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A FlexiWork App : An Innovative Way to Measure and Monitor Productivity while WFH for Academicians

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Abstract

Academics need better workplace flexibility as their brains can never wholly switch off from work. Therefore, flexible working arrangements (FWA) are linked with enhanced productivity. This research proposes a self-monitoring tool using a mobile application. FlexiWork App is a self-monitoring application designed for an academic to self-measure the impact of workplace flexibility on productivity; and secondly, for the institution to monitor the academic's key performance indicator (KPI) achievement. Hence, this application will benefit both the academics and the university in monitoring the KPI of the staff.

Keywords: Flexible Working, Productivity, Academic, Mobile Apps

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1.0 Introduction

The Ministry of Health Malaysia (2019) showed that the percentage of depression in Malaysia varies from 8 to 12 per cent. While mental health issues are increasing nationwide, a local study showed that depression among academic staff in higher institutions is three times higher than in the local population, at 35 per cent (Noor & Ismail (2016). Armstrong's survey conducted in 116 countries in 2021 found that workers' daily stress reached a record high in 2020. It was found that 43 per cent of respondents in over 100 countries claimed to have experienced stress, an increase from 38 per cent in 2019.

Amendments to the Employment Act 1955 allow employees in Malaysia who want to work on a flexible basis to apply for Flexible Working Arrangements (FWA) with their respective employers (Malaymail, 2022) with a further tax deduction for eligible employers.

Flexible work hours could benefit many employees, for example, working parents and caregivers. It can also help employers to include candidates who previously could not work because of family commitments. For example, many career women sacrifice their careers for family. FWA can relieve them as they can work and care for their family. In addition, a work culture, which emphasises the importance of work-life balance, empowers the staff to be assertive and provides a positive reward for productive work is essential to boost their motivation (Razali, 2019).

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Thus, this study explores and proposes a self-monitoring tool, a mobile application (App) called FlexiWork App, which academics can use to measure and monitor their KPI achievements.

1.1 Productivity

Based on Oxford Advanced Learner's Dictionary, productivity refers to "the rate at which a worker, a company or a country produces goods and the amount produced, compared with how much time, work and money are needed to produce them" (Hornby & Lea, 2020).

Labour productivity refers to the efficiency and effectiveness of each employee in generating value-added or overall output. It is generally measured using the ratio of value added to the total hours worked or employment (Mohamad Ali, 2022). According to the Office for National Statistics (ONS), United Kingdom, productivity has an increasing role in formulating and assessing government policy (Office for National Statistics, 2007).

In Malaysia, the National Productivity Council (NPC) was formed to steer the implementation of productivity at the national level (Malaysia Productivity Corporation, 2017). In addition, it drives economic growth by generating new economic opportunities, ensuring people's well-being and prosperity (Mohamad Ali, 2022).

Based on the Cobb-Douglas production function, there is a relationship between inputs, namely physical, capital and labour, with the amount of output produced as shown in the Cobb-Douglas Production Function (Douglas, 1976) below:

$$Q(L, K) = AL^\beta K^\alpha$$

Where:

Q is the quantity produced from the inputs L and K

L is the amount of labour expended which is typically expressed in hours

K is the amount of physical capital input, such as the number of hours for a particular machine, operation, or perhaps factory

A is a total factor of productivity

α and β are output elasticity which is the change in the output that results from a change in either labour or physical capita

1.2 Flexible Working Arrangements

Flexible work arrangements (FWA), often known as flexitime, refer to work environments and schedules that are not subject to the usual constraints of traditional work. Instead, these arrangements consider employees' demands, particularly balancing work, and personal life. Productivity at work primarily refers to the amount of work completed in a specific work environment over time. FWA are now possible because of advances in information and communication technology, as well as the development of software and applications. The technology has enabled human resource managers to manage and monitor FWA easily.

Academics as knowledge workers need better workplace flexibility as their brains never switch off from work in its entirety. The practice of FWA is becoming more common in Malaysia, especially during the pandemic age (Tumin, 2020). Alternative working arrangements generally promote work-life balance and improve productivity; this has been accepted in economically developed countries (Chandola, 2019) and developing countries (Subramaniam, 2018).

In FWA, there is flexibility in terms of time to work (flexi, staggered hours, or compressed weeks), where to work and way of work (WFH or satellite working). Finally, as a way of work, they can work on a part-time basis or job share.

Flexibility at the workplace is linked with better productivity due to better attunement to personal preference for performing work (Baard & Thomas, 2010). Academics are burdened by increasing workloads and long working hours (Sang et al., 2015). Therefore, universities should prepare a conducive work environment to support academics' growing commitments to the students, community, and research world (Richard, 2015). However, some employers claim that FWA will have a negative impact on productivity.

