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ARTICLE

A study of university students' attitude towards integration of information technology in higher education in Mauritius

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Abstract

Technology is changing the way teaching and learning take place. The main purpose of this study is to investigate tertiary students' attitude towards integrating information technology (IT) in higher education. Using stratified random sampling, 180 questionnaires were distributed to students from six tertiary institutions in Mauritius. Exploratory Factor Analysis followed by multiple regression analysis were used to identify factors which influence the perception of students towards integrating IT in education. Our findings show that prior experience, IT self-efficacy, compatibility and institute support are the main determinants of the attitude towards IT integration in tertiary education. Our findings are expected to be useful to a number of players in the tertiary education sector.

Abstrait

La technologie change la façon dont l'enseignement et l'apprentissage se déroulent. L'objectif principal de cette étude est d'étudier la perception de l'attitude des étudiants de l'enseignement supérieur à l'égard de l'intégration des technologies de l'information (TI) dans l'enseignement supérieur. En utilisant un échantillonnage aléatoire stratifié, 180 questionnaires ont été distribués aux étudiants de six établissements d'enseignement supérieur à Maurice. Une analyse factorielle exploratoire suivie d'une analyse de régression multiple a été utilisée pour identifier les

facteurs qui influencent la perception des étudiants quant à l'intégration des TI dans l'éducation. Nos résultats montrent que l'expérience antérieure, l'auto-efficacité informatique, la compatibilité et le soutien de l'institut sont les principaux déterminants de l'attitude envers l'intégration informatique dans l'enseignement supérieur. Nos résultats devraient être utiles à un certain nombre d'acteurs du secteur de l'enseignement supérieur.

1 | INTRODUCTION

Technology permeates in our everyday life, and teaching and learning are no exception. This creates the need for information technology (IT) infrastructure and provides opportunities for online learning. The rapid expansion of IT makes it crucial for universities to integrate IT in their teaching and learning (Hussein, 2017). As a result, technological competence and better learning process for ameliorating students' knowledge are anticipated. To increase the gains of better-quality education, various countries have focused on IT integration in the education system. In this paper, the use of IT applies to the use of computers and other information and communication technologies in the teaching process. The extent to which the integration of IT is being adopted by students in their teaching and learning process may be determined by technological characteristics such as perceived ease of use (DuPree, 2015), self-efficacy (Algan, 2006) and anxiety (Shu et al., 2011) but also by personal characteristics such as prior experience (Chokri, 2013), relative advantage (Rogers, 2003) and compatibility (Rogers, 1995).

The fact that information technology plays a significant role in ameliorating education has been accepted by stakeholders worldwide, and continuous massive investments are being undertaken in the IT infrastructure. Improved delivery and equity of access to higher education are two of the many benefits that information technology can provide (Henderson et al., 2017). Information technology enables universities to increase student access to higher education as the campus physical presence of students or faculty are not required with e-learning options (Chokri, 2013). This study targets students pursuing higher education, who play a major role in the country's development, and investigates their attitude towards integration of IT in teaching and learning. Numerous past studies (e.g., Ball & Levy, 2008; Lock & Kingsley, 2007; Schmidt, 2002) have been carried out on the benefits of IT in education, but few have focused on the significant factors that may impact on its integration in education.

The technological and personal characteristics used to investigate students' attitude towards integrating educational technologies at tertiary level in Mauritius are unique to this study. Apprehensions about the integration of information technology in Mauritian universities are also little known. The remainder of the paper is structured as follows: Section 2 provides a theoretical background; Section 3 details the conceptual framework used and then develops hypotheses based on the same; Section 4 explains the methodology used by the study; Section 5 discusses the results obtained; and finally Section 6 provides a conclusion to the study.

2 | RESEARCH BACKGROUND

2.1 | IT use in higher education in Mauritius

IT in education is understood to be the merging of processes and tools such as electronic facilities and technologies used to respond to academic needs, and also a combination of computer use (Ball & Levy, 2008; Roblyer &

Doering, 2006). With the introduction of new technologies, higher education institutions are increasingly having to change their mission and vision to adapt (Ajaheb, 2016). E-learning, digital workspace for students, digital learning and blended learning are listed as the new education methods of the new era (Dahmani & Tahi, 2015), and these new forms of education are termed as educational technologies: 'Digital technologies are integral to the future of university education around the world' (Henderson et al., 2017).

The integration of educational technologies into the traditional learning environment has ameliorated learning, devised new ways for diversity and creativity, as well as providing a platform where problem-solving situations are easily executed (Lock & Kingsley, 2007). Schmidt (2002) argues that replacing traditional classrooms effectively by placing the course on the Internet is one of the most challenging tasks. An equal or higher quality of learning and teaching process is anticipated with the usage of educational technologies as compared to traditional ones (Ball & Levy, 2008; Schmidt, 2002).

The importance of technology and its implementation in core educational policy is now recognised by many countries around the globe, and Mauritius is following the trend (Khedo et al., 2012). Ajaheb (2016) analysed the drivers of change in the tertiary education sector in Mauritius. She pointed out that as Mauritius ambitions to become a knowledge hub in Africa by attracting foreign universities to set up a branch on the island, a determining factor would be the integration of new and innovative technology in higher education. Unfortunately, the education system in Mauritius remains rigid and limited to the classroom, which is why an investigation on the adoption of technology in such a setting is fundamental. Technology would not only make education accessible to more Mauritians, but it would also make their development process more independent by providing them access to a wide range of educational resources, thus reducing their dependence on lecturers and face-to-face classes.

