

MoneyWise Cash-Flow Simulation Module: Improving Students' Grade Through Enhanced Personal Financial Planning System

Suhaily Maizan Abdul Manaf
Fathiyah Ismail
Nur Azwani Mohamad Azmin
Sholehah Abdullah
Siti Fatimah Mardiah Hamzah
Nik Noor Afizah Azlan
Salwani Affandi
Zaimi Mohamed

Faculty of Business and Management
Universiti Teknologi MARA, Cawangan Terengganu
suhailymaizan@uitm.edu.my

ABSTRACT

The development of MoneyWise Personal Cash-Flow Simulation Module in teaching and learning focuses on helping students understand the personal financial management elements. The issues arise previously are related to the problems of students' understanding on the basic financial management in attempting to answer the questions in Part A section of the subject of Personal Financial Management (FIN533). Thus, the simulation enables the students to experience the essentials of budgeting, record-keeping, valuable tools, and tips on managing cash flows and other related activities in money management. During the simulation, the students have been able to analyse their financial position in various reports, such as the budget template and cash-flow statement. In the meantime, the module will enhance students' potential to obtain excellent grades in the personal financial planning course and elevate their skills and readiness to face real-life situations in the future. The findings have shown that the percentage of student's scores in Part A

has increased from 75.9 per cent in semester 20182 to 84.6 per cent in semester 20184. While 80.6 per cent score in 20192 which is above the targeted average, concludes that the objectives have been achieved. The system not only functions as an e-learning material but is also helpful for individuals to record and manage their daily transactions. MoneyWise is an excellent e-learning innovation and relevant financial tool to elevate financial literacy, aligning with the National Strategy for Financial Literacy 2019-2023.

Keywords: e-learning; Module; Financial Literacy; Simulation; Students' Grade

INTRODUCTION

Financial well-being refers to an individual's ability to fulfil current and future financial responsibilities, feel secure with their financial future, and make choices that allow them to enjoy life. For decades, financial educators have prioritised research into the factors that affect financial wellbeing (Falahati & Sabri, 2015). According to Huzaini (2019), 60 per cent of Malaysia's total bankruptcy is due to spending habits that exceed the total income. Moreover, the report has also revealed some concerns about Malaysians, principally on the level of knowledge and skills to manage personal financial matters. Likewise, those who have been declared bankrupt have admitted that the leading cause of failure in controlling their finances is the lack of good financial education and planning (AKPK, 2021).

Based on the records of the Malaysian Department of Insolvency and as supported by the results of a study conducted by the Asian Institute of Finance (AIF), some essential things need to consider avoiding getting caught up in intimidating problem. People must understand the level of one's financial position, compare one's income with one's expenses, equip oneself with financial knowledge, do good financial management, and make wise investments. In other words, it is crucial to be proficient at the basics of financial management from an early age so that future generations do not quickly get into this severe and gruelling financial problem.

Therefore, the introduction of National Strategy for Financial Literacy 2019-2023 (2019) the Malaysian government has underlined strategic priorities and action plans to nurture the values from an early age by expanding financial education fundamental into the curriculum pre-school, primary school, and secondary school. The reinforcement of financial education through the curriculum will help young Malaysians understand and apply

essential knowledge, skills, and values when making financial decisions. As a result, financial education is essential if the community members benefit from the financial system and the emerging innovations changing the financial landscape (AKPK, 2021). It will help customers better understand the risks of handling their finances and making more informed financial decisions.

In line with the National e-Learning Policy (DePAN) and the National Strategy for Financial Literacy 2019-2023 (2019), the FBM East Coast Team (FBMEC) of the Faculty of Business and Management, UiTM Cawangan Terengganu, has created a teaching-and-learning (T&L) innovation, known as the *MoneyWise* Personal Cash-Flow Simulation System (*MoneyWise*), to support university policies that encourage the use of the latest teaching aids and according to students' needs.

This T&L innovation has been developed based on simulation methods used as a learning material for the Personal Financial Management (FIN533) course designed for the Bachelor of Business Administration (Hons) Finance (BM242) programme to improve the T&L delivery methods and elevate students' academic performances and financial literacy.

The objective of this paper is to determine the effectiveness of simulations module as a teaching and learning tools in delivering understanding, skills, and knowledge via simulation-based teaching. The result is useful to measure whether the *MoneyWise* Personal Cash-Flow Simulation Module can effectively empower students' performance for a good score in Personal Financial Management course. This paper consists of the reviews of the past studies related to topic, the methodology used for data collection, the result discussion, conclusion, and recommendation.

