blended learning, the differences in perceptions amongst academic discipline were reasonable. Reality testing is an essential step of the innovation process to determine whether an innovation fits the needs of the organisation or not (Rogers, 2003). In sum, *Academic Disciplines* had a negative effect on the matching stage which could potentially impede the overall progress of the innovation process.

The university could use an alternative approach in the matching stage. Higher education institutions and governments often collaborate with each other to reform education and manage emergencies (Cheng et al., 2020; Situmorang et al., 2018). Therefore, the MNU working with the Maldives government could eliminate the time pressure caused by the FDP. Teachers could then be provided with a reasonable time to pilot blended learning

along with proper consultations to get their feedback (Adekola et al., 2017). In addition, teachers and faculties could be given the opportunity for a gradual transitioning to blended learning (Abusalim et al., 2020; Mestan, 2019) which could allow them to have a clearer picture of what blended learning means to them and their teaching before it is fully implemented. This would likely enable teachers to better align the pedagogic method with their teaching needs, specifically, to address the concerns related to discipline-specific requirements. Teachers generally embrace pedagogic methods that are aligned with their teaching needs (Grgurovic, 2014; Liu et al., 2020). In addition, increasing teacher participation in adoption decision-making can provide them with the ownership of the change, making teachers positive change agents rather than implementors of others' projects (Mikser et al., 2016; Niesz & Ryan, 2018). As change agents, the likelihood of teachers taking the ownership of the change and actively promoting blended learning within the university would likely be high, as change agents often influence the innovation-decisions of others in desirable directions (Rogers, 2003). Overall, the matching was impacted by *University Policies* and *Academic Disciplines*, and the matching stage did not occur adequately, predominantly due to the increased time pressure of the FDP. This had a detrimental effect on the implementation of blended learning and can be problematic for the sustainability of blended learning over time.

7.3. Redefining and Restructuring

Redefining and Restructuring is altering an innovation and/or existing structure of an organisation to fit the innovation with the local context (Turner et al., 2021). In this stage, the innovation starts getting implemented and typically both the innovation and the organisation get modified, at least to some extent (Rogers, 2003). These modifications are necessary because innovations almost never fit perfectly in organisations in which they are to become embedded (Rogers, 2003). Redefining typically involves tailoring the

innovation to the organisation in which the innovation is to be implemented, while restructuring consists of activities such as creating new organisational units and recruiting personnel for implementation leadership positions (Harriger et al., 2014; Turner et al., 2021). In the current study, both the redefining and restructuring occurred and were impacted by the factors *Student Experiences*, *Institutional Readiness*, and *Teacher Support*. Although *Student Experiences* previously had a role in the agenda-setting which was predominantly improving student access and initiating the innovation process, the role of this factor was relatively different in the redefining/restructuring stage.

The redefining of blended learning was affected by *Student Experiences*. Universities often tailor blended learning by characterising key features of it, such that teachers could implement blended learning in a way that fits the needs of the university. In the case of blended learning this is significant because, despite blended learning being used in higher education for many years, there is still ambiguity in the current literature about what to blend and how to blend (Dziuban et al., 2018; Hrastinski, 2019). This could be problematic for teachers and practitioners in understanding the correct approaches for combining F2F instruction with online learning which could in turn result in uneven student experiences. In the current study it was even more critical because, at the time of the implementation, teachers had little to no knowledge of blended learning and did not have the time to refresh their pedagogical and technological knowledge to use a different method of course delivery. Teachers having vast differences in knowledge of and skills in blended learning is problematic because it means there is a higher likelihood of different practices amongst them within subject, course, faculty, and university levels. Such differences in teacher practices could result in significant variances in student learning experiences followed by inequity across the university, and consequently could result in teacher hesitancy and ultimate rejection. However, by redefining the key characteristics of

blended learning, universities can address such issues and guide teachers to apply blended learning in a way that students can be provided with better and more consistent learning experiences. In the current study, this involved characterising some key features of blended learning, such as defining the proportion of the F2F component as 50% of the contact hours, having at least a duration of two weeks in between any two F2F classes, and providing students with mandatory online activities for the semester weeks that do not have F2F teaching. This helped teachers to ensure that the key features of blended learning were included in their course delivery and student learning experiences in blended courses were consistent, in addition to helping teachers maintain compliance with the new teaching guidelines. Defining different dimensions of the “blend” is vital to make the implementation consistent and convenient for the stakeholders, and to set indicators of achievement (Galvis, 2018). Redefining of blended learning not only improved the consistency in student learning experiences, but also helped the university to better fit blended learning with the needs of the university which can positively affect the diffusion. Innovations that fit well with the local context are more likely to be adopted (Rogers, 2003). In sum, the redefining of blended learning was largely impacted by *Student Experiences* and was related to the university’s desire to maintain consistency in blended delivery across the board, which was a slightly different role for this factor compared to its role in the agenda-setting stage – expanding educational access for remote students and triggering the innovation process.

Restructuring was impacted by two factors: *Institutional Readiness* and *Teacher Support*. In relation to *Institutional Readiness*, universities establish critical technological infrastructure such as reliable internet network and acquire necessary hardware and software to improve institutional readiness, hence teachers can embrace online and blended learning. Blended learning requires teacher use of reliable internet along with a

range of digital technologies such as LMS and some specific software and hardware to produce online learning materials. Without providing teachers with such technological infrastructure and facilities, it is unlikely that universities will be able to implement blended learning at the institutional level (Porter et al., 2016). Despite the pervasiveness of the advanced technologies, all universities, especially those that promote purely “brick and mortar” style education, may not necessarily be ready for this, because these would not be their institutional priorities, which may result in a lack of essential technological infrastructure, facilities, and resources for adoption and diffusion of blended learning at the institutional level. The lack of access to appropriate technological facilities can undermine even the strong motivations of teachers to adopt blended learning, resulting in negative perceptions (Brown, 2016). Therefore, with the desire to improve institutional readiness for online and blended learning, universities often change their existing organisational structures and establish necessary facilities for teachers and students. In the current study, this involved changing the name and mandate of an existing organisational unit – the Centre for Open Learning, and creating a new centre named the Centre for Educational Technology and Excellence – CETE. This structural change was significant, because through the CETE the university was able to identify some critical issues related to its technological infrastructure and resources, and take necessary actions to address those issues, such as improving the internet network and the procurement of some computer hardware and software, amongst others, which was helpful for the university to improve institutional readiness for blended learning. A strong technology infrastructure improves institutional readiness and is critical for institutional implementation of online and blended learning (Porter & Graham, 2016; Rasheed et al., 2020). In sum, the restructuring of the university was affected by *Institutional Readiness*, and the establishment of the CETE as part of the restructuring was helpful for the university to

improve the overall readiness of the university for adoption and diffusion of blended learning.

A second factor that affected the restructuring was *Teacher Support*. Teachers need different types of support including technological support, pedagogical support, and incentives such as recognition and financial incentives to effectively use technology enhanced learning such as blended learning. It is more critical for blended learning because it requires teachers to use both F2F and online teaching, which is a significant change in practice and new to many teachers. Universities, therefore, often address this need by creating one-stop support centres so teachers can seek support when they need it. In the current study, the university made a structural change related to the establishment of the CETE; a one-stop support centre that reinforced teachers to use blended learning, especially helping them to address the technological issues related to the use of Moodle. These included, but were not limited to, issues related to the selection of online tools in Moodle and creating online learning materials and activities such as online quizzes. The availability of support for teachers to manage the technological component of blended learning is essential, because many teachers often need technological support to implement online and blended learning methods, as every teacher may not necessarily be “technology-savvy” (Liang et al., 2013). In addition, the combination and use of more than one method of delivery in a single subject significantly changes teacher practice, which most of the teachers may not be accustomed to. Teacher support, therefore, has been described as a prerequisite for successful implementation of institutional blended learning (Porter & Graham, 2016; Thomas et al., 2022). In sum, the university’s motivation to restructure the organisation and create the CETE as a new support centre was related to improving institutional readiness and teacher support, which were reported to be helpful for the diffusion of blended learning. Overall, the redefining/restructuring

stage occurred relatively smoothly, and this stage of the innovation process was affected by *Student Experiences*, *Institutional Readiness*, and *Teacher Support*.

7.4. Clarifying

Clarifying – making the meaning of the new idea clearer to the members of the organisation, occurs when the innovation is put into more widespread use (Rogers, 2003; Turner et al., 2021). This stage allows members of the organisation to talk about the innovation so that they can gradually develop a clearer understanding of what the innovation means to them and the organisation (Rusek et al., 2017). Clarifying involves social construction (Rogers, 2003) which can occur in multiple forms such as written communications, staff meetings and training, and the distribution of promotional materials (Turner et al., 2021).

The clarifying stage was affected by two factors – *Teacher Support*, and *Teacher Self-efficacy*. In the redefining/restructuring stage, teachers were provided with technological support. However, the role of *Teacher Support* in the clarifying stage was slightly different. Universities provide teachers with different types of support, including technological and pedagogical support, and incentives to encourage them to use technology enhanced learning such as blended learning. Hence, *Teacher Support* take on a different role in the clarifying stage – predominantly providing teachers with pedagogical support, which is necessary and important. In addition to the know-how of using instructional technologies, teachers need to have a thorough understanding of the pedagogical principles underpinned by the integration of technologies into classroom practices in order to provide students with optimal learning experiences (Liang et al., 2013). In the case of blended learning this is more critical because blended learning is not just the use of online learning along with F2F instruction. It also requires the purposeful

combination of F2F instruction with online learning (Garrison & Vaughan, 2013; Zimba et al., 2021), which can only be achieved if teachers understand the pedagogical principles of “blending” of F2F instructions with online learning. This may, however, may not be easy for most teachers, as traditionally teachers are trained for F2F teaching. Therefore, pedagogical support is essential to clarify teacher doubts about the combination of online instructions with F2F learning and teach them the fundamentals of “blending” because many teachers may have never had this experience before. In the current study, this support came through in the form of intensive professional development (PD) workshops along with several staff meetings, at both the central and faculty levels, led predominantly by the experienced teachers at the CETE, to teach teachers how to design and deliver blended subjects, such as understanding blended course design models. This support is essential for teachers when transitioning to online and blended learning (Porter et al., 2016; Scherer et al., 2021), because teacher pedagogical support in relation to design principles, models, and approaches of blending instruction could enable teachers to better understand blended learning and improve their comfort levels (Reid, 2017), and as a result, teacher willingness to adopt blended learning can be increased. Overall, the support provided to the teachers in the form of PD was largely about how to design and deliver blended teaching which was somewhat different from the technological support that teachers received in the redefining/restructuring stage.