The way forward would thus require a restructuring of tertiary institutions' objectives to meet the demands of education democratisation. With globalisation, the adoption of technology in Mauritius would allow institutions to better interact with their external environment. Ajaheb (2016) also concluded that this development will create a multi sensory learning environment, as compared to the current text-based learning system in Mauritius. There will be higher cost effectiveness as a result of the lower need for face-to-face lectures and whereby course delivery can be extended irrespective of time and location. This is particularly important as affordability is a vital challenge, especially for tertiary education.

Therefore, it is observed that the use of IT in education in Mauritius is being widely promoted in order to achieve the goal of becoming a knowledge hub in Africa. However, the extent to which this is achieved successfully depends on its acceptability by the major stakeholder, the student. We therefore seek to study the attitude of students towards the integration of IT in higher education in Mauritius.

2.2 | Technology adoption models

Various models have been used to explain adoption of new technologies (Wade, 2009). Models that are increasingly used by practitioners are the Technology Acceptance Model (TAM) (Davis, 1989), the Diffusion of Innovation theory (Rogers, 1995), theory of Planned Behaviour (Ajzen, 1985, 1991) and Theory of Reasoned Action (Fishbein & Ajzen, 1977). The Technology Acceptance Model stems from the Theory of Reasoned Action and is used in this study, following the plethora of studies (e.g., Hussein, 2017; John, 2015; Lu et al., 2003) that have adopted this model to explain technology acceptance.

TAM is the most prevalent model used to explain the acceptance or rejection of technological innovations. It purports that use and adoption of IT in an organisation are influenced by the two vital determinants consisting of individual's perceived usefulness and perceived ease of use (Lu et al., 2003). Davis (1989) defined perceived usefulness (PU) as 'the extent to which a person believes that using a particular technology will enhance her/his job performance'. The same author defines perceived ease of use (PEU) as 'the degree to which a person believes that using a technology will be free from effort'.

TAM, which originates from the Theory of Reasoned Action, states that behaviour can be predicted from the attitude and beliefs of people, and focuses specifically on the acceptance of IT (Ajzen, 1985, 1991). This theory was used by researchers to recognise the real motive behind the adoption of information technology, behaviours and advice.

Several authors have used and tested TAM. Over time, authors have extended the original TAM, resulting in several versions such as TAM 2 (Venkatesh & Davis, 2000) and TAM 3 (Venkatesh & Bala, 2008). This research uses a modified TAM model. The original model is amplified by other factors which have been empirically tested in studies such as John (2015) to influence the intention to use technology. These factors are technology self-efficacy, technology anxiety, perceived ease of use, attitude, experience, compatibility and relative advantage.

3 | CONCEPTUAL FRAMEWORK AND HYPOTHESIS DEVELOPMENT

3.1 | Attitudes

Rogers' Diffusion of Innovation Theory emphasises that the key element of adopting IT is the attitude of the individual towards it. Similarly, TAM maintained the same observation. A study by Hussein (2017), where 151 university students were surveyed through random sampling, showed that a positive attitude towards computer usage affected the students' intention to use e-learning. The aim of educational technologies is to facilitate students in their teaching and learning ways, and according to Altawallbeh et al. (2015), attitude has an important direct influence on intention to adopt e-learning. In most of the studies examined, attitude was a fundamental determinant leading to intention to use that technology (Altawallbeh et al., 2015; Pinho & Soares, 2011; Sharma & Chandel, 2013; Tajudeen Shittu et al., 2011).

3.2 | Technological characteristics: TAM, perceived ease of use, computer self-efficacy

Perceived usefulness and ease of use variables in TAM are observed to be reliable and valid, and this has been maintained by studies such as Lu et al. (2003). King and He (2006) carried out a meta-analysis study of 88 research papers, and high credibility of TAM was reported. Various researchers tested, validated and extended TAM where the results observed throughout the years gave positive feedbacks on its high validity and flexibility (Benamati & Rajkumar, 2008; Lee, 2009; Lu et al., 2003; Yousafzai et al., 2007).

Both faculty and students have identified the importance of using multiple tools appealing to diverse learning styles regarding technological tools (Menchaca & Bekele, 2008). Therefore, to study the approach of students to IT for teaching and learning based on TAM, several tools are taken into account, thus contributing to the technology and higher education domain.

Many students who lack computer skills and knowledge, enter universities and the job market. This shortfall affects directly the level of technology self-efficacy of the student (Işman & Çelikli, 2009). Bandura (1986) describes the term self-efficacy as 'a person's own verdict regarding his capacity to organize the necessary activities and concluding it successfully to show a certain level of performance'. According to Işman and Çelikli (2009), technology self-efficacy perception is an important characteristic and parameter in the educational sector. Moreover, the social cognitive theory argues that the self-efficacy perception is birthed from four different sources, which are information of the experience, experience of others, verbal persuasion and emotional situation.

Algan (2006) suggests states that self-efficacy of the use of information and communications technology (ICT) refers to the ability of someone to use ICT instruments in an educational environment. Additionally, those students who have negative attitudes towards adoption of IT are more likely to encounter a higher level of anxiety when using technology in both classroom and workplace (Shu et al., 2011).