LITERATURE REVIEW

Financial literacy

Higher education quality is continuously improving in many countries simultaneously, and this has been a trend for several decades, resulting in increased learning accessibility for students (Mat Halif et al., 2020). Knowing a student's learning style will provide them with a wealth of knowledge, such as how they learned things differently than others (Mat Halif et al., 2020). According to National Strategy for Financial Literacy 2019-2023 (2019), one in three Malaysian rated themselves to be low in

financial knowledge. Also, one in ten believe that they are not disciplined in managing their finances, while 84 per cent has regularly save but only for the immediate term, as they will withdraw at month-end to care daily expenses. Among the factors contributing to the high level of indebtedness and bankruptcy among youths are low financial literacy rate, failure to manage finances well, and debt burdens are borne immediately after graduation (Rafdi et al., 2015). The Malaysian Department of Insolvency reported that 100,610 people had been declared bankrupt from 2013 to 2017, 60 per cent of them aged between 18 and 44 years old. It is very astonishing when some people have even been declared bankrupt as early as 18 years old. Having been classified as bankrupt is the most daunting experience as there would be so many adverse effects if it occurs.

Information and Communication Technology in Education

With the current economic situation causing life to be more stressful, money management has gone haywire, and people could not settle their debts commitment, which is in turn, causes an individual to go bankrupt (Rafdi et al., 2015). Indeed, this issue is alarming because it could impose a negative impact not only on sociocultural aspects but also potentially inhibit macroeconomic growth in the long run. According to Tuma et al. (2020), information and communication technology (ICT) has changed the education landscape in teaching and learning (T&L). The pressure on academics to build ICT skills in teaching and learning has grown over the last decade (Fook & Sidhu, 2009). Moreover, most educators believe that good teaching leads to good learning and being engaged and inspired and having the right approach and knowledge (Amir & Mohd Jelas, 2011).

Although most academics are aware of the many benefits of ICT, there are still academics who believe in the value of face-to-face contact and the instructor's didactic function (Fook & Sidhu, 2009). These changes require both student and teacher to be adaptive and digitally competent. These changes involve using a blended learning method, a learning delivery that is not only done face-to-face but also handled through other methods. The CAP e-Learning Committee of the Ministry of Education Malaysia has defined blended learning as the courses that have a mix of an online-learning-mode and onsite-learning-mode approach. In this way, 30 per cent to 80 per cent of the course contents and activities is conducted online, whether to support or replace face-to-face learning. In the meantime, the scope of e-learning involves a form of T&L instructions conducted via electronic media aimed at increasing the effectiveness of the T&L process and supporting it. One of the

methods which could be implemented as a blended-learning material is a simulation method. This method is used in the T&L process where students have a window of opportunities to apply financial-management theories to the real world (as if they are in an actual situation) by doing activities related to particular topics as appeared in the course syllabus.

Simulation-Based Learning

One of the essential items in the UiTM Transformation Programme agenda (TRANS4U) and the university's top management mandate is cultivating innovation to increase the effectiveness of the T&L process. Besides, the university community's involvement in the most recent learning approaches is also essential in aligning with Education 5.0@UiTM. 21st-century teachers or instructors should have skills to guide students in the tech-assisted learning process to meet the educational challenges (Tuma et al., 2020). Furthermore, this method is targeted to support the aspiration and meet 21st-century teaching and learning expectations. According to Levant et al. (2016), business simulations may benefit male and female students from various ethnic and cultural backgrounds, regardless of whether they have any previous professional experience. Cook et al. (2016), Solnick and Weiss (2007), cited in Warren et al. (2016), agreed that simulation-based learning is an educational intervention that creates conducive experiential learning for students.

On top of that, the simulation method did develop soft skills, particularly self-knowledge, the ability to obtain and use the information and the ability to communicate among students (Levant et al., 2016). In line with these findings, FBM East Coast has come out with an initiative to develop a simulation module, namely the *MoneyWise* Cash Flow Simulation Module. This module is enhanced to the current needs of the syllabus accordingly.

The Faculty of Business and Management of UiTM offers the course Personal Finance Management (FIN533) to enhance students' know-how and skills on personal financial-management elements, such as preparing budgets, recording financial transactions, and generating reports, and monitoring their financials systematically. A preliminary analysis of the students' achievements taking this course has shown that there is still room for improvement that is feasible to boost the students' performances to the maximum level. Hence, the FBMEC team has selected the *MoneyWise* project to facilitate lecturers to design assignment materials and course evaluation, increase the variety of T&L materials, and improve student

mastery and performance for the FIN533 course by utilising the concept of blended learning, e-learning, and simulation methods.

METHODOLOGY

The *MoneyWise* module's development has begun with the data collection and analysis of the students' final examination results taking the FIN533 course. Figures 1 and 2 show the analysis of student achievement by grade from 2012 to 2017 for the FIN533 course. 50.7 per cent of the students from the BM242 programme offered in UiTM as a whole. 58.6 per cent of the students from UiTM Cawangan Terengganu have obtained a B+ and above. Detailed analysis on investigating the students' final-examination marks in Part A related to personal financial statements management. The maximum score ever achieved has only been 32 out of 40 marks, with the average overall score of Part A has been 27.9 out of 40 marks, equivalent to 69.7 per cent. This achievement could be considered modest and, therefore, needs to be improved. To skyrocket the overall score of 80 per cent for the FIN533, Part A's score on the final examination must exceed 32 marks. It is believed that the number of students getting B+ and above will increase to 80 per cent by applying the *MoneyWise* simulation system in the learning process of the FIN533 course.