A second factor that affected the clarifying stage was *Teacher Self-efficacy*. Teachers tend to subjectively evaluate their own knowledge of and skills in using new technologies and pedagogic practices before they integrate them into teaching and learning. This judgement of teachers is critical because teachers generally avoid adopting new pedagogic practices unless they believe that they have the ability to produce positive learning outcomes and prevent potential detrimental effects of those activities on their students’ learning (Cheng

et al., 2021; Joo et al., 2018). In the case of blended learning, this is more significant, because blended learning significantly changes teacher practice as it requires teachers to integrate both F2F and online instruction into their lessons. However, teacher higher self-efficacy in one area does not necessarily mean higher self-efficacy in another area (Kwon et al., 2019), suggesting that teachers with high self-efficacy of F2F delivery may still have significant difficulties with online teaching. Therefore, typical activities of the online component of blended learning, such as designing and producing online content for blended delivery, maintaining learner engagement through instructional technologies, and effective use of a learning management system such as Moodle, could be significant issues for teachers who are accustomed to F2F teaching. Such skills, nonetheless, can be provided to teachers through tailored PD programs, and in return, teacher self-efficacy can be improved. In the current study, intensive PD training workshops were conducted for teachers to upskill their knowledge and understanding of online teaching that included, but was not limited to, basic Moodle skills, maintaining online learner engagement, and principles/models of combining online instruction with F2F learning. These activities were reported by teachers as significantly helpful for them to improve their self-efficacy of teaching blended subjects and which had a positive effect on individual teacher adoption of blended learning. The literature suggests that teacher self-efficacy is closely related to teacher motivation, classroom management and persistence in performing challenging tasks in teaching (e.g, Goddard & Kim, 2018; Kwon et al., 2019), and teachers with higher self-efficacy are more likely to adopt online and blended teaching methods (Narayanan & Ordynans, 2021). This suggests that the increased teacher self-efficacy that teachers may have gained through the professional development workshops would lead to higher likelihood of teacher adoption of blended learning. Overall, the PD training conducted for teachers in the clarifying stage was affected by

Teacher Support, and *Teacher Self-efficacy*, which had positive effects on the process of diffusion of blended learning and helped the university to move to the final stage of the innovation process, routinising.

7.5. Routinising

Routinising – when innovation is incorporated into the regular activities of the organisation and it loses its foreign identity, is the final stage of the innovation process (Rogers, 2003). In this stage, members of the organisation consider using the innovation as part of their daily practice, and at this point, the innovation process is completed (Rogers, 2003).

The routinisation of blended learning was predominantly affected by *Teacher Support*. However, the role of *Teacher Support* in this stage was more of a systematic “after-implementation” support along with the oversight of the overall diffusion, and relatively different from the other stages. Through dedicated support centres, universities establish structures and mechanisms to support the continuity of the implementation of online and blended learning. This is because in the initial phases of teacher adoption of technology enhanced learning, their conceptualisation and actual use could be fragile, and in return, their pedagogical techniques could still be closely reflecting their traditional teaching strategies (Chikasanda et al., 2013). This is problematic, because if teachers are unable to completely shift their beliefs and practices of teaching and cannot find significant differences in the new practice to their previous methods of teaching, the likelihood of dropping the new idea is high. However, universities can address such issues by establishing proper monitoring mechanisms and providing teachers and faculties with tailored support. In the current study, it was the CETE which played this role, by closely working with the faculties to monitor the implementation progress, identify areas for

improvement, conduct tailored training for those who need it, and generate periodic implementation reports for the senior management. This was helpful for the university to ensure that blended learning was implemented in accordance with the guidelines of the Academic Senate, and the faculties were well supported to make the new pedagogic practice as part of their daily routine activities. Support centres and teaching and learning units often play a vital role in institutional adoption and diffusion of blended learning (Dooley & Murphrey, 2000; Graham et al., 2013). Overall, the routinising stage was affected by *Teacher Support*, and relatively quickly (within 6-8 months) blended learning was considered as part of the routine activities of the university, which suggests that the innovation process was successfully completed.

Even if blended learning becomes routinised and the innovation process is completed, Rogers (2003) warned not to take routinising as straightforward as it might seem at first glance, because sustainability can be an entirely different story. One reason is that even if the routinising stage goes relatively smoothly, unexpected issues can arise throughout and after the routinising stage (Rogers, 2003). This is very relevant to the current study, because throughout the innovation process, most of the key decisions were made by the leadership, whereas teacher participation was minimal, especially in the critical activities of the matching stage. Therefore, even though teachers started using blended learning, one can argue that teachers may still not be able to properly align blended learning with their teaching needs which may result in a reversion to their previous teaching methods. Teachers are less likely to use pedagogic methods that are not aligned with their pedagogic needs (Tondeur et al., 2017). More significantly, at the end of the first year of the official adoption, the entire management of the university was replaced by a new team (the chancellor, vice chancellor, and all the deputy vice chancellors) which likely came with a different set of strategic directions. “If the innovation-decision is an authority

decision, with only one or a few powerful individuals involved, and if these authorities happen to leave the organisation, sustainability of the innovation is at risk” (Rogers, 2003, p. 429). This suggests that, in the context of the current study, if blended learning happened to be given less priority in the policy agenda of the new management, sustainability of blended learning could be at risk. Unexpected leadership changes in universities can derail institutional change initiatives because leadership changes often alter strategic objectives and budget allocations that may have a detrimental effect on the success of ongoing change initiatives (Latta & Myers, 2005). Therefore, while blended learning came into the university system with a strong agenda and was generally perceived as a “good fit” for the needs of the university, it is reasonable to assume that the continuity of blended learning can be on shaky ground over time, mainly due to the weak occurrence of the matching stage, and the enormous change that occurred in the management of the university. However, this would largely be dependent on the strategic directions of the new management and can only be fully determined by collecting data at more than one point in time, which was beyond the scope of the current study.

7.6. Summary

In sum, the adoption and diffusion of blended learning at the MNU can be understood as a process which consisted of five stages – agenda-setting, matching, redefining/restructuring, clarifying, and routinising. While these stages were relatively distinct, there were some commonalities in the nature of the activities in some stages such as providing teachers with support, specifically in the last three stages of the innovation process. Several factors were identified as important in the process of diffusion, including *Student Experiences, Teacher Beliefs and Attitude, Teacher Support, Teacher Self-efficacy, University Policies, Academic Disciplines, and Institutional Readiness*. Even though these factors are well-known to be affecting teacher adoption of general

technology, applying them to the process of innovation helped us understand the role of these factors in different stages of the diffusion process and how their roles can be changed as the diffusion progresses. Overall, some of the factors such as *Student Experiences*, *University Policies*, and *Teacher Support* were important in more than one stage of the innovation process, and their roles were also slightly different in each of those stages depending on the needs of the university. In sum, the change process of blended learning was prompted by *Student Experiences* with a strong desire to provide students with better experiences in terms of access, flexibility, and engagement, and the diffusion process was catalysed by *University Policies*, and *Teacher Support*. Overall, blended learning was routinised relatively quickly and the university managed to complete the diffusion process, even though the sustainability of blended learning may be at risk over time, largely due to the less/non-occurrence of the matching stage and the leadership change of the university. However, this can only be fully determined by collecting data at more than one point in time.

Chapter 8: Conclusion

The aim of this study was to understand user perceptions and beliefs of blended learning and describe a process of blended learning adoption leading to diffusion across a university. The Technology Acceptance Model (Davis et al., 1989), and the Diffusion of Innovations theory (Rogers, 2003) were used to understand how individuals perceived blended learning and how the process of diffusion occurred across a university. Several factors that affect teacher adoption of general technology were identified and applied to Roger's innovation process in organisations to explain the roles of those factors in adoption and diffusion of blended learning in higher education.

A case study method was employed to understand in-depth information about the events that occurred in the process of the diffusion of blended learning. The participants include 407 students, 99 teachers, and six university executives. A convergent mixed method approach was applied for data collection and analysis. Data were collected through questionnaires, interviews, and focus groups. In addition, several university documents such as the university's strategic plans, annual reports, and blended learning implementation guidelines were collected and analysed for triangulation purposes. The quantitative and qualitative data were collected in parallel, analysed separately, and were then merged. The results suggest that the university had a genuine need for institutional adoption of blended learning and the events that occurred for the diffusion of blended learning can be understood as a process that included five stages – agenda-setting, matching, redefining/restructuring, clarifying, and routinising. Results further revealed that several factors, including *Student Experiences*, *Teacher Beliefs and Attitudes*, *Teacher Self-efficacy*, *Teacher Support*, *Academic Disciplines*, *University Policies*, and *Institutional Readiness* took on different roles in the stages of the innovation process and the roles of these factors were shifting. Overall, despite the less effective or non-

occurrence of the matching stage, blended learning was routinised relatively quickly and the innovation process was completed.

The study was guided by three research questions. The sections below address the research questions, followed by the limitations and possible future research, implications, and conclusions.

8.1. Addressing the Research Questions

Research Question 1: What are the differences in perceptions of blended learning across the university?