Another study by DuPree (2015) investigated factors that affect university students' perspectives on use of new technology, and showed that perceived ease of use, perceived usefulness and computer self-efficacy impact on attitudes of students towards the intention to use IT. Using Structural Equation Modelling (SEM), computer self-efficacy was found to be a non-significant contributor towards intention to use. Comparatively, perceived ease of use and perceived usefulness indicated high significance towards intention to use. However, computer self-efficacy is maintained to be vital in other studies when it comes to adopting new technology. For example, a study by John (2015) on social networking site adoption in Thailand reveals that basic computer knowledge and previous computer experience positively influence an individual's computer self-efficacy and their intention to use social networks. Computer self-efficacy was also found to be important for adopting an information system. Previous studies in technology adoption (Holden & Rada, 2011; Igbaria & Iivari, 1995; Venkatesh, 1996) show that the higher an individual's computer self-efficacy, the more he or she perceives using the information system to be useful. Moreover, an interesting paper developed by Ariff et al. (2012) evidenced that there is a clear relation between computer self-efficacy and the use of an Internet banking system. Therefore, this study maintains IT self-efficacy as a predictor of the intention to adopt IT in education. Based on the above discussion and theories, the following hypotheses are proposed:

Hypothesis 1 *Perceived ease of use has a positive influence on a student's attitude towards using educational technologies.*

Hypothesis 2 *A student's technology self-efficacy positively influences his/her attitude towards using educational technologies.*

Hypothesis 3 *A student's technology anxiety has a negative impact on his/her attitude towards using educational technologies.*

3.3 | Personal characteristics: Experience, relative advantage, compatibility, institute's support

3.3.1 | Experience

Knowledge and personal characteristics influence students' adoption of IT into learning. Using TAM, Chokri (2013) carried out a study on the factors that influence students' level of acceptance to e-learning technology. The results show that prior experience with IT plays a major role in determining the adoption of IT in university classrooms. Albirini (2006) emphasised that a lack of experience in IT can be the main obstacle for individuals' acceptance of IT and their attitudes in developing countries. According to Weinberg (2004), a higher percentage of college graduate men use a computer since they have been exposed to technological use during their studies and work. Also, more experienced workers are more likely to use computers than other categories. Similarly, Scherer et al. (2019) identify the strong relationship between the teacher's experience and the TAM model. The authors take into account many factors such as teaching experience with IT and non-IT tools. The findings reveal that teachers with more IT skills are bound to adopt technology-related tools and integrate them into their teaching more easily and divulge their methodology into the learning component. It is also noted that PEU and PU may on their own not be enough to predict a teacher's behavioural intentions to use ICT, and instead it can be predicted by the teacher's experience, with ICT exposure (Scherer et al., 2019).

Other research studies suggest that attending courses on technology integration also has some impact on increasing and developing students and teachers' self-efficacy levels of ICT adoption and use (So et al., 2012). An interesting study made in Jordanian universities supports the idea of Chokri (2013). In fact, in the study, it has been found that new types of learning such as 'blended learning', which combines in-person lectures and web-based

teaching, can provide a better adaptation to technology in class, and hence it enhances students' learning experiences (Al-Adwan & Smedley, 2013). Hence it is hypothesised:

Hypothesis 4 *Prior experience in using information technology significantly influence a student's attitude towards information technology.*

3.3.2 | Relative advantage

Rosenberg and Foshay (2002) argue that using the Internet or other information technologies in learning focus on the individual learner's needs instead of the instructor's or educational institution's needs. Rogers (2003) highlighted that relative advantage is evidence of innovation attributes that affect the adoption rate. Dillon and Morris (1996) argued that individuals tend to integrate innovations that are likely to offer them more benefits than difficulties to use. Thus, from the students' perspective, if innovation is found to be more effective than the actual system, they can have a positive view of the integration of IT in education. The following hypothesis is proposed:

Hypothesis 5 *Relative advantage positively influences students' attitude towards integrating IT in higher education.*

3.3.3 | Compatibility

Compatibility is regarded as an important antecedent of attitude towards using IT. It was proposed by Rogers (1995) that a person tends to accept a change when it is compatible with his or her opinions and practices. The integration of the Internet in our daily lives has led it to become much more important. John (2015) argues that the evolution of online social networking sites has a great impact on the beliefs and attitudes towards Internet usage. The younger generation finds compatibility a very appealing factor. He found that compatibility positively affects attitude towards IT adoption in education. Therefore, due to the high increase in use of Internet, a positive relationship can be expected between the compatibility of university students and the acceptance of IT in higher education. We therefore hypothesise that:

Hypothesis 6 *Compatibility has a positive impact on the attitude of students towards integrating IT in higher education.*

3.3.4 | Institute's support

Vahed and Cruickshank (2018) found that providing academic support to undergraduate students on research in dental technology increases students' productivity. Similarly, Tondeur et al. (2008) argue that successful IT integration is mainly influenced by the actions taken at the institute's level: for instance, the ICT plan, IT support and IT training. Furthermore, Butler and Sellbom (2002) pointed out, in their research focusing on the drawbacks to adopting IT in the educational system, that a shortfall in technical support affects the willingness to use IT. The authors also highlighted that providing re-engineered and well-equipped digital infrastructure with updated hardware and software is vital to adopting educational technologies. Since, institute's support is fundamental in integrating IT in higher education, the following is hypothesised:

Hypothesis 7 *Institute's support has a positive influence on the attitude of students towards integrating IT in higher education.*

4 | RESEARCH METHODOLOGY

4.1 | Data collection

According to the figures of Statistics Mauritius (2016), there were around 48,089 students enrolled in tertiary education. Due to time constraint, the study targets the six most populated tertiary institutions which represent approximately 97 per cent of the total number of students enrolled in tertiary education in Mauritius. In total there are ten publicly funded tertiary institutions in Mauritius. We then applied stratified random sampling based on the total population of these six institutions to distribute 180 questionnaires. The paper-based questionnaires were distributed to students who already had some knowledge about IT in a classroom situation whereby the students were informed about the data collection by their lecturers. The sample representation were as follows: University of Mauritius (53.9%); University of Technology (12.8%); Université des Mascareignes (7.8%); Fashion & Design Institute (11.7%); and Mahatma Gandhi Institute (7.2%). The responses received were roughly in line with sample representation and are shown in Table 1.