Figure 1: Student-Achievement Analysis for the FIN533 Course (Overall)

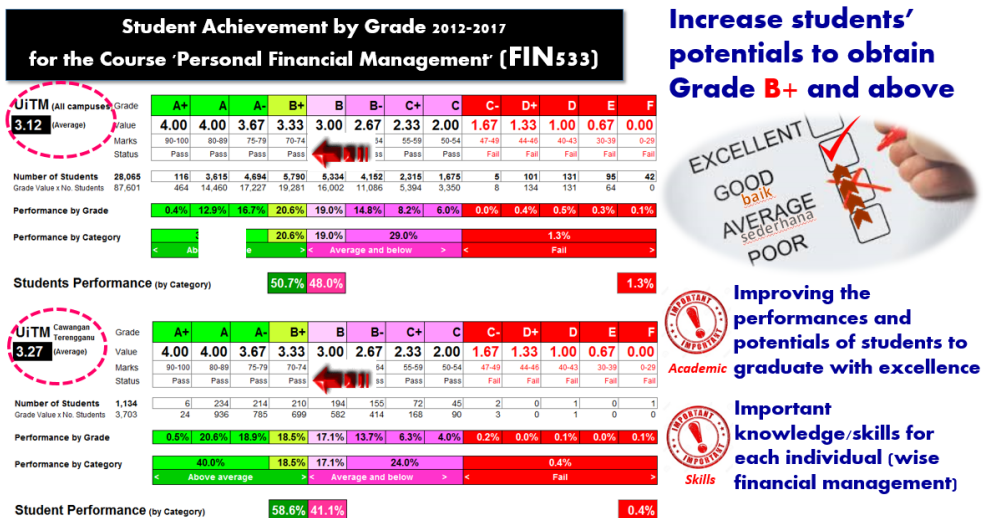
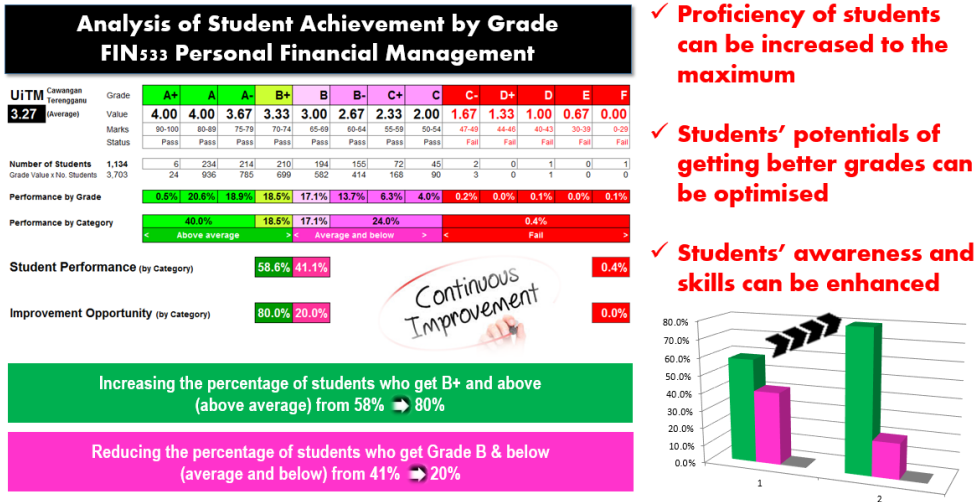


Figure 2: Student-Achievement Analysis for the FIN533 Course (UiTM Cawangan Terengganu)



This study uses observation and the 5W1H method to get an initial picture of the problems encountered. The root causes of the problem have been studied in more detail, as shown in Figure 3. The five (5) main factors, namely humans, tools, environment, materials, and methods are the causes of the problem that need to be considered, which have caused the FIN533 course final-examination results to secure a place at the intermediate level. The results of more detailed discussions and studies have shown that there are only three (3) causal factors that could be addressed by our group, namely methods, materials, and humans (Figure 4). Based on the problem's root causes, we have formulated an action plan to provide comprehensive T&L materials and improve the teaching techniques and variations by developing the *MoneyWise* system.