User perceptions were studied across the three stakeholder groups of the university: students, teachers, and the executives. For students, blended learning was a method of teaching that allows them to participate in university education without needing to migrate to the city, which was not possible for them before blended learning was introduced. Teachers had views similar to those of the students and felt that they could not keep this student cohort in Malé for F2F teaching, because most of these students are based on remote islands where they have commitments such as family and fulltime employment. While this flexibility can be a feature of fully online learning, blended learning was considered as the preferred method of delivery, because unlike fully online learning, the F2F component of blended learning was perceived as a crucial element of teaching that can allow students to have better learning experiences by having some in-person interactions with teachers. For the executives, in addition to the potential of blended learning to increase access to learning for the remote communities, blended learning was perceived as a solution for some of the quality issues related to the university's flexible course delivery, specifically around learner engagement issues, and

as a tool for attracting more students to the university. Overall, blended learning perceptions were generally positive across the university.

In terms of the differences in perceptions between these three groups, the general overall perceptions were quite similar across the three groups. The potential of blended learning to provide students with better learning experiences, specifically, increased access to learning for the remote island communities, was considered by the three participant groups to be the primary advantage of blended learning. The major differences in the overall perception of blended learning between these three groups were the executives' desire to address learner engagement issues related to the university's flexible course delivery, and to attract more students to the university. The literature suggests that the purposeful integration of F2F learning with technology-mediated instruction of blended learning can provide learners with increased access to learning and enhanced engagement, especially for the remote and rural communities, which would otherwise be unlikely to occur (e.g., Crawford, 2017; Dey & Bandyopadhyay, 2019). In addition, blended learning is often identified as the preferred method of learning which increases student course enrolment and retention, compared to fully F2F or fully online learning (e.g., Dziuban et al., 2018; Lightner & Lightner-Laws, 2016). This suggests that the university can sell blended learning within the wider community of the nation as a suitable method of teaching for the people who live at remote locations.

Student and teacher perceptions were also compared for the demographic variables. For students, the demographics of interest were gender, area/region of living, level of course/studies, employed status and unemployed, and the academic disciplines. Results suggest that there were no significant differences for gender, level of course/studies, and employed/unemployed status. However, for the area of living, students who lived on the remote islands were more receptive to take another blended learning course in future

compared to those who lived in the city. This suggests that universities could use blended learning to reach the people who live in remote and dispersed communities such as the islands of the Maldives. Another demographic variable of students that showed significant differences was academic disciplines. The results suggest that students in more hands-on teaching subjects such as hospitality and tourism studies, and science/engineering, were more sceptical about blended learning and had lower positive perceptions, compared to disciplines such as Islamic studies, liberal arts, and education. This indicates that the application of blended learning and the rate of adoption within subject disciplines could be relatively different, and consequently could have a significant impact on the overall diffusion of blended learning. Literature suggests that academic disciplines have distinct ways of knowledge construction and may want more in-person or direct teaching (Mercader & Gairín, 2020; Vo et al., 2020), which is significantly different from blended learning. This suggests that universities should consider the differences between subjects and disciplines and be cautious about implementing blended learning using a “one-size-fits-all” approach.

Two teacher demographic variables, namely teaching experiences and academic disciplines, were used to compare the differences in teacher perceptions. For teaching experience, the results suggest that compared to the experienced teachers, the novice were less positive in relation to teacher self-efficacy, perceived usefulness, and perceived ease of use of blended learning. In general, the novice teachers had little understanding of blended learning compared to those who had more experience of teaching blended subjects. This suggests that compared to the experienced teachers, the novice may need additional support to use blended learning, especially, in the first few months of the implementation process. Teacher support has been identified as an essential aspect for the beginning teachers to use online and blended learning (e.g., Ottenbreit-Leftwich et al.,

2018; Warsame & Valles, 2018). Similar to the students, and generally speaking, teachers who were involved in academic disciplines which required more hands-on teaching were more sceptical about blended learning compared to teachers in other subject fields.

Blended learning typically reduces F2F instruction time and requires a significant portion of online teaching, which may be perceived as not the ideal way of teaching by some subject disciplines (Shelton, 2014), and as a result, the new way of teaching could be confronting for teachers who needed to align their teaching with the unique requirements of their disciplines.

In sum, the results suggests that generally, blended learning was perceived as a method of teaching that allows people who live on the remote islands to participate in university education without migrating to the city, which was not the case before blended learning was introduced. These perceptions, particularly the positive beliefs and attitude held about the usefulness of blended learning to improve student access and engagement, were part of the reason why the university was able to diffuse blended learning relatively quickly. However, the differences in perceptions, specifically differences across academic disciplines suggest that a “one-size-fits-all” approach may be problematic. Because, while some of the disciplines may find blended learning to be more aligned with their subject requirements or way of teaching, others would find the opposite, resulting in hesitancy and, in some cases, possible rejection. Academic disciplines have their own manners of knowledge construction and cognitive purposes. Hence pedagogic methods that are not consistent with the disciplinary requirements are unlikely to be adopted (Lim & Richardson, 2021).

Research Question 2: *How did the diffusion of blended learning occur throughout the university?*

The results suggest that in the case of MNU, the diffusion of blended learning can be described as a multi-stage process which included agenda-setting, matching, redefining/restructuring, clarifying, and routinising, even though the matching stage did not occur effectively. In the first stage, agenda-setting, the university's motivation for the institutional adoption of blended learning was prompted by multiple issues related to student experiences, such as maximising educational access for the people of the geographically isolated islands and learner engagement issues in the university's then-used "block-mode" teaching. The university was very clear about its needs and blended learning was chosen as a potential innovation to solve the identified issues. Even though the agenda-setting occurred relatively well, the second stage of the innovation process – matching, did not occur successfully, if it at all. This was largely due to the mounted time pressure caused by the FDP, which resulted in the fast-tracking of the innovation process and the missing of crucial activities of the matching stage such as proper teacher consultations and piloting of blended learning. Consequently, teachers did not have time to "play" with blended learning to understand what blended learning meant to them and their teaching practice. This resulted in anxiety and some reservations about blended learning amongst teachers, specifically in academic disciplines that offered more hands-on teaching such as hospitality and tourism studies, and engineering/science. Teachers often show negative attitudes towards unfamiliar pedagogic methods and technologies that they find less consistent with their teaching needs (Eickelmann & Vennemann, 2017).

The third stage, redefining and restructuring, occurred relatively successfully, and in this stage both the innovation (blended learning) and the structure of the university were

modified. In relation to redefining, the key features of blended learning were identified and characterised, which included defining the proportion of the F2F component as being 50% of the contact hours, having at least a duration of two weeks in between any two F2F classes, and providing students with mandatory online activities for the semester weeks that do not have F2F teaching. Redefining was beneficial for the university to better fit blended learning with the needs of the university and to ensure that the implementation was consistent across the university, hence students could be provided with better learning experiences. By redefining different dimensions of the “blend”, universities could make the implementation consistent and convenient for the stakeholders and set indicators of achievement (Galvis, 2018). For restructuring, an existing unit of the university named the Centre for Open Learning was renamed as the Centre for Educational Technology and Excellence (CETE) with a new mandate and facilities for coordination and oversighting of blended delivery across the university. This change was significant and helpful for the university to upgrade its internet network and improve some critical facilities, such as online learning material production facilities, which increased the overall readiness of the university. A strong technology infrastructure improves institutional readiness and is vital for institutional implementation of online and blended learning (Rasheed et al., 2020).

The fourth stage of the innovation process, clarifying, was dominated by two key types of activities, namely teacher professional development training and staff meetings. In this stage, in addition to the several staff meetings held at both the faculty and central level to clarify teacher concerns, intensive PD training workshops were conducted for teachers to upskill their knowledge and understanding of blended learning that included, but were not limited to, basic Moodle skills, maintaining online learner engagement, and principles/models of combining online instruction with F2F learning. These activities

were reported as essential not only to clear teacher doubts about blended learning, but also as an immense support for teachers to improve their knowledge and skills in using blended learning in their teaching. Teachers often need support to implement blended learning (Liang et al., 2013), because blended learning significantly changes teachers' practices and requires teachers to use both online and F2F teaching, which may not be easy for many teachers. A teacher being good at one method of teaching does not necessarily mean they have the same capacity to use another method of teaching (Kwon et al., 2019), suggesting that even the teachers with significant experience of F2F teaching would need clarity and support to use online and blended learning. Overall, in the case of MNU, the clarifying stage occurred relatively successfully and was helpful for the diffusion of blended learning.

The fifth and the final stage of the innovation process was routinising. In this stage, teachers and the faculties started following a pattern of activities in relation to the use of blended learning, and through the CETE, the university established a blended learning implementation monitoring mechanism. This was achieved by the CETE closely working with the faculties to monitor the implementation progress, identify areas for improvements, conduct tailored training for those who need it, and generate periodic implementation reports for the senior management. As Rogers (2003) postulates, these activities suggest that the new practice was embedded with the regular activities of the institution, which can be considered as the completion of the innovation process.

In sum, the diffusion of blended learning occurred as a multi-stage process that included agenda-setting, matching, redefining/restructuring, clarifying, and routinising. Even though the matching stage did not occur successfully, and there were some commonalities in the nature of the activities, such as teacher support, that were undertaken in some stages of the process, the current study suggests that it is possible to use a multi-stage

approach for diffusion of blended learning at a university. It also indicates that the matching stage has a critical role to play in ensuring that teachers better understand blended learning. By allowing teachers to “play” with blended learning in the matching stage, teachers can align blended learning with their teaching needs, which may have significantly positive effects on the institutional efforts to embrace blended learning. Teachers are more likely to adopt pedagogic methods that are aligned with their teaching needs (Tondeur et al., 2017). Overall, the innovation process was initiated by setting an agenda for blended learning to solve the university’s issues related to its flexible course delivery and was completed by embedding the pedagogic method within the daily activities of the university.