Other than home and office, people may consider third places, as suggested by sociologist Ray Oldenburg (1982), and refers to places where people spend time between home ('first' place) and work ('second' place). There are third-place locations where they can be productive, exchange ideas, and even build relationships while working. As technology advances, there is a push to create third places on the world wide web known as the third space; many young generations consider third places virtual (Soukup, 2006). This new norm may lead to productivity enhancement and increased happiness.

Changes in work-life over the past two decades have accelerated, thanks to the development of Information and Communication Technology (ICT). Thus, digital technology has led to a more flexible workplace and working time practices (Vargas & Weber, 2020).

At the same time, Employee Productivity Monitoring Software or App is another means to help employees plan, schedule, organise and prioritise tasks. Furthermore, a real-time understanding of performance allows the universities to plan for appraisals and performance reviews of academics. Apps can also provide a better solution for the remote working environment (Desklog, 2022).

1.3 Issue and Objective of Study

Issue:

Academics are burdened with increased workload and long working hours that may lead to loss of productivity. Therefore, an app can be a way for academics and the institution to monitor academic productivity.

Objectives of Study:

This study firstly explores the possibility of a self-monitoring tool as a mobile application (App) called FlexiWork App. Based on the pilot study done to measure the usefulness and user-friendliness of the FlexiWork App, a prototype was designed to self-measure the impact of workplace flexibility on productivity and for the institution to monitor the academic's key performance indicator (KPI) achievement.

2.0 Literature Review

The Malaysian government has prepared guidelines on FWA, including work from home (WFH), in line with the new regulation. There are 12 different categories: WFH, Flexi Hours, Seasonal Work, Job Sharing, Modified Role, Phased Retirement, Compressed Work Week, Leaving Early from Work, Employee's Choice of Day-Off, Shift Swapping, Staggered Hours, and Reduced Work (Daim, 2021)

WFH is one or more days per week of periodic work at home (away from the main office) (Hill et al., 2003). This arrangement has been proposed as an alternative method of organising work to provide workers with flexibility in terms of hours, balancing work and non-work duties, and saving time on work commutes (Felstead & Jewson, 2000).

WFH has frequently promoted Work-life Balance (WLB) in Western countries and huge corporations (Felstead & Jewson, 2000) as a policy intended to give companies more flexibility in assisting employees in balancing their roles at and outside work (Olson & Primps, 1984). In fact, during the COVID-19 pandemic, WFH became a new norm globally, transforming the entire workplace model. Besides enhancing WLB, WFH reduces academic stress in Malaysia (Subramaniam et al., 2021).

The literature discusses the effects of WFH arrangements on efficiency and production, thereby creating an organisational business case for the process (Nakrosien et al., 2019; Timsal & Awais, 2016). It is stated that working away from the office allows employees to be more productive since they may work during their most productive time as they are not distracted by office socialising or co-workers, and they have less commute time (Golden & Veiga, 2008; Martinez-Sanchez et al., 2006; Tremblay & Genin, 2007).

Research has indicated that applying WFH improves efficiency. For example, according to an IBM employee survey, 87 per cent of employees thought that WFH agreements boosted their productivity. In addition, WFH personnel can change the work environment to meet individual demands, such as balancing work and family, thereby improving productivity by better managing time limitations and workflow requirements (Bailey & Kurland, 2002). Besides, FWA allows academics to control their working time, location, and method (Subramaniam, 2020).

Furthermore, results show that WFH is associated with better physical health and reduced absenteeism. There are also suggestions that it has fewer somatic symptoms (Shifrin & Michel, 2022). Employees also work more hours to show gratitude to their employer for giving them the privilege of WFH. In the post-pandemic era, flexible work has become a new normal (Jackson & Fransman, 2018).

Flexible work options such as WLB strategies enable organisations to retain and attract a high-performing workforce (Atiku, 2021). In addition, new technological innovations such as mobile communication, the use of terminals to create dial-up connections, and the internet of things have made FWA successful (Belzunegui-Eraso, & Erro-Garcés, 2020).

Individual characteristics considered crucial in affecting employee productivity in the case of WFH include digital orientation and digital capabilities with access and support from management (Aboelmaged & Subbaugh, 2012).

Furthermore, the digitally oriented employee is dedicated to embracing digital initiatives as part of their day-to-day job and responsibilities (Afrianty et al., 2022). The term "digital infrastructure" refers to hardware and software solutions that support organisational operations and personnel performance (Minehane, 2019). The current WFH process, which is managed online, generates a need for digital technology skills and thus necessitates IT training to prepare for WFH programs (Afrianty et al., 2022).