Figure 3: Cause-and-Effect Analysis 1

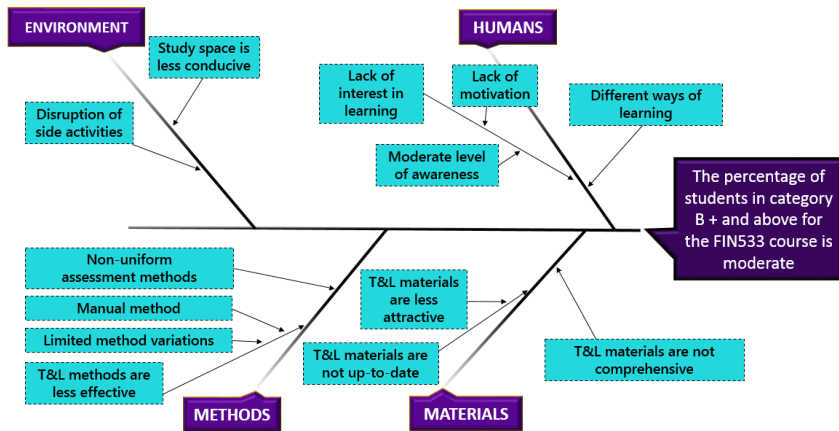
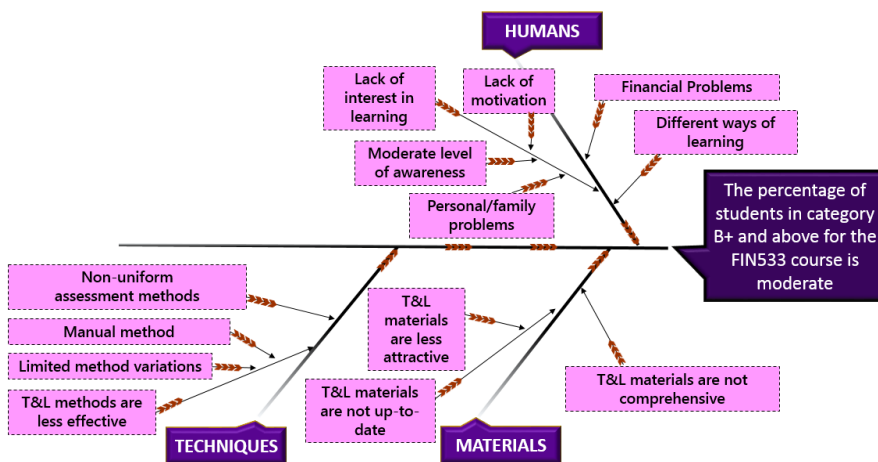


Figure 4: Cause-and-Effect Analysis 2

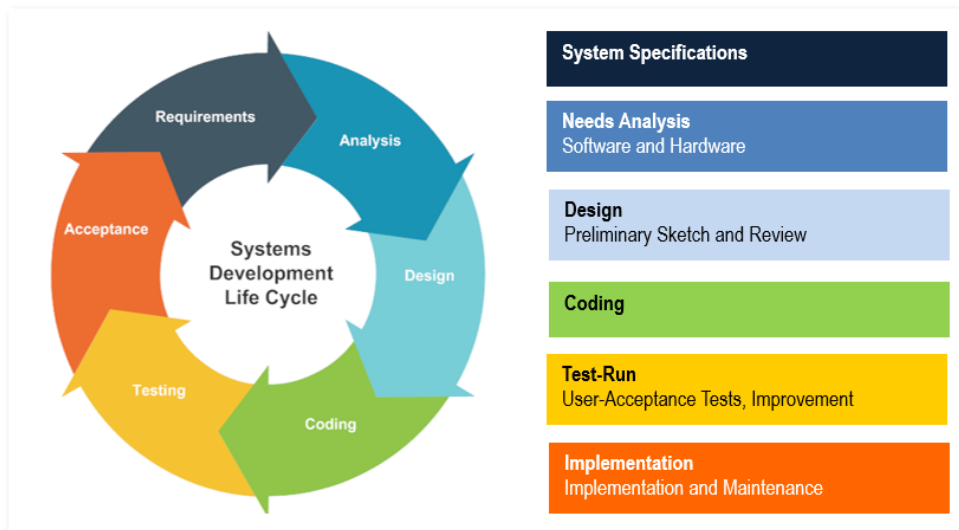


The *MoneyWise* project has been implemented in stages according to the proposed action plan shown in Table 1 below. In the interim, the system development has been carried out according to the phase methodology of the information-technology system development, the Waterfall System Development Life Cycle (SDLC) certified by many researchers and system developers (Sami, 2012). It is a series of phases that provide a common understanding of the software building process. Based on the system-development phase methodology, as shown in Figure 5, we have analysed the system's specifications, prepared the software and hardware

requirements, and made the system's initial sketch. The system's design has been reviewed to ensure that each component and element identified meet users' needs.

Table 1: Proposed Action Plan

What Needs to Be Done?	How?
Setting the system-development phase	<ul style="list-style-type: none"> ○ Phase 1 - Excel-based ○ Phase 2 - Web-based ○ Phase 3 - Mobile-app
Determining the specifications and contents of the system/module	<ul style="list-style-type: none"> ○ Getting feedback/suggestions from students ○ Getting feedback/suggestions from lecturers ○ Getting expert views (ASNB, AKPK)
Designing the system/module	<ul style="list-style-type: none"> ○ Obtaining the equipment and software ○ Designing the system framework, logo/texts/images ○ Setting the layout and contents ○ Building the database
Test-running	<ul style="list-style-type: none"> ○ Preparing the test materials and date-setting ○ Getting user feedback for improvement
Documentation	<ul style="list-style-type: none"> ○ Workflow and Process ○ User Manual ○ Videos (tutorials and promotions) ○ Resource Person
Standardisation	<ul style="list-style-type: none"> ○ Approval from the Deputy Academic Rector of UiTM Cawangan Terengganu ○ Approval from the Dean of the Faculty of Business and Management, UiTM ○ Briefing and Promotion

Figure 5: System-Development Phase

Meanwhile, the coding process's commencement and a test-run session (Figure 6) by students cum potential users. According to the users, the system is attractive, creative, user-friendly, beneficial for the teaching process, easy to understand, and meets the course's needs. All the feedback and suggestions submitted by the students have always been taken into account for continuous improvement. Figure 7 shows the system's implementation phase starting from the use of the module at the programme level, followed by the proposed implementation for all the programmes offered by the Faculty of Business and Management, UiTM Cawangan Terengganu.