Research Question 3: *What were the roles of the factors affecting the adoption and diffusion of blended learning in the university?*

The results revealed that the process of diffusion was affected by several factors that included *Student Experiences, Teacher Beliefs and Attitude, Teacher Support, Teacher Self-efficacy, University Policies, Academic Disciplines, and Institutional Readiness*. Although these factors had role influencing the decisions of the university throughout the innovation process, different stages of the process were affected by certain factors. First, in the agenda-setting stage, *Student Experiences, University Policies, and Teacher Beliefs and Attitude* were important. In this stage, identifying and prioritising the university’s problems and needs were largely driven by *Student Experiences, and University Policies*, while the selection of blended learning was impacted by *Teacher Beliefs and Attitude*. This suggests that these three factors can play a critical role in the initiation of change processes in universities.

Second, the matching stage was affected by *University Policies* and *Academic Disciplines*, wherein both factors had largely negative impacts on the diffusion process. Although *University Policies* had a positive effect on setting an agenda for blended learning, the effect of this factor was mainly negative in the matching stage, significantly reducing the implementation period of blended learning, which resulted in skipping the key activities of the “matching”. This hindered teachers from aligning blended learning with their pedagogic objectives, especially in some academic disciplines such as hospitality and tourism studies, and science and engineering, which had an overall negative effect on teacher adoption of blended learning. The literature suggests that the unsuccessful or non-occurrence of the matching stage could potentially minimise effective alignment of new innovations with organisational needs, and consequently have a detrimental effect on diffusion at the organisational level (Rogers, 2003; Turner et al., 2021).

Third, the redefining/restructuring stage was impacted by *Student Experiences*, *Institutional Readiness*, and *Teacher Support*, and in the case of MNU, both the redefining and restructuring did occur. The university’s motivation for redefining blended learning to fit the innovation to the needs of the university was impacted by *Student Experiences*. While this factor had a role in the agenda-setting – expanding educational access for remote students and triggering the innovation process, *Student Experiences* took on a slightly different role in the redefining/restructuring stage and was related to the university’s desire to maintain consistency in blended delivery across the board, hence students could be provided with better and consistent learning experiences. The literature suggests that by defining different dimensions of blended learning, universities can make the implementation consistent and convenient for relevant stakeholders and set indicators of achievement (Galvis, 2018). In relation to the restructuring, the university brought a

significant change to its existing organisational structure – changing the name and mandate of the Centre for Open Learning and creating a new centre named the Centre for Educational Technology and Excellence (CETE). These changes were impacted by *Institutional Readiness* and *Teacher Support*. Through the CETE, the university was aiming to improve its readiness for diffusion of blended learning and provide teachers with necessary support, especially technological support. Dedicated support centres can play a vital role in providing teachers with necessary support and improving overall institutional readiness.

Fourth, the clarifying stage was affected by *Teacher Support* and *Teacher Self-efficacy*. In this stage, the dominant activities were professional development training and staff meetings for teachers. These activities were reported as helpful for teachers not only to learn about blended learning but also to improve teacher self-efficacy in teaching blended subjects. Professional development is a critical support that helps teachers to improve their self-efficacy in using online and blended learning (Philipson et al., 2019). The fifth and final stage of the innovation process was routinising, which was impacted by *Teacher Support*. The role of support in this stage was relatively different from the roles of support in other stages and was largely “after-implementation” support, along with the oversight of the overall diffusion, including evaluation of individual teacher use of blended learning and the provision of tailored feedback to improve their practice. Providing after implementation support is vital because in the first few months of the implementation, teacher conceptualisation and the use of blended learning can be fragile, and consequently, their pedagogical techniques can still be reflecting their traditional teaching strategies (Chikasanda et al., 2013). However, through a teacher support mechanism, such issues can be addressed and the risks of teachers reverting to their traditional teaching practices can be minimised.

Of the impacting factors, results suggest that *Student Experiences*, *University Policies*, and *Teacher Support* were important in more than one stage of the innovation process. Overall, the motivation for institutional adoption of blended learning was triggered by *Student Experiences* and was cartellised by *University Policies*, and *Teacher Support*. Another key finding of this study was the shifting in relation to the roles of the factors across various stages of the innovation process. For instance, *Teacher Support* was at play in three different stages – redefining/restructuring, clarifying, and routinising. The roles of support, however, were different in each of the stages which suggests that teacher support may include multiple subdimensions that need to be focused on by universities to enable teachers to use blended learning at the institutional level. Likewise, the roles of the *Student Experiences* were slightly different in the stages of agenda-setting, and redefining/restructuring, while the roles of *University Policies* were also shifted from “kick-starting” to “fast-tracking” in the agenda-setting and the matching stages, respectively. In sum, the diffusion process of blended learning was affected by several factors related to the three key stakeholder groups of a university: students, teachers, and the executives, and as the innovation process progressed, the roles of these factors were shifting to cater for the institutional needs.

8.2. Implications

The findings of the current study have multiple implications for the theory and practice of blended learning. *For theory*, this study applied a set of factors that affect teacher adoption of general technology to the Diffusion of Innovations theory - DoI (Rogers, 2003), more specifically, the *innovation process in organisations*, to understand the roles of these factors in each stage of the diffusion process and how their roles can be changed throughout the process. In addition, this study highlighted the key role of the matching

stage in the innovation process in organisations. While previous studies have used the DoI to understand various aspects of technology adoption, such as the attributes of innovations and adopter categories, there is very limited research that applied DoI at the institutional level to understand how innovations are diffused at the institutional level (Templeton et al., 2009). More importantly, to the best knowledge of the author, there is nearly no empirical evidence in the current literature about how DoI can be used in higher education to explain adoption and diffusion of technology enhanced learning, specifically the diffusion processes of blended learning. Given the rapid increase of online and blended teaching since the COVID-19 pandemic, it is imperative to explore the approaches for adoption and diffusion of blended learning to help educational leaders to take informed decisions at the institutional level. The current study provides some significant new knowledge to the field of blended learning and diffusion of innovations and offers some guidance about the applicability of DoI to understand organisational changes in higher education, specifically, the diffusion of blended learning at the university level. Second, this study suggests that perceived affordances of blended learning, specifically, increased access to learning and enhanced learner engagement, can be related to the perceived usefulness of blended learning, while improved flexibility can be linked to the ease of use of blended learning which is consistent with the Technology Acceptance Model - TAM (Davis, 1989). The findings reported in this study, hence, strengthen TAM by providing some empirical evidence from a blended learning context, suggesting that TAM not only explains individual teacher adoption of technology but also can be helpful to explain institutional implementation of blended learning.

For *practice*, the current study has four implications. First, universities can consider embracing blended learning as a method of instruction, especially given the rapid increase of online teaching since the current global pandemic. This can not only widen prospective

student populations of universities but can also maximise access to education by allowing people who are unable to attend daily F2F classes due to reasons such as living at remote locations, being fulltime employed, and having families to care for. While fully online learning can provide similar flexibility, the F2F component of blended learning serves as an added advantage that can address some of the quality concerns that may arise with fully online learning.

Second, understanding the roles of various factors that affect adoption of blended learning would help universities to apply those factors in universities and build support structures for teachers to use blended learning at the institutional level such as creating dedicated support centres to provide teachers with pedagogical and technological support.

Universities can also use these factors as a guide to prioritise the innovation activities and to better understand the key areas to focus on, such as learner experiences, university policies, and teacher support to facilitate diffusion of blended learning.

Third, for adoption of blended learning, higher education providers need to consider having clear strategic directions. Having strategies, policies and guidelines for adoption and diffusion of blended learning can help universities to provide teachers and students with required technological infrastructure, resources, and support, including improved internet infrastructure, and to establish adequate technological hardware and software for teachers to use in their blended teaching. This is likely to increase the rate of teacher adoption and consequently, can result in a faster diffusion process at the institutional level.

Fourth and finally, for a smoother process diffusion, university leaders need to consider teacher participation in decision making in relation to the change in pedagogic practices such as blended learning. Participation of teachers not only allows them to have a say in

the university's decision making, but it also gives them the ownership of the change process, and as a result, teachers become change agents who drive the change within the university. In addition, it can give teachers ample opportunities to “play” with blended learning, before it is fully implemented, to learn the fundamentals of blended learning. This can minimise potential teacher negative beliefs and attitudes, and in return, the diffusion process can be faster. Overall, this study provides important practical guidelines for adoption and diffusion of blended learning in higher education, specifically at the institutional level.

8.3. Limitations

This study is limited by three methodological factors: (a) specific context of the study, (b) research participants, and (c) data collection time. First, for the context, this is a case study which was conducted at a small university in the Maldives. Blended learning courses were limited to specific programs, even though eight subject disciplines were included. In addition, the participants of this study were largely fulltime employed and matured-aged (over 25 years of age) students who lived with their families on geographically isolated islands. Considering the geographical factors of the nation and student demographics, the MNU may likely be significantly different from other conventional universities. Therefore, generalisations in relation to adoption of blended learning in higher education that leads to diffusion is limited to the Maldivian context or other similar universities.

Second, at the time of data collection, all the students enrolled in blended learning courses were invited to participate in this study. However, as detailed in Chapter 4, student participation was limited in some subject areas due to the small number of students enrolled in some blended learning courses such as science and engineering, health

sciences, and arts. Therefore, student perceptions in relation to academic disciplines reported in this study may not be an entirely true representation of some of the disciplines. Therefore, the findings of this study in relation to the differences in perceptions of blended learning, specifically amongst academic disciplines, need to be interpreted with caution, and may not be generalisable to other university settings.

Third, data were collected within the first nine months of the institution-wide blended learning implementation. At this time, many students and teachers had just one semester of blended learning experience and were at the very early stages of understanding blended learning. Therefore, beliefs in, and perceptions and experiences of blended learning reported in this study may not necessarily be an entirely true reflection of their blended learning application. With more knowledge and skills in, and experiences of blended learning, student and teacher perceptions may change. Hence, some of the findings reported in this study in relation to student and teacher perceptions and experiences of blended learning must be interpreted with caution.