4.2 | Sample characteristics

All the figures included below are information gathered from the survey. Table 1 reports data collected from the sample.

Respondents were requested to give their personal opinions on integrating IT into education. A 5-point Likert (scale 1 = strongly disagree to 5 = strongly agree) was used for evaluation. The results are illustrated in Table 2. It showed that most students are in favour of IT integration in education. Interestingly, above 50 per cent of students prefer learning by using hypermedia and hypertext instead of the traditional way.

4.3 | Questionnaire design

The questionnaire was prepared to focus on perception of the students about IT and the factors that affect the intentions of the students to use IT in their teaching and learning process. The questionnaire is based on John (2015) with the exception of one additional construct, 'Institutional Support', which was added based on the pilot testing of the questionnaire whereby some respondents identified this construct as being an important factor. The novel construct is made up of seven items that relate to institutional support (e.g., 'The university's academic staff promotes IT integration in teaching and learning'). The questionnaire includes three sections. Section A covers the demographic profile of the respondents; section B consists of questions about students' perception towards integrating IT in education; and section C includes statements to analyse the factors affecting intention to use IT in education.

4.4 | Exploratory factor analysis and reliability test

Exploratory Factor Analysis (EFA) is mainly used when a researcher needs to determine the number of factors influencing variables and to analyse which variables complement each other (DeCoster, 1998). EFA reduces the variables to a smaller set placing them into meaningful categories to focus on the key factors only, rather than the other variables which may be insignificant.

Exploratory factor analysis was used to investigate the uni-dimensionality of the constructs. Principal Component Analysis with Varimax rotation revealed the presence of seven constructs which together explain a

TABLE 1 Sample characteristics

	N	%
Gender		
Male	66	36.7
Female	114	63.3
Age		
Less than 20 years	34	18.9
Between 21–25 years	139	77.2
More than 25 years	7	3.9
Course Level		
BA/BSc	171	95
MA/MSc	9	5
PhD	0	0
University currently attending		
University of Mauritius	97	53.9
University of Technology	23	12.8
Université des Mascareignes	14	7.8
Fashion & Design Institute	21	11.7
Mahatma Gandhi Institute	13	7.2
Computer literacy		
Yes	179	99
No	1	1
Regulation system for ICT		
Yes	180	100
No	0	0
Teaching and learning methods usually use in the class		
Computer assisted instructions	107	59.4
Lecturing only	90	50
Collaborative activities	77	42.8
Active discussions	139	77.22
IT facilities provided in the course		
Course management system	65	36.11
Smartboards	17	9.44
Computers	153	85
Projectors	174	96.7

variance of 64 per cent. The Kaiser-Meyer-Olkin (KMO) value reached 0.823, which is considered excellent for factor analysis (Kaiser, 1974). The Barlett test of sphericity was significant at 1 per cent, indicating that factor analysis is appropriate. According to the Kaiser principle, only those factors with eigenvalues greater than 1 were maintained for further analysis. The factorial load of each item in their respective constructs were higher than 0.8, which is above the lower limit suggested by Hair et al. (1998). The EFA results are presented in Table 3.

TABLE 2 The perception of the students towards integrating IT into education

	Strongly disgree (%)	Disagree (%)	Neutral (%)	Agree (%)	Strongly agree (%)
I believe that IT is very useful for learning	6.10	0.60	6.10	42.20	45.00
The use of IT for learning enhance flexibility to navigate in different learning resources	3.90	1.70	12.20	57.80	24.40
I prefer learning process based on hypermedia and hypertext rather than typical printed books	8.30	6.10	28.90	33.30	23.30

4.5 | Construct reliability

Construct reliability, which assesses the degree to which multiple measurements are consistent (Hair et al., 1998), was measured using Cronbach's alpha. The score for each of the constructs exceed 0.9. This is above the minimum set by Hair et al. (1998), concluding a high reliability of the scale. The construct reliability results are presented in Table 4.

5 | REGRESSION ANALYSIS

Multiple linear regression was used to analyse the factors which influence the use of IT among tertiary students. The *F* value was significant at 1 per cent, suggesting that the model as a whole can be used to predict the attitude of tertiary students towards IT usage. The adjusted *R* square reached .799, showing that around 80 per cent of the variance in the model is explained by the independent variables. The regression results are presented in Table 5.

The study's main objective was to identify the main factors that influence students' intention to use IT at tertiary level. It can be observed from the findings that antecedents of the attitude of students are: prior experience; IT self-efficacy; compatibility; and institute support.

Our results show that IT self-efficacy contributes to the adoption of IT in education and as such Hypothesis 2 is supported ($b = 0.161$, $p < .05$). This result is in agreement with the study of Pauli et al. (2007), who assert that students' level of IT self-efficacy does have a positive and direct impact on their attitude to use IT in education. Similarly, Compeau and Higgins (1995) argue that computer self-efficacy shapes the belief and behavior of the student.