3.0 Methodology

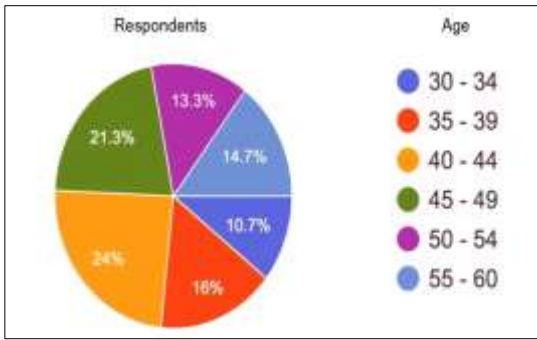
This pilot study went through two stages and used a quantitative survey approach. Initially, a pilot study was conducted to capture the perception of academics by using a self-evaluation app. Questions and timing were tested in the first stage. The second stage involved developing a prototype to evaluate the usefulness and user-friendliness of the mobile app. The observations are provided and discussed in the next section.

Using a purposive sampling technique, seventy-five respondents filled out the survey form, which was sent via a Google form. A mix of responses was received from academics in public and private universities. The 5-point Likert scale was used to gauge respondents' perceptions regarding the usefulness and user-friendliness of the app. Respondents were required to identify their level of agreement with a statement, typically in five points, to indicate their positive-to-negative strength of understanding or strength of feeling

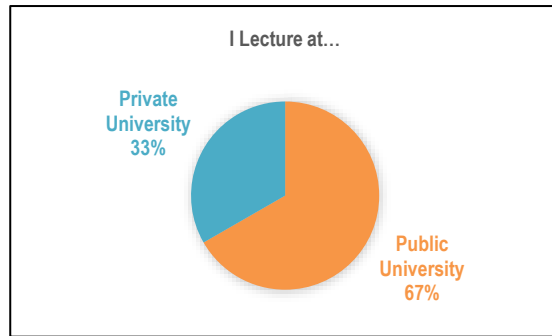
- (1) Strongly disagree;
- (2) Disagree;
- (3) Neither agree nor disagree;
- (4) Agree;
- (5) Strongly agree.

A Likert scale assumes that the strength or the intensity of an attitude is linear, which would have a numerical value to measure the responses, for example, on a continuum from strongly disagree to agree strongly and assumes that attitudes can be measured. This 5-point Likert scale is helpful for measuring the respondent's perception of the usefulness and user-friendliness of the app.

There were various age groups from 30 to 60 years old, as shown in Figure 1(a). In addition, academics from public and private universities were given the questionnaire, as shown in Figure 1(b). Figure 2 shows the gender dynamics of the respondents, with 60 per cent females and 40 per cent males, which is typically the gender structure in most universities in the country.



(a)
Figure 1 (a) Respondents' age group



(b)
Figure 1(b) Respondents' University Affiliation

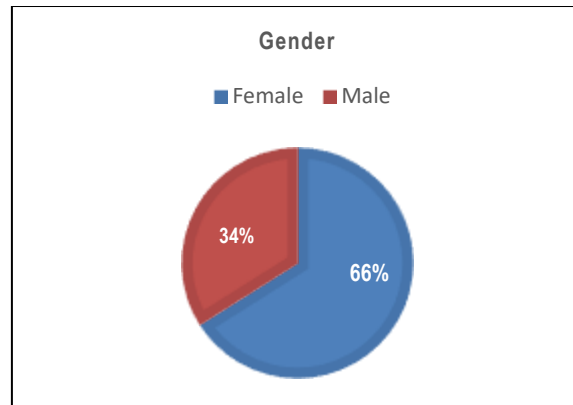


Figure 2. Respondents' Gender

3.1 Flexibility and Productivity

A survey question was asked about the opinion of Malaysians on workplace flexibility and productivity. Figure 3 shows the availability of FWA at the university. 75 per cent of the academics have FWA at their universities, whereas 20 per cent said there is flexibility but only to a small extent. A small percentage (5%) said there is no flexibility in their workplace at all.