8.4. Suggestions for Future Research

In terms of future research, data were collected within the first nine months of blended learning implementation. Even though this study showed the innovation process of blended learning was successfully completed, the results suggest some possible threats to the sustainability of blended learning over time. Therefore, a study that employs the same methods but with multiple points of data collection is needed to fully understand the effectiveness of the diffusion process of blended learning, and gauge how sustainable institution-wide blended learning can be with this approach.

One of the limitations of the current study was related to the limited number of students participating from some of the subject disciplines. Therefore, to acquire a more accurate picture of the differences in perceptions amongst academic disciplines, a comprehensive study is needed with a larger student representation from each academic discipline. In addition, future questionnaires could be informed by other related theories such as the Theory of Planned Behaviour (Ajzen, 1991), and the framework for Technological Pedagogical Content Knowledge -TPACK (Mishra & Koehler, 2006). This would help to identify not only more factors that influence student and teacher behaviour when using blended learning, but also a range of potential barriers that they may encounter in using blended learning at the university level.

This study explored the process of blended learning adoption that led to diffusion at the university level. However, understanding the effect of blended learning on student learning outcomes was not included in the scope of this study. A comparative study with blended and non-blended learning students could help us to better understand how institution-wide blended learning can impact on learning effectiveness across various subject disciplines.

8.5. Conclusion

This study investigated user perceptions and beliefs of blended learning and described the process of blended learning adoption leading to diffusion across a university. Overall, the results revealed that blended learning was perceived as a method of teaching that has the potential to allow people who live on the remote islands of the Maldives to participate in university education without needing to migrate to the city, which was nearly impossible for them before blended learning was introduced. Even though user perceptions of blended learning were generally positive across the three participant groups – students,

teachers, and the executives, results suggest that beliefs and attitudes of teachers and students may be different depending on their academic disciplines, due to their subject-specific teaching needs. In particular, those subjects that involve more hands-on teaching could be somewhat apprehensive about the use of blended learning due to the reduced F2F learning time, as F2F teacher-student instructions were more valued by those subject domains. Despite this, generally, blended learning was perceived as a good fit for the needs of the university.

For the diffusion of blended learning, the results suggest that adoption and diffusion of blended learning at the university can be understood as a process that included five distinct stages – agenda setting, matching, redefining/restructuring, clarifying, and routinising, even though there were some commonalities in the nature of the activities that occurred in these stages and the boundaries between some of these stages were not entirely clear. These stages were shaped by a range of activities and events and were impacted by a set of factors. These factors included *Student Experiences*, *Teacher Beliefs and Attitude*, *Teacher Self-efficacy*, *Teacher Support*, *Academic Disciplines*, *University Policies*, and *Institutional Readiness*. Some of these factors such as *Student experiences*, *University Policies*, and *Teacher Support* were found to be more important and were at play in more than one stage of the innovation process. In addition, it was quite interesting to see how the roles of these factors kept shifting as the innovation process progressed, suggesting a complex relationship between the stages of the innovation process. Overall, the diffusion of blended learning occurred relatively effectively, and the routinisation of blended learning was completed quite quickly. As a result, teachers and faculties started considering blended learning as part of their daily practice. However, the results suggest that the deficiencies of the matching stage, and some unexpected leadership changes that occurred within the university, may put the sustainability of blended learning at risk over

time. Overall, this study suggests that adoption and diffusion of blended learning at a university is a complex matter which needs careful planning, thorough and specific policies, strategies, and structure for smoother diffusion to facilitate the diffusion and improve sustainability. By doing so, university leaders can empower teachers, faculty heads and the broader university community to embrace blended learning.

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Appendices

Appendix 1

Pre-validated surveys used to design the questionnaires for teachers and students

Teachers questionnaire (Wanner & Palmer, 2015)

1. Flexible learning is an excellent way to improve student learning and engagement
2. The flipped classroom is an excellent way to improve student learning and engagement
3. Flexible learning overall involves less work and time commitment for me than a regular class (face-to-face lectures and tutorials)
4. Implementing a flipped classroom overall involves less work and time commitment for me than a regular class (face-to-face lectures and tutorials)
5. On a scale from 1 (highest) to 10 (lowest), what is your current level of commitment to include the flipped classroom into your courses?
6. On a scale from 1 (highest) to 10 (lowest), how much pressure do you feel you are under to include a flipped classroom into your courses?
7. Please provide any further information regarding your thoughts on flexible learning and the flipped classroom
8. Involving learners/students in the assessment process in a course is an excellent idea. From what you know about flexible assessment, for which of the following aspects of assessment would you provide a choice for the students in your courses:
 - Methods of assessment (e.g., essay, exam, report, quizzes)
 - Criteria of assessment (setting the criteria for your assessment pieces)
 - Weighting of assessment (how much weight in per cent is given to each assessment piece for your overall mark)
 - Timing of assessment (when work is submitted) Please provide any further information regarding your thoughts on flexible assessment

Appendix 1 Continued.

Student questionnaire (Owston et al., 2013)

1. Overall, I am satisfied with this course.
2. Given the opportunity I would take another course in the future that has both online and face-to-face components.
3. This course experience has improved my opportunity to access and use the class content.
4. The online and face-to-face course components of this course enhanced each other.
5. The course Moodle site is well organized and easy to navigate.
6. The web resources in this course are helpful.
7. When I encounter a problem with the use of the technologies in this course, the York technical support service helped me with my problem in a timely and effective manner.

Compared to typical face-to-face courses I have taken...

8. this course offered the convenience of not having to come to campus as often.
9. ...this course allowed me to reduce my total travel time each week and related expenses.
10. ...I am more engaged in this course.
11. ...I am likely to ask questions in this course.
12. ...I feel that the amount of my interaction with other students in this course increased.
13. ...I feel that the quality of my interaction with other students in this course was better.
14. ...I feel connected with other students in this course.
15. ...I feel isolated during this course.
16. ...I feel that the amount of my interaction with the instruction this course increased.
17. ...I feel that the quality of my interaction with the instruction this course was better.
18. ...I am overwhelmed with information and resources in this course.
19. ...I have trouble using the technologies in this course.
20. ...I feel more anxious in this course.
21. ...this course required more time and effort.
22. ...this course has improved my understanding of key concepts.

Appendix 2

Student questionnaire



Student Questionnaire

This questionnaire is designed to explore your beliefs and experience of blended learning in higher education. Blended learning is a combination of face-to-face and online learning.

Please read the given statements carefully and tick [✓] ONE answer for each statement. The answer scales are; 1= Strongly disagree; 2 = Disagree; 3= Undecided; 4 = Agree; 5= Strongly agree.

Demographic information

- Faculty:
- Level of study:
- Atoll of living:
- Gender (please circle): Male / Female
- Age (please Tick) : Below 25Yrs 25-35Yrs 36-45Yrs Above 45Yrs
- Employment status (please circle): Fulltime employed / Part-time employed / Not working

	Strongly disagree (1)	Disagree (2)	Undecided (3)	Agree (4)	Strongly agree (5)
1. I am happy to use digital technology in my learning.					
2. I find Moodle easy to navigate.					
3. The flexibility of blended learning makes my course easier for me, compared to a regular course.					
4. Blended learning is a useful way for me to complete university learning.					
5. My blended learning course allows me to study while I live far from the university campus.					
6. In my blended learning course, I get more engaged with learning compared to a regular face-to-face course.					
7. If I did not have the blended learning option, it would be very difficult for me to participate in university learning.					
8. My blended learning course allows me to study in my own time.					

Appendix 2 Continued.

	Strongly disagree (1)	Disagree (2)	Undecided (3)	Agree (4)	Strongly agree (5)
9. My blended learning course allows me to study at my own speed					
10. I mostly study in my spare time after my employment and/or family commitments.					
11. If I log a Moodle-related issue, my university's technical support team help me in a timely manner.					
12. It is easy for me to get Moodle-related technical support when I need it.					
13. If I need any assistance related to my course, I can easily contact to my lecturer through Moodle.					
14. If I ask for help in Moodle, my lecturer promptly responses to my request.					
15. I am confident of using Moodle tools for learning.					
16. In blended learning, I don't feel sense of isolation during the semester even though I don't see my lecturers and classmates daily/weekly.					
17. Travelling for face-to-face classes is too expensive for me.					
18. I am satisfied with the quality of the internet service available for me for my blended learning.					
19. In the future, I would take another blended learning course instead of a face-to-face one.					
20. If you have any further comments about your use of blended learning, please write below!					

Thank You

Appendix 3

Teacher questionnaire



UNIVERSITY
OF WOLLONGONG
AUSTRALIA

Teachers' Questionnaire

Please read the given statements carefully and choose ONE answer for each statement. The answer scales are; 1= Strongly disagree; 2 = Disagree; 3= Undecided; 4 = Agree; 5= Strongly agree.

Demographic information

- Faculty:
- Number of years of blended learning experience:

	Strongly disagree (1)	Disagree (2)	Undecided (3)	Agree (4)	Strongly agree (5)
1. I am happy to use digital technology in my teaching.					
2. I can confidently use Moodle in my blended teaching.					
3. I have sufficient knowledge and skills required to use blended learning.					
4. Professional development opportunities are available for me to develop my skills of using blended learning.					
5. The professional development opportunities that I am offered fit my needs.					
6. Using blended learning in teaching is easy for me.					
7. Blended learning is a useful approach for me to use in teaching.					
8. Blended learning is a good way of teaching for those who cannot come to campus every day.					
9. Blended learning helps my students to learn more effectively.					
10. I would use blended learning in my future teaching even if I have other available options.					
11. I began blended learning because the university introduced it to me.					

Appendix 3 Continued.