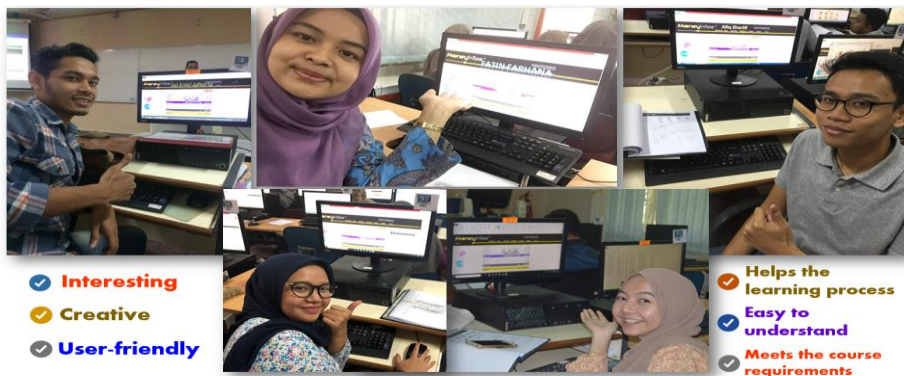
Figure 6: System Test-Run Session

Figure 7: MoneyWise Implementation Phase

Mar 2020 Proposing Standardisation in all programmes offering equivalent courses in UiTM

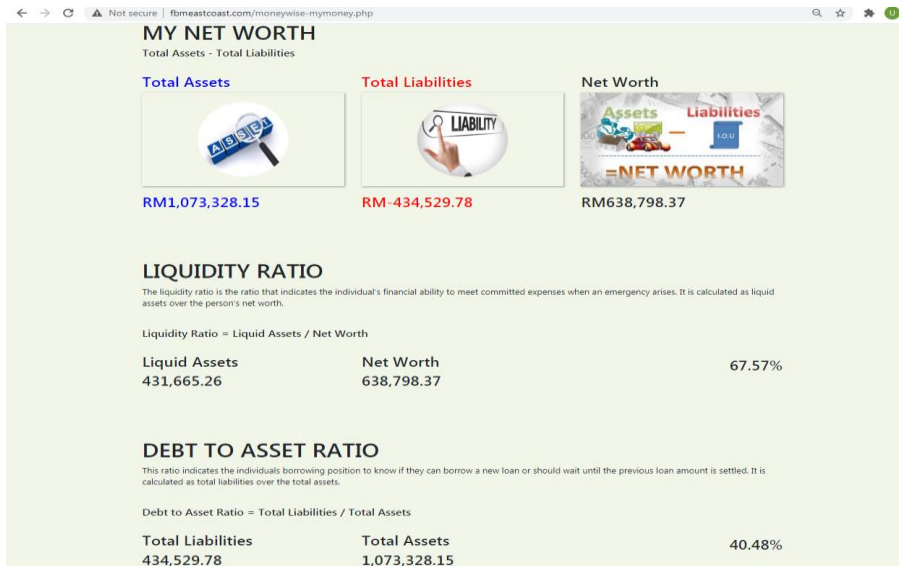
Mar 2019 Proposing Offer at the FBM Bachelor's Degree programme level throughout the UiTM System

Sep 2018 Implementing in all UiTMCT FBM Bachelor's Degree programmes ✓

Mar 2018 Implementing in the selected UiTMCT FBM Bachelor's Degree programmes (BM242 BA242) ✓

For standardisation and more comprehensive implementation, the *MoneyWise* simulation module has been upgraded from the excel-based system to the web-based system. The latest version of *MoneyWise* is now more user-friendly and easy-to-access. To give more confidence to students and potential users, *MoneyWise* has been registered at Perbadanan Harta Intelek Malaysia (MyIPO) on 17th July 2018. Apart from a recognition endowed by the faculty management and top management of UiTM Cawangan Terengganu, the *MoneyWise* simulation module has also been certified by two professional evaluators, namely Mr Zamri Musa (Registered Financial Planner, Amanah Saham Nasional Berhad Kuala Terengganu) and Mr Saidi Ya'acob [Head of The Credit Counselling and Debt Management Agency, known as Agensi Kaunseling dan Pengurusan Kredit (AKPK) Kuantan.