Hypothesis 4, which predicted that prior experience in using information technology significantly influences a student's attitude towards information technology, is supported ($b = 0.127$, $p < .05$). Chokri (2013) highlighted that the significance of experience in the IT sector is high, and therefore proved to be a critical factor in determining the attitude of students towards using IT. The findings of this study is also in accord with Weinberg (2004) and Albirini (2006).

Compatibility is one of the constructs of Diffusion of Innovation theory (Rogers, 1995), and in the study of John (2015) compatibility was found to be a factor to which the younger generation are more attracted. Our results support both Hypothesis 6 ($b = 0.443$, $p < .05$) and past studies such as Rogers (1995) and John (2015), claiming that compatibility has a positive impact on the attitude of students towards adopting IT in higher education.

TABLE 3 EFA results

IB users	Rotated component matrix	F.L
Attitude	1. I like using computers for learning process	.928
	2. Computers and other IT facilities can be effectively adopted as instructional tools	.910
	3. Students should use information technology in all subject matters	.871
	4. Learning with the use of IT offer more benefits over traditional methods of instruction	.865
	5. Students must be allowed to use the Internet to access content related materials	.862
Perceived ease of use	1. Using the course management platform (the LCMS, LMS, etc.) to have a follow up of my course is easy.	.899
	2. I find the institute online education resources (Learning Management Systems, online course management tools, websites, etc.) to be easy to use.	.891
	3. Overall, I believe that Information Technology including Internet is easy to use.	.839
IT self-efficacy	1. Using IT in classrooms is manageable when learning (PowerPoint presentation, hypermedia, computer assisted instructions, etc.)	.946
	2. I can learn to use computers and other IT systems for my learning process	.946
	3. Instructional options can be further extended when using computer and Internet	.924
	4. I can effectively use IT as my learning Tool (internet access, Moodle e-learning, YouTube lecture tutorials, etc.)	.919
	5. I could complete my learning process using computers if someone could show me how to do it first	.861
IT anxiety	1. Computers and internet technologies are somewhat intimidating to me	.906
	2. I hesitate to use IT for fear of making mistakes that I cannot correct	.898
	3. I feel apprehensive (uneasy, nervous, etc.) when using IT	.891
	4. Using computers and related technologies to learn makes me feel uncomfortable	.882
	5. It scares me to think that I could cause the computer to destroy a large amount of information by hitting the wrong key	.858
Adoption of IT	1. I can operate a word processing program (e.g., Word), spreadsheet program (e.g., Excel), Database program (e.g., Access), presentation program (e.g., PowerPoint)	.918
	2. I often use Internet and various websites (You Tube, social media, etc.)	.899
	3. I have high expertise in using computer for learning	.893
	4. I possess an email address and I use it in the learning context	.893
	5. I have high expertise in general web surfing	.798

(Continues)

TABLE 3 (Continued)

IB users	Rotated component matrix	F.L
Relative advantage	1. Using IT improves my performance in class and outside the university	.937
	2. Using IT increases my productivity	.933
	3. Using IT improves the quality of my learning task	.932
	4. Using IT gives me greater control over my work	.902
	5. Using IT enables me to accomplish my tasks (assignments, presentations, revisions, etc.) more quickly	.888
Compatibility	1. Using IT is completely compatible with my current situation	.947
	2. I think that using IT fits well into my lifestyle	.916
	3. I think that using IT fits well with the way I like to learn	.911
	4. Using IT is compatible with all aspects of my course	.897
Institute's support	1. The university's academic staff promotes IT integration in teaching and learning	.946
	2. Lecturers and other academic staff often exchange ideas about technology integration with students	.943
	3. The ICT coordinator (CITS, MIS, ITS, IT service dept., etc.) support initiatives in association with academic staff, in the areas of research and teaching	.905
	4. Technical support for IT is adequate at the university	.900
	5. A variety of computer and IT related technologies are available for use at the university	.883
	6. The university encourages integration of IT in teaching and learning	.866
	7. Instructional support for the use of IT is adequate at the university	.851

As regards institute's support, our findings provide support to Hypothesis 7 ($b = 0.206$, $p < .05$). Therefore, it can be concluded that institute's support is a high predictor of the attitude of student towards IT use. Our result is in line with the findings of Tondeur et al. (2008). The authors explained that actions at the institute's level, such as ICT plan, support and training, influence successful IT integration.

Other potential predictors: perceived ease of use (Hypothesis 1), relative advantage (Hypothesis 3) and IT anxiety (Hypothesis 5) were also analysed, but no significant relationships were found with intention to adopt IT in education. IT anxiety was expected to have an influence on the attitude of the students, but it was not the case. This result is supported by Venkatesh et al. (2003), that there is no significant effect between IT anxiety and the attitude of the individual to use technological tools. The results of the findings for these determinants obtained may be due to the respondents' characteristics and the number of responses received.

The hypothesis results are summarised in Table 6. It can be seen that the two most significant predictors were compatibility and institute's support, followed closely by self-efficacy. On the other hand, the least significant predictor was perceived ease of use.

6 | SUMMARY AND IMPLICATIONS

Technological progress has altered the way education is provided. Some institutions are offering fully online courses, while others have varied the degree of use of information technology in their courses. This study

TABLE 4 Reliability results

	Cronbach's alpha	Number of items
Attitude	0.932	5
Perceived ease of use	0.737	4
IT self-efficacy	0.952	5
IT anxiety	0.931	5
Adoption of IT (Experience)	0.928	5
Relative advantage	0.953	5
Compatibility	0.937	4
Institute's support	0.960	7

assessed the factors influencing the use of IT in tertiary education. Integrating IT in education is still in its infancy in Mauritius. This study targets students who are at the core of the IT integration process. Even if IT is a popular topic, this is one of the rare studies carried out on the factors influencing the attitude of students towards integrating IT in education in Mauritius. Various studies on the integration of IT in education have investigated only the benefits that IT can bring in the educational system rather than exploring both the technological and personal characteristics that may influence or hinder its implementation. Hence this research fills the gap in the literature contributing to extant literature. The study comes at an opportune time when 'IT integration' is seen as the 'new normal' for higher education institutions, due to the Covid-19 pandemic.