	Strongly Disagree (1)	Disagree (2)	Undecided (3)	Agree (4)	Strongly agree (5)
12. My university encourages me to use blended learning in my teaching.					
13. Blended learning involves more preparations than a regular course.					
14. Blended learning involves more ongoing course coordination than a regular course.					
15. I spend more time providing learning support to blended learning students compared to a regular course.					
16. It is easy for me to get support (e.g., technical and/or admin.) for blended learning from the respective Units/Sections.					
17. My blended learning students get timely support from the university when they have technical issues.					
18. My students do not complain about the internet quality that they use for blended learning.					
19. I have a suitable environment in my university to use blended learning.					
20. If you have any further comments about your use of blended learning, please write below!					

Thank You

Appendix 4

Student focus groups protocol



Student Focus Group Protocol

In this focus group interview, I am going to ask you a series of questions about your experience of learning in your course, specifically about your blended learning. Blended learning is a combination of traditional face-to-face and online learning. So, it's about how you learn through face-to-face classes and Moodle-based activities.

For the first part, I will be using 'episodic' interview method, which means you will be asked to share your experience as narratives of situations. The aim is to get as much as information about key activities of your learning experience. Throughout the interview, I will ask you a few questions and you take turns speaking aloud what you are thinking. When I ask a question, just respond with whatever comes to your mind first. There is no right or wrong. I will ask additional questions if I need a little more information. If you don't understand a question, ask me to explain. If you don't want to answer a question, simply say so! Do any of you have any questions?

I will turn on the recorder and ask for verbal consent to record, and then we'll start.

[Switch on recorder]

I am here with a group of students from XXX on XX August/September 2019. Are all of you happy for me to record this focus group discussion? [Yes/no]

Can you please tell me your names so when I transcribe the interview it will help me to recognize individuals' voice?

Thanks, we will get started now....

1. What were your general feelings about your course so far?
 - a. Could you give me a specific moment that illustrates this approach?
2. What were the reasons you chose a blended learning course?
 - a. Could you give me a specific example that illustrates the situation?
 - b. How useful blended learning approach is for you? Can you give me an example that illustrates this?
 - c. How easy blended learning is compared to face-to-face learning? Can you give me an example?

Appendix 4 Continued.

3. Let's talk about the block-classes.
 - a. Could you describe a typical block class of one of your subjects?
 - b. How do you feel about the block classes?
 - c. Could you give me a typical reason you believe this?
 - d. If you had choice, would you prefer not attending the block classes? Why?
 - e. Overall, what is your impression about the block classes?

4. Let's talk about the things you do online in Moodle.
 - a. What are the specific things that you do in the Moodle?
 - b. What are your favourite types of online activities that you do in Moodle?
Could you give me some specific reasons you feel that?
 - c. What are the least favourite types of online activities that you get in Moodle? Could you give me some specific reasons you feel that?
 - d. If you had choice of not using Moodle, would use it? Why?

5. Let's talk about the Moodle.
 - a. How easy for you to use Moodle? Can you give me an example that illustrates this?
 - b. How confident are you of using Moodle tools? Can you give me an example that illustrates this?
 - c. If you had chance to change your Moodle course page, what would you change? Why would you change those?

6. So far, throughout your course, did you have any preference between the block classes and online learning in Moodle?
 - a. Could you give me a typical example of this preference?
 - b. Would you prefer online lectures instead of attending block class? Why?

Appendix 4 Continued.

7. Do you face any difficulties/barriers for studying through blended learning?
 - a. Could you give me a typical example of this?
 - b. What the difficulties that you face studying away from the campus? Can you give me a typical example of this?
 - c. When you face a technical issue, how do you solve it? Can you give me an example?

8. Overall, what is your general view of doing a blended learning course?
 - a. Could you give me a specific time or incident that illustrates or explains this belief?
 - b. Would you take another blended learning course in future? Why?

It's the end of the interview. Is that OK if I contact you later to clarify if there is anything that I need to? [Great, thanks]

I really appreciate your time and helping me to collect data for the research. Thank you very much once again!!

Appendix 5

Teacher interview protocol



Teacher Interview Protocol

In this interview, I am going to ask you a series of questions about your experience of blended teaching. It's about how you do things in facilitation of learning for your students at the University. It will be like an informal conversation rather than a formal interview.

For the first part, I will be using 'episodic' interview method, which means you will be asked to share your experience as narratives of situations. The aim is to get as much as information about the key activities of your teaching experience. Throughout the interview, I will ask you a few questions and you take turns speaking aloud what you are thinking.

When I ask a question, just respond with whatever comes to your mind first. There is no right or wrong. I will ask additional questions if I need a little more information. If you don't understand a question, ask me to explain. If you don't want to answer a question, simply say so! Do any of you have any questions?

I will turn on the recorder and ask you for verbal consent to record, and then we'll start.
[Switch on recorder]

I am here with [name] from the Faculty of XXX on XX August/September 2019. Are you happy for me to record this interview? [Yes/no]

Thanks, we will get started now....

1. What are your general feelings about using blended learning approach at university?
 - a. Could you give me a typical example of this?
2. Let's talk about how you started using blended learning.
 - a. How and when blended learning was introduced to you first?
 - b. When blended learning was introduced to you, what were the things you knew about it? Can you give me a typical example of this?

Appendix 5 Continued.

- c. After it was introduced to you, what were your general thoughts about blended learning at that stage? Can you give me an example that illustrates this?
 - d. Were there any reasons for you to continue using blended learning? Can you give me an example?
 - e. Would you use blended learning in your future teaching? Why?
 - f. From the introduction to your decision for continuation of blended learning, were there any significant steps that occurred throughout the process? Can you give me some examples?
3. How useful blended learning approach is for you? Can you give me a typical example that illustrates this?
4. How easy blended learning approach is for you? Can you give me a typical example that illustrates this?
5. Let's talk about the face-to-face classes.
 - a. How does a typical block class look like? Could you give me a typical example of this?
 - b. Do you have any reason that you structure your course like that? What are they?
 - c. Would you change the current block class structure? Why?
 - d. If you want change, what change would you suggest? Why?
 - e. Overall, what is your impression about the block classes?
6. Let's talk about online learning.
 - a. How do you use online teaching? Could you give me a typical example of this?
 - b. Is there any specific online structure for a typical blended course? Can you give me a typical example of this?
 - c. What are the typical online activities that you include in your blended course? Why?
 - d. Who decides online activities? Can you give me typical example of this?

Appendix 5 Continued.

7. What are the preparations involved in a typical blended learning course?
 - a. How does your block class preparation look like? Can you give me a typical example of this?
 - b. How does your online teaching preparation look like? Can you give me a typical example of this?
 - c. Overall, how much time do you spend for preparation of a typical blended course? Could you give me an example that illustrates this situation?
 - d. How do you feel the workload that involve in blended teaching? Why?
8. How confident are you using the online/Moodle tools? Can you give me typical example of this?
 - a. Do you think you need support for online teaching? Can you give me a typical example of this?
 - b. If you need any help about using online tools, what do you do? Can you give me a typical example of this?
 - c. What are the professional development opportunities arranged for you? Could you give me a typical example of this?
9. What are the difficulties you face to use blended learning in your teaching? Could you give me a typical example of this?
 - a. Do you think you can overcome the current barriers? How?
10. Do you think your university is ready to apply blended learning across the university? Why?
 - a. Do you think the current blended learning model of the university is a good solution for the current need? Why?
 - b. Do you think you are encouraged to use blended learning? Could you give me a typical example of this?
 - c. If you had choice, would you stop using blended learning? Why?

It's the end of the interview. Is it OK if I contact you later to clarify if there is anything that I need to? [Great, thanks]

I really appreciate your time and helping me to collect data for the research. Thank you very much once again!!

Appendix 6

Executives' interview protocol



Executives' Interview Protocol

In this interview, I am going to ask you a series of questions about your view of blended teaching at the University. It's about how things are facilitated to encourage teachers and students to use blended learning across the University.

In this interview, I will be using 'episodic' interview method, which means you will be asked to share your experience as narratives of situations. The aim is to get as much as information about the key activities of your experience. Throughout the interview, I will ask you a few questions and you take turns speaking aloud what you are thinking.

When I ask a question, just respond with whatever comes to your mind first. There is no right or wrong. I will ask additional questions if I need a little more information. If you don't understand a question, ask me to explain. If you don't want to answer a question, simply say so! Do you have any questions?

I will turn on the recorder and ask you for verbal consent to record, and then we'll start.
[Switch on recorder]

I am here with [name] from the Faculty of XXX on XX August/September 2019. Are you happy for me to record this interview? [Yes/no]

Thanks, we will get started now....

1. What are your general feelings of using digital technology in learning? Can you give me an example that illustrates this view?
2. What are your general feelings about using blended approach at university/faculty?
 - a. Could you give me a typical example of this?

Appendix 6 Continued.

3. Let's talk about how blended learning was introduced to the university/faculty.
 - a. When and why blended learning was introduced to the Uni/faculty?
 - b. What were the things you did to cater blended learning in the system? Did you bring any changes to the existing system? Can you give me an example?
 - c. What were the concerns raised by the staff when blended learning was placed in practice? Can you share some examples?
 - d. How were the concerns of the staff clarified? Can you share a typical example?
 - e. Is blended learning use in daily operations of the university/faculty now? Can you give me an example that illustrates this?
4. Do you have any target to achieve, in terms of blended learning across the institution?
 - a. Could you explain/describe the target for me?
5. Why do you think some faculties/staff do not want to use blended learning?
 - a. Could you give me a typical moment that illustrates this?
6. Do you have any written strategy to encourage staff to use blended learning across the university? What are they?
 - a. Could you give an example that illustrates this?
 - b. Could you share the document/s with me?
7. How do you encourage those who do not use blended learning to adopt the modality?
 - a. Could you give me a typical example of this?
8. Do you think blended learning is appropriately promoted across the university?
 - a. Could you give me an example that illustrates this?
9. Let's talk about the resources. Do you think the university has adequate infrastructure and resources to adopt blended learning?
 - a. Could you give me an example that illustrates the situation?
 - b. Do you think you need additional resources? Could you give me an example of this?