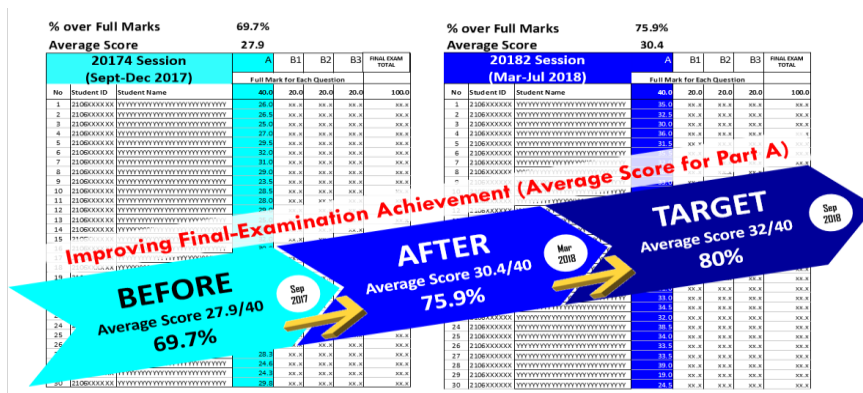
Figure 8: Interface of Financial-Ratio Report



RESULTS AND DISCUSSIONS

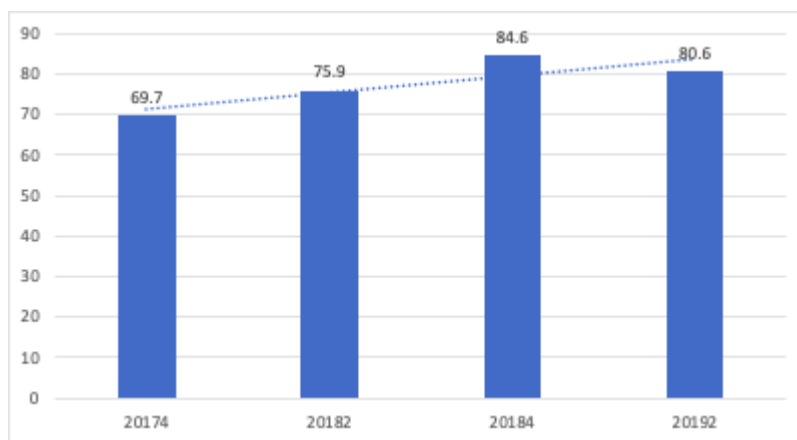
The Faculty of Business and Management students, UiTM Cawangan Terengganu, successfully sample a pilot test using the *MoneyWise* simulation module during the March-2018 semester. The final-examination analysis has shown that Part A's average score has increased from 69.7 per cent to 75.9 per cent. Being inspired by the result, we have expected a continuous increase of up to 80 per cent in the following semester (Figure 9).

Figure 9: Project Successful Attainment



The system has been continuously used for the subsequent four semesters. The findings show that the percentage of student's scores in Part A has increased to 84.6 per cent in semester 20184. The results show a score of 80.6 per cent for semester 20192, which is still above the target. These findings conclude that the targeted score has been achieved. However, starting from semester 20194 and onwards, Part A's scores cannot be generated anymore because the new method of generating the final examination marks and results has been introduced. The reported findings are consistent with Castillo-Merino and Serradell-López (2014), who also suggested that the use of innovations in the technology of teaching and learning show a positive impact on students' performance. In the comparative teaching experiment, Yu (2016) also revealed that successfully enhancing education quality on financial management gain from the simulation system's usage.

Figure 10: Part A's Scores



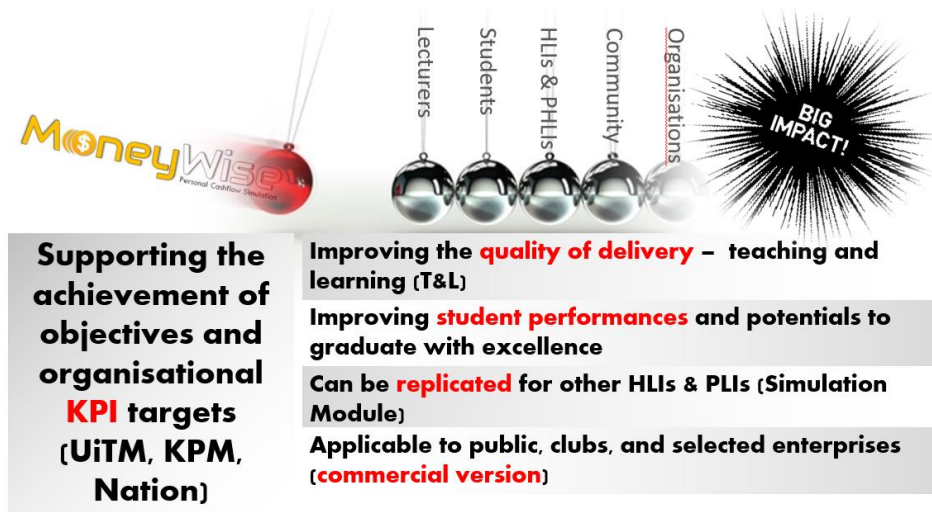
The *MoneyWise* system's existence benefits many and has a high impact, which is in line with university aspirations and national agenda (Figure 10). For students, this system could increase their potential to obtain better grades for the FIN533 (Personal Financial Management) course and be very relevant for their future use. For lecturers, the existence of *MoneyWise* provides an alternative for them to use the interactive, attractive, and easy-to-understand teaching aid. The system developed is very user-friendly, easily intelligible, and in line with the syllabus's needs in providing effective delivery to students to grasp the ideas of related topics. *MoneyWise*, which had initially served as a T&L material, could now be used by the public

(individuals) to record their financial transactions. Besides, these outcomes are in line with Fook and Sidhu (2009) stated that to effectively address the crucial problems related to introducing technology into university teaching and learning in ways that are both contextualised and genuine, the faculty must be more sensitive to the needs of staff and students.