Our findings reveal that prior experience, IT self-efficacy, compatibility and institute support are the main determinants of the attitude towards IT integration in tertiary education. These findings have a number of practical implications. Since prior experience influences the attitude of students towards IT, authorities such as the Ministry of Education can plan the secondary school curriculum to include basic IT skills. This will also help to boost the self-confidence of students as 'self-efficacy' has been found to be one antecedent of the attitude towards IT integration. With the Internet and the advent of social media, youngsters are practically 'growing over the web' (John, 2015). Therefore, it is no surprise that compatibility affects students' attitude towards IT in education. When designing online education platforms, education technologists can include features similar to social media platforms which are valued by youngsters. This will increase the chances of successful IT integration. Similarly, institute support is essential to integrate IT in education. Tertiary institutions must ensure that enough support is available to students. For example, having a 24/7 help desk to support students in their studies will ensure that the massive investment made in IT reaps benefits.

The findings of this study can be useful to several stakeholders in the higher education field. Tertiary institutions contemplating the integration of IT in the teaching and learning process can take into account the findings of this study to increase the chances of successful IT integration. For instance, policymakers can use the findings of this report to issue guidelines to tertiary institutions to integrate IT successfully in their teaching. The Ministry of Education continuously stresses integrating information technology as part of our educational system which promotes lifelong learning. It also relates to the new Sustainable Development Goals set by the United Nations (2017), where reforms of the education system are significant. In this regard, policymakers, government and, more specifically, the regulatory body of tertiary education (Tertiary Education Commission) need to co-operate to promote '… inclusive and equitable quality education' (SDGs, Goal 4). This can be achieved by improving the higher education environment and integrating information technology. It is highlighted by Ajaheb (2016) that the higher education sector has undergone substantial transformation, due to the emerging trend of globalisation, global economies, virtual classrooms, e-learning, etc. Hence, the Higher Education Commission should have a strategic plan for the re-engineering of the current IT infrastructure in order to complement new technological changes.

TABLE 5 Regression results (Attitude)

Model	β	T	Sig.
(Constant)	.067	.351	.726
Adoption (experience)	.127	2.253	.026**
IT self-efficacy	.161	2.765	.006***
IT anxiety	−.018	−.522	.602
Relative advantage	.064	.873	.384
Compatibility	.443	5.659	.000***
Perceived ease of use	.009	.127	.899
Institute support	.206	4.129	.000**
R square	.807		
Adjusted *R* square	.799		
SE of estimate	.38445		
F	102.4**		

***Significant at $p < .01$;
**significant at $p < .05$.

TABLE 6 Hypothesis results

Hypothesis	Significance	Result
Hypothesis 1: Perceived ease of use has a positive influence on a student's attitude towards using educational technologies	.899	Rejected
Hypothesis 2: A student's technology self-efficacy positively influences his/her attitude towards using educational technologies	.006	Not rejected
Hypothesis 3: A student's technology anxiety has a positive correlation with his/her attitude towards using educational technologies	.602	Rejected
Hypothesis 4: Prior experience in using Information Technology significantly influence a student's attitude towards information technology	.013	Not rejected
Hypothesis 5: Relative advantage will positively influence the Students' attitude towards integrating educational technology	.384	Rejected
Hypothesis 6: Compatibility has a positive impact on the attitude of students towards adopting IT in higher education	.000	Not rejected
Hypothesis 7: Institute's support has a positive influence on Attitude of students towards integrating IT in education	.000	Not rejected

Therefore, to implement such strategies, a countrywide survey can be carried out where the findings can be more accurate and more comparable, and ultimately support better decision-making.

7 | LIMITATIONS AND FUTURE RESEARCH

This study, however, comes with its share of limitations. First, it targets only the student's attitude towards IT adoption in the teaching process, when teaching staff's attitude is also a crucial element to be considered for the

efficient implementation of IT in tertiary education. Secondly, the sample includes only 60 per cent of publicly funded universities, with an increasing number of students turning to privately funded universities. Future research can not only include a greater proportion of publicly funded universities in their sample, but also include privately funded universities to increase representativeness. Many other factors influence the student's attitude towards technology integration and the teaching process, such as field of study of the student and academic performance of the student. These are left for future studies to investigate.

CONFLICT OF INTEREST

None.

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REFERENCES

Ajaheb, S. (2016). Drivers of change in the tertiary education sector in mauritius. In *International Conference on Internationalisation of Tertiary Education, 23–25 March 2011*, Reduit, Mauritius. ISSN reference 1694-1160.

Ajzen, I. (1985). From intentions to actions: A theory of planned behavior. In J. Kuhl & J. Beckmann (Eds.), *Action control* (pp. 11–39). Springer.

Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, *50*(2), 179–211. https://doi.org/10.1016/0749-5978(91)90020-T

Al-Adwan, A., & Smedley, J. (2013). Exploring students acceptance of e-learning using Technology Acceptance Model in Jordanian universities. *International Journal of Education and Development Using ICT*, *9*(2), 4–18.