Appendix 6 Continued.

10. What is your view about the workload of the academics who involve in blended learning?
 - a. Why do you think the situation is like that?
11. Let's talk about the support provided to the academic staff.
 - a. What are the technical supports provided to the blended learning lecturers? Could you give me a typical example of this?
 - b. What are the typical pedagogical supports provided to the blended learning lecturers? Could you give me a typical example of this?
 - c. What professional development opportunities are provided to the staff, in relation to blended learning?
12. What are the incentives provided to the staff who involve in blended learning? Could you give me a typical example of this?
13. What are the difficulties that you face to use blended learning across the institution?
 - a. Could you give me a typical example of this?
14. Let's talk about blended learning overall.
 - a. How useful blended learning is to cater for the current need?
 - b. How easy blended learning is to use in the current context?
 - c. Overall, do you think the current blended learning model is a good solution for the current need? Why?
15. Do you think your university is ready to apply blended learning across the university? Why?
16. Overall, how happy are you with the way blended learning is being used at the Uni/Faculty? Why?
 - a. If you had choice, would you stop using blended learning? Why?

It's the end of the interview. Is it OK if I contact you later to clarify if there is anything that I need to? [Great, thanks]

I really appreciate your time and helping me to collect data for the research. Thank you very much once again!!

Appendix 7

UOW's ethics approval

HREC Approval of Application 2019/129

irma-support@uow.edu.au <irma-support@uow.edu.au>

Tue 5/14/2019 1:31 PM

To: Sarah Howard <sahoward@uow.edu.au>

Cc: Ramiz Ali <ra229@uowmail.edu.au>; Helen Georgiou <helengeo@uow.edu.au>; rso-ethics@uow.edu.au <rso-ethics@uow.edu.au>

Dear Dr Howard,

I am pleased to advise that the application detailed below has been approved.

Ethics Number: 2019/129

Approval Date: 14/05/2019

Expiry Date: 13/05/2020

Project Title: Understanding Blended Learning: Investigating Blended Learning Adoption from the Perspective of a Small Island Nation

Researcher/s: Howard Sarah; Ali Ramiz; Georgiou Helen

Documents Approved:

- UOW Application for HREC Approval V2_01-05-2019
- Responses for HREC clarifications V1_01-05-19
- PIS executives V2_01-05-2019
- PIS lecturers V2_01-05-2019
- PIS students V2_01-05-2019
- Lecturer questionnaire V2_01-05-2019
- Student questionnaire V2_01-05-2019
- Executives consent form V2_01-05-2019
- Lecturer consent form V2_01-05-2019
- Student consent form V2_01-05-2019
- Executives interview protocol V1_18-03-2019
- Lecturer interview protocol V1_18-03-2019
- Student focus group protocol V1_18-03-2019
- Email draft Executives V1_18-03-2019

Sites:

Site	Principal Investigator for Site
The Maldives National University, Male', Maldives	Ramiz Ali

The HREC has reviewed the research proposal for compliance with the *National Statement on Ethical Conduct in Human Research* and approval of this project is conditional upon your continuing compliance with this document. Compliance is monitored through progress reports; the HREC may also undertake physical monitoring of research.

Approval is granted for a twelve month period; extension of this approval will be considered on receipt of a progress report prior to the expiry date. Extension of approval requires:

- The submission of an annual progress report and a final report on completion of your project.
- Approval by the HREC of any proposed changes to the protocol or investigators.
- Immediate report of serious or unexpected adverse effects on participants.
- Immediate report of unforeseen events that might affect the continued acceptability of the project.

If you have any queries regarding the HREC review process or your ongoing approval please contact the Ethics Unit on 4221 3386 or email rso-ethics@uow.edu.au

Yours sincerely,

Emma Barkus

Associate Professor Emma Barkus,
Chair, UOW & ISLHD Social Sciences Human Research Ethics Committee

Appendix 8
MNU's ethics approval



To be filled by researchers from other institution to collect data from MNU

Personal details			
Applicant's details			
Date of application	16/ 05/ 2019		
Full name of applicant	Ramiz Ali		
Contact address	Unit 201 Bangalay, 11 Northfields Ave, Keiraville, NSW2500, Australia		
Phone number	+61450705594	Email	ramixali@gmail.com
Institution/ Organisation	University of Wollongong	Faculty/Centre	School of Education
Supervisor details			
Principal Supervisor	Associate Professor Sarah Howard	Phone number	+61 2 4221 3664
Institution/ Organisation	University of Wollongong Australia	Email.	sahoward@uow.edu.au
Project details			
Title of the project	Understanding blended learning: Investigating blended learning adoption from the perspective of a small island nation		
Proposed date of commencement of data collection	01/ 06/ 2019	Expected date of completion of data collection	31/ 10/ 2019
Ethics approval number	2019/129		

Documents to be submitted with the form:

- Information sheet (as per MNU guideline)
- Consent form
- Ethics approval letter/ document
- Official letter from Institution

FOR OFFICIAL USE (Approval by Committee)

Name and Signature of committee members	Member from MNURC	Member from Faculty/Centre	Member external to the respective Faculty/Centre

Appendix 9

Student consent form



UNIVERSITY
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AUSTRALIA

CONSENT FORM FOR STUDENTS

Project Title: Investigating Blended Learning Adoption from the Perspective of a Small Island Nation

I have been given information about “Investigating Blended Learning Adoption from the Perspective of a Small Island Nation” and I voluntarily agree to participate in this PhD research.

By signing below, I am giving my consent to (please tick):

- To participate in a questionnaire survey
- To participate in a 60-minute focus group interview
- To having my Moodle course data included in analysis

I understand that:

- Participating in this research involves minimal risk for me.
- All information I provide for this study will be treated confidentially.
- In any report on the results of this research, my identity will remain anonymous.
- I can choose NOT to answer any question without any consequences.
- I can withdraw my permission to use data from my interview/questionnaire data within FOUR weeks after the completion of the interview/questionnaire in that case, the material will be deleted.
- The data collected from my participation will be used to complete this particular PhD research, however, may publish in academic journals and can be presented at conferences, and I consent for it to be used in that manner.
- If I have any concerns or complaints regarding the way the research is conducted, I can contact to the University of Wollongong Ethics & Integrity Manager on +61 242214457 or by email rso-ethics@uow.edu.au.

I have read and understand the explanation provided to me. I have had all my questions answered to my satisfaction, and I voluntarily agree to participate in this study.

Participant’s signature:

Full name:

Email address:

Date:

Appendix 10
Executives' consent form



UNIVERSITY
OF WOLLONGONG
AUSTRALIA

CONSENT FORM FOR UNIVERSITY EXECUTIVES

**Project Title: Investigating Blended Learning Adoption from the Perspective of a
Small Island Nation**

I have been given information about “Investigating Blended Learning Adoption from the Perspective of a Small Island Nation” and I voluntarily agree to participate in this PhD research.

I understand that:

- My participation in this research involves a 60-minute one-on-one interview only.
- Participating in this research involves minimal risk for me.
- All information I provide for this study will be treated confidentially.
- In any report on the results of this research, my identity will remain anonymous.
- I can choose NOT to answer any question without any consequences.
- I can withdraw my permission to use data from my interview within FOUR weeks after the interview in that case, the material will be deleted.
- The data collected from my participation will be used to complete this particular PhD research, however, may publish in academic journals and can be presented at conferences, and I consent for it to be used in that manner.
- If I have any concerns or complaints regarding the way the research is conducted, I can contact to the University of Wollongong Ethics & Integrity Manager on +61 242214457 or by email rso-ethics@uow.edu.au.

I have read and understand the explanation provided to me. I have had all my questions answered to my satisfaction, and I voluntarily agree to participate in this study.

Participant's signature:

Full name:

Email address:

Date:

Appendix 11
Teacher consent form



CONSENT FORM FOR LECTURERS

**Project Title: Investigating Blended Learning Adoption from the Perspective of a
Small Island Nation**

I have been given information about “Investigating Blended Learning Adoption from the Perspective of a Small Island Nation” and I voluntarily agree to participate in this PhD research.

By signing below, I am giving my consent to (please tick):

- To participate in a questionnaire/survey
- To participate in a 60-minute one-on-one interview
- To having my Moodle course data included in analysis

I understand that:

- Participating in this research involves minimal risk for me.
- All information I provide for this study will be treated confidentially.
- In any report on the results of this research, my identity will remain anonymous.
- I can choose NOT to answer any question without any consequences.
- I can withdraw my permission to use data from my interview/questionnaire data within FOUR weeks after the completion of the interview/questionnaire in that case, the material will be deleted.
- The data collected from my participation will be used to complete this particular PhD research, however, may publish in academic journals and can be presented at conferences, and I consent for it to be used in that manner.
- If I have any concerns or complaints regarding the way the research is conducted, I can contact to the University of Wollongong Ethics & Integrity Manager on +61 242214457 or by email rso-ethics@uow.edu.au.

I have read and understand the explanation provided to me. I have had all my questions answered to my satisfaction, and I voluntarily agree to participate in this study.