Individuals or communities could utilise the system to formulate financial planning, including monthly and annual incomes and daily, monthly, and annual expenses, to provide an effective means for them to plan any investment forms that suit their financial objectives and goals.

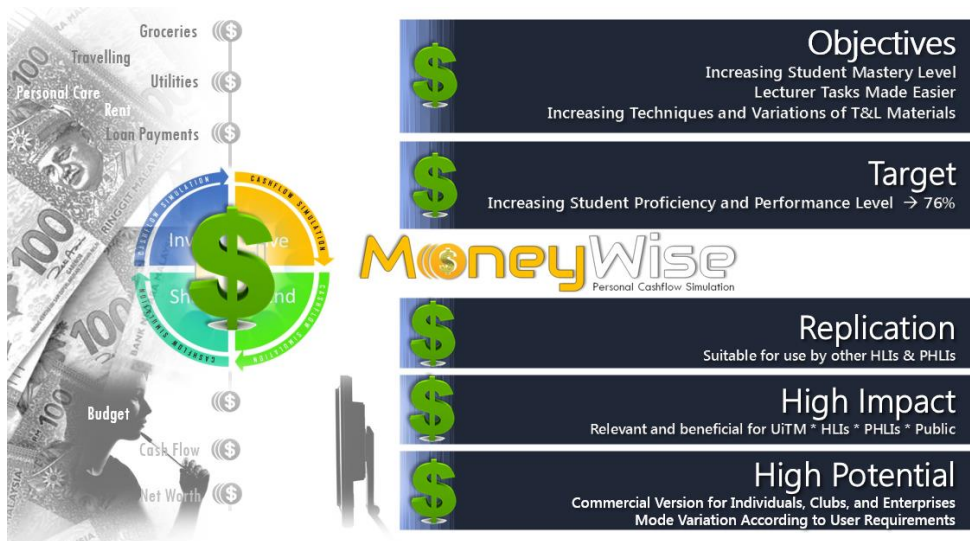
In terms of system-development project costs, the *MoneyWise* system has shown different results depending on whether it has been developed using internal or external expertise. Based on the study, the system has saved the excel-based and web-based development cost with a much lower cost if using internal expertise compared to using external expertise. Consequently, the system has created with a minimum cost of RM900 by merely using internal expertise. This system is proven to save the overall budget compared to outsourcing to external parties that may cost up to RM10,800. The total saving of RM9,900 is an outstanding achievement. It proves that the system is very economical and cost-effective to use in the UiTM system for official use and implemented in the subject's syllabus. In terms of time, it is very convenient, prompt, and saves time to use. In the interim, the menu provided is also not burdensome and complicated to use. Hence, this project has a bright potential to be introduced in either public or private higher-learning institutions to provide extensive exposure to prudent financial aspects. In this way, people would not be easily deceived by scammers who are increasingly rampant nowadays. Since fewer academic programmes offer financial subjects, this system has shown one of the best and most effective paths in providing space for learning basic finance knowledge and managing cash flows.

Figure 11: Part A's Scores



To serve as an e-learning material, it could also be employed to record transactions and manage individuals' actual daily financial matters and has the potential to be developed and configured for the use of selected clubs and enterprises (Figure 11). The *MoneyWise* simulation module is an e-learning innovation in tandem with the desired T&L approach in Education 5.0@UiTM. Moreover, it is also a very appropriate financial aid to amplify the level of financial literacy among the community, which is in line with implementing the National Strategy for Financial Literacy 2019-2023. To refine and boost this system to its limit in the future, we have been working on upgrading the system to a mobile app that can be used more widely and practically. Precise planning has been designed to cover various aspects, such as more comprehensive financial techniques, appropriate forms of investment, household-debt-reduction tips, more exciting and interactive menus and displays, and other features that are appropriate. Mobile app has been chosen as the next project because mobile devices offer much easier and faster accessibility.