Albirini, A. (2006). Teachers' attitudes toward information and communication technologies: The case of Syrian EFL teachers. *Computers & Education*, *47*(4), 373–398. https://doi.org/10.1016/j.compedu.2004.10.013

Algan, C. E. (2006). *The perception of self-efficacy of the use of it in education of the classroom teachers' teaching at private schools & the way of benefit from it in their lessons* (Unpublished master's thesis). Institute of Educational Sciences, Istanbul, Turkey.

Altawallbeh, M., Soon, F., Thiam, W., & Alshourah, S. (2015). Mediating role of attitude, subjective norm and perceived behavioural control in the relationships between their respective salient beliefs and behavioural intention to adopt e-learning among instructors in Jordanian Universities. *Journal of Education and Practice*, *6*(11), 152–159.

Ariff, M. S. M., Yeow, S. M., Zakuan, N., Jusoh, A., & Bahari, A. Z. (2012). The effects of computer self-efficacy and technology acceptance model on behavioral intention in internet banking systems. *Procedia-Social and Behavioral Sciences*, *57*, 448–452. https://doi.org/10.1016/j.sbspro.2012.09.1210

Ball, D. M., & Levy, Y. (2008). Emerging educational technology: Assessing the factors that influence instructors' acceptance in information systems and other classrooms. *Journal of Information Systems Education*, *19*(4), 431–444.

Bandura, A. (1986). The explanatory and predictive scope of self-efficacy theory. *Journal of Social and Clinical Psychology*, *4*(3), 359–373. https://doi.org/10.1521/jscp.1986.4.3.359

Benamati, J., & Rajkumar, T. M. (2008). An outsourcing acceptance model: An application of TAM to application development outsourcing decisions. *Information Resources Management Journal*, *21*(2), 80–102. https://doi.org/10.4018/irmj.2008040105

Butler, D. L., & Sellbom, M. (2002). Barriers to adopting technology. *Educause Quarterly*, *2*(1), 22–28.

Chokri, B. (2013). Factors influencing the adoption of the e-learning technology in teaching and learning by students of a university class. *European Scientific Journal*, *8*(28), 165–190. https://doi.org/10.19044/esj.2012.v8n28p%p.

Compeau, D. R., & Higgins, C. A. (1995). Computer self-efficacy: Development of a measure and initial test. *MIS Quarterly*, *19*(2), 189–211. https://doi.org/10.2307/249688

Dahmani, B. F., & Tahi, R. (2015). New Horizons on Education Inspired by Information and communication technologies. *Procedia-Social and Behavioral Sciences*, *174*, 602–608. https://doi.org/10.1016/j.sbspro.2015.01.589

Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly*, *13*(3), 319–340. https://doi.org/10.2307/249008

DeCoster, J. (1998). *Overview of factor analysis*. http://www.stat-help.com/notes.html

Dillon, A., & Morris, M. G. (1996). *User acceptance of new information technology: Theories and models*. Information Today.

DuPree, Y. (2015). *Determinants of intention to use new technology: An investigation of students in higher education* (Unpublished PhD dissertation). Nova Southeastern University. https://nsuworks.nova.edu/gscis_etd/69/

Fishbein, M., & Ajzen, I. (1977). *Belief, attitude, intention, and behavior: An introduction to theory and research*. Addison-Wesley.

Hair, J. F., Jr, Anderson, R. E., Babin, B. J., & Black, W. C. (1998). *Multivariate data analysis* (5th ed.). Prentice Hall.

Henderson, M., Selwyn, N., & Aston, R. (2017). What works and why? Student perceptions of 'useful' digital technology in university teaching and learning. *Studies in Higher Education*, *42*(8), 1567–1579. https://doi.org/10.1080/03075079.2015.1007946

Holden, H., & Rada, R. (2011). Understanding the influence of perceived usability and technology self-efficacy on teachers' technology acceptance. *Journal of Research on Technology in Education*, *43*(4), 343–367. https://doi.org/10.1080/15391523.2011.10782576

Hussein, Z. (2017). Leading to intention: The role of attitude in relation to technology acceptance model in e-learning. *Procedia Computer Science*, *105*, 159–164. https://doi.org/10.1016/j.procs.2017.01.196

Igbaria, M., & Iivari, J. (1995). The effects of self-efficacy on computer usage. *Omega*, *23*(6), 587–605. https://doi.org/10.1016/0305-0483(95)00035-6

Işman, A., & Çelikli, G. E. (2009). How does student ability and self-efficacy affect the usage of computer technology? *Turkish Online Journal of Educational Technology*, *8*(1), 33–38.

John, S. P. (2015). The integration of information technology in higher education: A study of faculty's attitude towards IT adoption in the teaching process. *Contaduría y Administración*, *60*, 230–252. https://doi.org/10.1016/j.cya.2015.08.004

Kaiser, H. F. (1974). An index of factorial simplicity. *Psychometrika*, *39*(1), 31–36. https://doi.org/10.1007/BF02291575

Khedo, K. K., Roushdat, S. M., Elaheebocus, A., Mocktoolah, A., & Suntoo, R. (2012). Online social networking as a tool to enhance learning in the mauritian education system. *Journal of Emerging Trends in Computing and Information Sciences*, *3*(6), 907–912.