Participant’s signature:

Full name:

Email address:

Date:

Appendix 12

Participant information sheet- students



PPARTICIPANT INFORMATION SHEET FOR STUDENTS

Project Title: Investigating Blended Learning Adoption from the Perspective of a Small Island Nation

What is this study about?	The aim of this PhD research is to understand perceptions, beliefs, and practices of blended learning at the Maldives National University and to describe blended learning adoption, implementation and a diffusion strategy. The study will help to understand blended learning adoption strategies and the current practice and will help to improve students blended learning experiences.
Who is conducting this study?	The study is conducted by two staff and a PhD student at the University of Wollongong. The researchers are: A/Prof Sarah Howard Dr Helen Georgiou Mr. Ramiz Ali School of Education School of Education School of Education +61242213664 +61242214843 +61242392247 sahoward@uow.edu.au helengeo@uow.edu.au ra229@uowmail.edu.au
Do I have a local contact number to clarify about the research?	Yes, you can directly contact to the student researcher (Ramiz Ali) on 7785453 or 9631988.
Who will participate in this study?	Students and teaching staff who involve in blended learning teaching and learning will be invited. Also, senior executive staff of the University and the Heads of respective faculties will be requested to participate.
What will participants be asked to do?	You will be asked to respond to a questionnaire and will be invited to participate in a sixty-minute focus group interview to discuss blended teaching practice of the University. This discussion will be audio taped and computer analysed. Other than the researchers, no one else will hear the recording.
What types of questions will be included in the questionnaire?	Questionnaire is designed to understand general use of blended learning in your teaching. You will be asked to choose the best option from a given Likert scale that reflects your view/practice. Questions will be like: <ul style="list-style-type: none"> • I am happy with the number of scheduled block classes for each subject. • I am happy with the amount of time I spend in the block classes. • My Moodle course page is well organized and easy to navigate.

Appendix 12 Continued.

What types of questions will be asked in the interview?	<p>The types of questions you will be in the interview will be:</p> <ul style="list-style-type: none"> • What are your general feelings about using blended approach at the university/faculty? • What is the strategy of encouraging staff to use blended learning across the university/your faculty? • Why do you think some faculties/staff do not want to use blended learning?
How my Moodle data will be used for the research?	<p>Screen prints of your Moodle course pages will be captured and analysed to understand how Moodle is used in learning activities. E.g., subject outlines, provided learning materials, assessment tasks, discussion forums and announcements will be analysed using a content analysis technique.</p>
Are there any disadvantages for participating in this study? What are the benefits?	<p>The only burden involved in participation of this study will be the 60 minutes of your time. The project will benefit MNU to improve its' current blended learning practice so it will not directly benefit you. You will not receive a payment for your participation or any other financial incentive.</p>
Are there any disadvantages for NOT participating in this study?	<p>No, there is no disadvantage of choosing not to participate in this study. Not participating or withdrawing from this study will not affect your relationship with the Maldives National University or the University of Wollongong.</p>
What happens with the results?	<p>Throughout the study, no individual's identity will be disclosed. Results will be shared with the senior executives of MNU you can use them to improve the quality of blended learning courses of your faculty/ university. Results may also be published in academic journals or presented at conferences.</p>
Do I have to participate?	<p>You do not have to participate. Participation in this study is entirely voluntary and you can choose to withdraw your participation at any time without a consequence. However, if you want to withdraw your data, you will require withdrawing within FOUR weeks of the completion of the interview and/or questionnaire. If you choose to withdraw, please contact Ramiz Ali using the contact details above.</p>
Where can I find more information?	<p>If you would like more information about this research, please contact any of the researchers using the contact details above.</p>
How can I sign up for the study?	<p>If you are happy to participate, please sign the consent form attached and return it to one of the researchers of this project.</p>

Appendix 13

Participant information sheet- teachers



UNIVERSITY
OF WOLLONGONG
AUSTRALIA

PPARTICIPANT INFORMATION SHEET FOR LECTURERS

Project Title: Investigating Blended Learning Adoption from the Perspective of a Small Island Nation

What is this study about?	The aim of this PhD research is to understand perceptions, beliefs, and practices of blended learning at the Maldives National University and to describe blended learning adoption, implementation and a diffusion strategy. The study will help to understand blended learning adoption strategies and the current practice and will help to improve students blended learning experiences.
Who is conducting this study?	The study is conducted by two staff and a PhD student at the University of Wollongong. The researchers are: A/Prof Sarah Howard Dr Helen Georgiou Mr. Ramiz Ali School of Education School of Education School of Education +61242213664 +61242214843 +61242392247 sahoward@uow.edu.au helengeo@uow.edu.au ra229@uowmail.edu.au
Do I have a local contact number to clarify about the research?	Yes, you can directly contact to the student researcher (Ramiz Ali) on 7785453 or 9631988.
Who will participate in this study?	Students and teaching staff who involve in blended learning teaching and learning will be invited. Also, senior executive staff of the University and the Heads of respective faculties will be requested to participate.
What will participants be asked to do?	You will be asked to respond to a survey questionnaire and will be invited to participate in a sixty-minute one-on-one interview to discuss blended teaching practice of the University. This discussion will be audiotaped, and computer analysed. Other than the researchers, no one else will hear the recording.

Appendix 13 Continued.

<p>What types of questions will be included in the questionnaire?</p>	<p>Questionnaire is designed to understand general use of blended learning in your teaching. You will be asked to choose the best option from a given Likert scale that reflects your view/practice. Questions will be like:</p> <ul style="list-style-type: none"> • Use of blended learning is relatively new for me. • Blended learning suits for my students' learning needs. • My students do not complain about their internet speed/quality. • I can confidently use Moodle platform/tools.
<p>What types of questions will be asked in the interview?</p>	<p>The types of questions you will be in the interview will be:</p> <ul style="list-style-type: none"> • What are your general feelings about using blended approach at the university/faculty? • What is the strategy of encouraging staff to use blended learning across the university/your faculty? • Why do you think some faculties/staff do not want to use blended learning?
<p>How my Moodle data will be used for the research?</p>	<p>Screen prints of your Moodle course pages will be captured and analysed to understand how Moodle is used in learning activities. E.g., subject outlines, provided learning materials, assessment tasks, discussion forums and announcements will be analysed using a content analysis technique.</p>
<p>Are there any disadvantages for participating in this study? What are the benefits?</p>	<p>The only burden involved in participation of this study will be your time of filling the questionnaire and the interview time. The project will benefit MNU to improve its' current blended learning practice so it will not directly benefit you. You will not receive a payment for your participation or any other financial incentive.</p>
<p>Are there any disadvantages for NOT participating in this study?</p>	<p>No, there is no disadvantage of choosing not to participate in this study. Not participating or withdrawing from this study will not affect your relationship with the Maldives National University or the University of Wollongong.</p>
<p>What happens with the results?</p>	<p>Throughout the study, no individual's identity will be disclosed. Results will be shared with the senior executives of MNU you can use them to improve the quality of blended learning courses of your faculty/ university. Results may also be published in academic journals or presented at conferences.</p>
<p>Do I have to participate?</p>	<p>You do not have to participate. Participation in this study is entirely voluntary and you can choose to withdraw your participation at any time without a consequence. However, if you want to withdraw your data, you will require withdrawing within FOUR weeks of the completion of the interview and/or questionnaire. If you choose to withdraw, please contact Ramiz Ali using the contact details above.</p>
<p>Where can I find more information?</p>	<p>If you would like more information about this research, please contact any of the researchers using the contact details above.</p>
<p>How can I sign up for the study?</p>	<p>If you are happy to participate, please sign the consent form attached and return it to one of the researchers of this project.</p>

Appendix 14

Participant information sheet- executives



PPARTICIPANT INFORMATION SHEET FOR EXECUTIVES

Project Title: Investigating Blended Learning Adoption from the Perspective of a Small Island Nation

What is this study about?	The aim of this PhD research is to understand perceptions, beliefs, and practices of blended learning at the Maldives National University and to describe blended learning adoption, implementation and a diffusion strategy. The study will help to understand blended learning adoption strategies and the current practice and will help to improve students blended learning experiences.
Who is conducting this study?	The study is conducted by two staff and a PhD student at the University of Wollongong. The researchers are: A/Prof Sarah Howard Dr Helen Georgiou Mr. Ramiz Ali School of Education School of Education School of Education +61242213664 +61242214843 +61242392247 sahoward@uow.edu.au helengeo@uow.edu.au ra229@uowmail.edu.au
Do I have a local contact number to clarify about the research?	Yes, you can directly contact to the student researcher (Ramiz Ali) on 7785453 or 9631988.
Who will participate in this study?	Students and teaching staff who involve in blended learning teaching and learning will be invited. Also, senior executive staff of the University and the Heads of respective faculties will be requested to participate.
What will participants be asked to do?	You are invited to participate in a sixty-minute one-on-one interview to discuss blended teaching practice of the University. This discussion will be audiotaped, and computer analysed. Other than the researchers, no one else will hear the recording.
What types of questions will be asked in the interview?	The types of questions you will be in the interview will be: <ul style="list-style-type: none"> • What are your general feelings about using blended approach at the university/faculty? • What is the strategy of encouraging staff to use blended learning across the university/your faculty? • Why do you think some faculties/staff do not want to use blended learning?

Appendix 14 Continued.

<p>Are there any disadvantages for participating in this study? What are the benefits?</p>	<p>The only burden involved in participation of this study will be the 60 minutes of your time. The project will benefit MNU to improve its' current blended learning practice so it will not directly benefit you. You will not receive a payment for your participation or any other financial incentive.</p>
<p>Are there any disadvantages for Not participating in this study?</p>	<p>No, there is no disadvantage of choosing not to participate in this study. Not participating or withdrawing from this study will not affect your relationship with the Maldives National University or the University of Wollongong.</p>
<p>What happens with the results?</p>	<p>Throughout the study, no individual's identity will be disclosed. Results will be shared with the senior executives of MNU you can use them to improve the quality of blended learning courses of your faculty/ university. Results may also be published in academic journals or presented at conferences.</p>
<p>Do I have to participate?</p>	<p>You do not have to participate. Participation in this study is entirely voluntary and you can choose to withdraw your participation at any time without a consequence. However, if you want to withdraw your data, you will require withdrawing within FOUR weeks of the completion of the interview. If you choose to withdraw, please contact Ramiz Ali using the contact details above.</p>
<p>Where can I find more information?</p>	<p>If you would like more information about this research, please contact any of the researchers using the contact details above.</p>
<p>How can I sign up for the study?</p>	<p>If you are happy to participate, please sign the consent form attached and return it to one of the researchers of this project.</p>

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