Figure 12: Project Summary



CONCLUSION AND RECOMMENDATION

MoneyWise Cash-Flow Simulation Module has benefited students who enrolled in Personal Financial Management (FIN533) course as the examination result shows increasing trend in scores (grade A) by students, relatively from 69.7 per cent to 75.9 per cent. Based on this achievement, the conclusion can be drawn that students score for grade A in Personal Financial Management course has significantly related to MoneyWise Cash-Flow Simulation Module used in the T&L activity for this respective course. It seems that this simulation module-based learning plays a vital role in enhancing understanding on personal financial management. Students also would be able to use and apply the financial management skills and knowledge beyond their classroom environment for their experiential learning, since managing money wisely is one of the essential skills that every individual must possess. These skills and knowledge are vital to ensure that the students' and other people's financial affairs are well-managed. *MoneyWise* not only could be used by the students of public and private higher-learning institutions, home and abroad but is also very suitable for real-world use by the public. Most importantly, finance lecturers or instructors also could take this simulation module into consideration as their teaching method. Despite the benefits of simulation module in teaching and learning to empower students' score in personal financial management course, there is limitation to take note. The assessments could be varied in

term of level of difficulty and the former academic background of students (previous diploma programs or other foundation courses) were also different from one semester to another, could possibly influence the scores. The MoneyWise Cash-Flow Simulation Module also has yet to fully develop to a system to be reach widely by the public and the mobile app version is under development. However, this simulation module has contributed to the variation of teaching and learning using simulation-based method. It can be embedded as one of the teaching methods in financial management curriculum related subjects and can facilitate experiential learning if the module or this system, skills and knowledge are to be used further beyond the classroom setting. For future research, this simulation module is a new reform tool and proven effective in teaching and learning activities for both students and instructors to experience actual cash flow, understand personal financial management elements, and be introduced to other educational institutions. The team is also planning to expand its usage to the community for their business and daily financial transaction recording. Another level is to develop mobile applications for this simulation module to widen access for all potential users.

ACKNOWLEDGEMENT

There was no specific grant for this research from any governmental, commercial, or not-for-profit funding agencies. This research was conducted by FBM EAST COAST (600-UiTMCTKD (PJI/RMU 5/1) SIG 1/2022 (13)).

REFERENCES

- AKPK. (2021). Financial Education. Agensi Kaunseling dan Pengurusan Kredit. <https://www.akpk.org.my/content/185-financial-education-introduction>
- Amir, R., & Mohd Jelas, Z. (2011). A study of the learning styles of Malaysian students. *Asian Journal of University Education*, 7(1), 85–96.
- Castillo-Merino, D., & Serradell-López, E. (2014). An analysis of the determinants of students' performance in e-learning. *Computers in Human Behavior*, 30, 476–484. <https://doi.org/10.1016/j.chb.2013.06.020>
- Falahati, L., & Sabri, M. F. (2015). An exploratory study of personal financial wellbeing determinants: Examining the moderating effect of gender. *Asian Social Science*, 11(4), 33–42.

- <https://doi.org/10.5539/ass.v11n4p33>
- Financial Education Network. (2019). *Malaysia national strategy for financial literacy 2019-2023*. <https://fenetwork.my/v2/wp-content/uploads/2020/07/National-Strategy-ENG-F.pdf>
- Fook, C. Y., & Sidhu, G. K. (2009). Integrating information and communication technology (ICT) into university teaching and learning: A case study. *Asian Journal of University Education*, 5(1), 71–94.
- Huzaini, N. B. (2019, December 11). 60 peratus muflis adalah golongan muda-Bank Dunia. *Berita Harian*. <https://www.bharian.com.my/bisnes/lain-lain/2019/12/637714/60-peratus-muflis-adalah-golongan-muda-bank-dunia>
- Mat Halif, M., Hassan, N., Sumardi, N. A., Sheikh Omar, A., Ali, S., Abdul Aziz, R., Abdul Majid, A., & Salleh, N. F. (2020). Moderating effects of student motivation on the relationship between learning styles and student engagement. *Asian Journal of University Education*, 16(2), 94–103. <https://doi.org/https://doi.org/10.24191/ajue.v16i2.10301>.
- Rafdi, N. J., Puad, N. A. M., Shahar, W. S. S., Nor, F. M., & Shahar, W. S. S. (2015). Faktor-faktor muflis di kalangan belia. *International Conference on Management and Muamalah, 2015*, 484–488. [http://www.kuis.edu.my/icommm/2nd/download/IC 044.pdf](http://www.kuis.edu.my/icommm/2nd/download/IC%20044.pdf)
- Sami, M. (2012). *Software Development Life Cycle models and methodologies*. SDLC. <https://melsatar.blog/2012/03/15/software-development-life-cycle-models-and-methodologies/>
- Tuma, L. A., Stanley, C., & Stansbie, P. (2020). Teaching innovation grant covid-19 online social distance teaching project & virtual event. *Journal of Teaching in Travel and Tourism*, 20(4), 395–401. <https://doi.org/10.1080/15313220.2020.1793259>
- Warren, J. N., Luctkar-Flude, M., Godfrey, C., & Lukewich, J. (2016). A systematic review of the effectiveness of simulation-based education on satisfaction and learning outcomes in nurse practitioner programs. *Nurse Education Today*, 46, 99–108. <https://doi.org/https://doi.org/10.1016/j.nedt.2016.08.023>
- Yu, Y. (2016). Student assessment system for distance education on financial management. *International Journal of Emerging Technologies in Learning*, 11(10), 11–15. <https://doi.org/10.3991/ijet.v11i10.6265>