King, W. R., & He, J. (2006). A meta-analysis of the technology acceptance model. *Information & Management*, *43*(6), 740–755. https://doi.org/10.1016/j.im.2006.05.003

Lee, M.-C. (2009). Factors influencing the adoption of internet banking: An integration of TAM and TPB with perceived risk and perceived benefit. *Electronic Commerce Research and Applications*, *8*(3), 130–141. https://doi.org/10.1016/j.elerap.2008.11.006

Lock, R. H., & Kingsley, K. V. (2007). Empower diverse learners with educational technology and digital media. *Intervention in School and Clinic*, *43*(1), 52–56. https://doi.org/10.1177/10534512070430010701

Lu, J., Yu, C.-S., Liu, C., & Yao, J. E. (2003). Technology acceptance model for wireless Internet. *Internet Research*, *13*(3), 206–222. https://doi.org/10.1108/10662240310478222

Menchaca, M. P., & Bekele, T. A. (2008). Learner and instructor identified success factors in distance education. *Distance Education*, *29*(3), 231–252. https://doi.org/10.1080/01587910802395771

Pauli, K. P., Gilson, R. L., & May, D. R. (2007). Anxiety and avoidance: The mediating effects of computer self-efficacy on computer anxiety and intention to use computers. *Review of Business Information Systems*, *11*(1), 57–64. https://doi.org/10.19030/rbis.v11i1.4431

Pinho, J. C., & Soares, A. (2011). Examining the technology acceptance model in the adoption of social networks. *Journal of Research in Interactive Marketing*, *5*(2/3), 116–129.

Republic of Mauritius. (2016). *Statistics of mauritius*. http://statsmauritius.govmu.org/English/Pages/default.aspx

Roblyer, M. D., & Doering, A. H. (2006). *Integrating educational technology into teaching* (Vol. *2*). Pearson/Merrill Prentice Hall.

Rogers, E. M. (1995). Lessons for guidelines from the diffusion of innovations. *Joint Commission Journal on Quality and Patient Safety*, *21*(7), 324–328. https://doi.org/10.1016/S1070-3241(16)30155-9

Rogers, E. M. (2003). *Diffusion of innovations* (5th ed.). Free Press.

Rosenberg, M. J., & Foshay, R. (2002). E-learning: Strategies for delivering knowledge in the digital age. *Performance Improvement*, *41*(5), 50–51. https://doi.org/10.1002/pfi.4140410512

Scherer, R., Siddiq, F., & Tondeur, J. (2019). The technology acceptance model (TAM): A meta-analytic structural equation modeling approach to explaining teachers' adoption of digital technology in education. *Computers & Education*, *128*, 13–35. https://doi.org/10.1016/j.compedu.2018.09.009

Schmidt, K. (2002). The web-enhanced classroom. *Journal of Industrial Technology*, *18*(2), 2–6.

Sharma, S. K., & Chandel, J. K. (2013). Technology acceptance model for the use of learning through websites among students. *International Arab Journal of e-Technology*, *3*(1), 44–49.

Shu, Q., Tu, Q., & Wang, K. (2011). The impact of computer self-efficacy and technology dependence on computer-related technostress: A social cognitive theory perspective. *International Journal of Human-Computer Interaction*, *27*(10), 923–939. https://doi.org/10.1080/10447318.2011.555313

So, H.-J., Choi, H., Lim, W. Y., & Xiong, Y. (2012). Little experience with ICT: Are they really the Net Generation student-teachers? *Computers & Education*, *59*(4), 1234–1245. https://doi.org/10.1016/j.compedu.2012.05.008

Tajudeen Shittu, A., Madarsha Basha, K., AbdulRahman, S. N., & Badariah Tunku Ahmad, T. (2011). Investigating students' attitude and intention to use social software in higher institution of learning in Malaysia. *Multicultural Education & Technology Journal*, *5*(3), 194–208. https://doi.org/10.1108/17504971111166929

Tondeur, J., Van Keer, H., Van Braak, J., & Valcke, M. (2008). ICT integration in the classroom: Challenging the potential of a school policy. *Computers & Education*, *51*(1), 212–223. https://doi.org/10.1016/j.compedu.2007.05.003

United Nations. (2017). *Sustainable development goals*. https://sustainabledevelopment.un.org/sdg4

Vahed, A., & Cruickshank, G. (2018). Integrating academic support to develop undergraduate research in Dental Technology: A case study in a South African University of Technology. *Innovations in Education and Teaching International*, *55*(5), 566–574.

Venkatesh, A. (1996). Computers and other interactive technologies for the home. *Communications of the ACM*, *39*(12), 47–54. https://doi.org/10.1145/240483.240491

Venkatesh, V., & Bala, H. (2008). Technology acceptance model 3 and a research agenda on interventions. *Decision Sciences*, *39*(2), 273–315. https://doi.org/10.1111/j.1540-5915.2008.00192.x

Venkatesh, V., & Davis, F. D. (2000). A theoretical extension of the technology acceptance model: Four longitudinal field studies. *Management Science*, *46*(2), 186–204. https://doi.org/10.1287/mnsc.46.2.186.11926

Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003). User acceptance of information technology: Toward a unified view. *MIS Quarterly*, *27*(3), 425–478. https://doi.org/10.2307/30036540

Wade, M. (2009). *Resource-based view of the firm*. http://www.fsc.yorku.ca/york/istheory/wiki/index.php/Resource-based_view_of_the_firm

Weinberg, B. A. (2004). Experience and technology adoption. *IZA Discussion Papers 1051*. http://ftp.iza.org/dp1051.pdf

Yousafzai, S. Y., Foxall, G. R., & Pallister, J. G. (2007). Technology acceptance: A meta-analysis of the TAM: Part 2. *Journal of Modelling in Management*, *2*(3), 281–304. https://doi.org/10.1108/17465660710834462

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