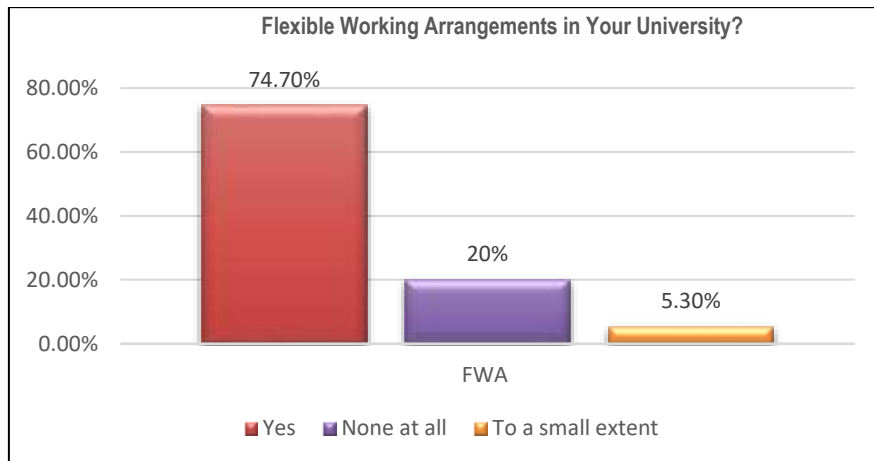


Figure 3. Flexible Working Arrangements in University

3.2 Usefulness of the FlexiWork App

As for the usefulness of the app, the majority of the respondents agreed that the app is user-friendly. About 60 respondents agreed that the FlexiWork App is user-friendly and easy to access. Figure 4(a) shows the detailed figures on the user-friendly criteria. Figure 4(b) shows that the respondents also agreed that the FlexiWork App could be used anywhere at any time.

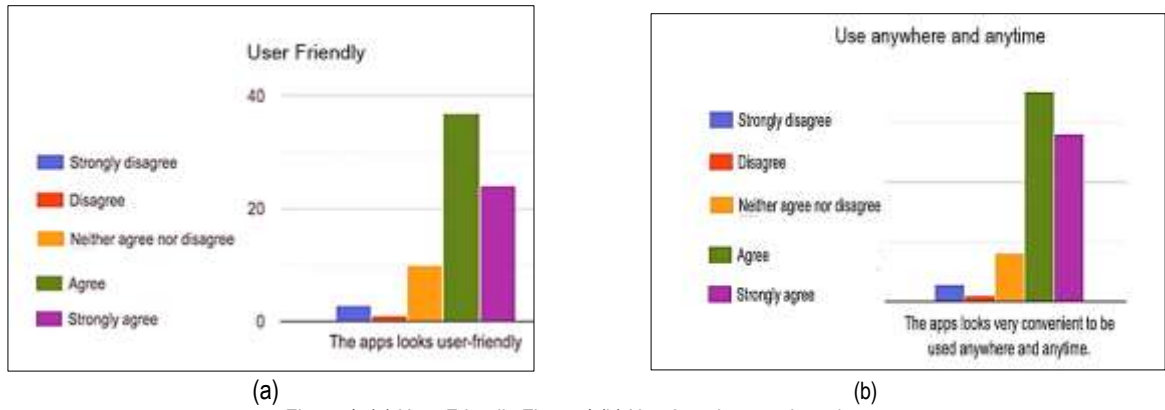


Figure 4. (a) User-Friendly Figure 4 (b) Use Anywhere and anytime.

3.3 Performance and KPI Monitor

Most of the respondents agreed that the FlexiWork App is useful in either helping to remind them of their performance or monitoring their monthly KPI. They also accepted that the app assists them in monitoring their monthly productivity. They believe that the FlexiWork App can help them plan their work well. Figures 5(a), 5(b) and 6 show the performance and KPI reminder survey results, work plan and monthly productivity.

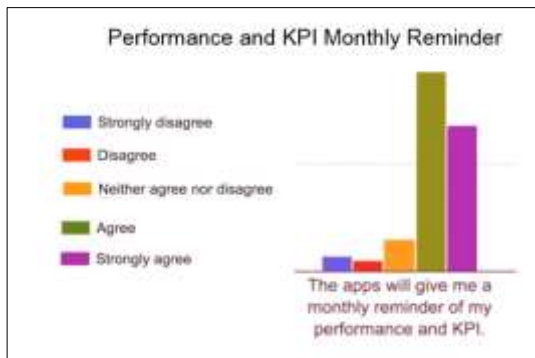


Figure 5 (a) Performance and KPI monitor

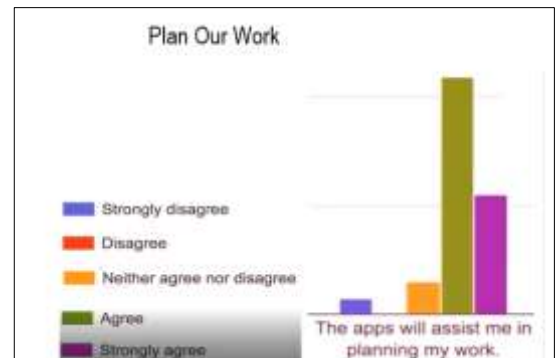


Figure 5 (b) Assist in work planning.



Figure 6. Monthly Productivity

4.0 Results and Discussion

'FlexiWork App' is proposed to benefit the employees and the organisation, intending to monitor employee activity while allowing employees to enjoy their flexibility at work. The app is designed to help employees input information regarding various tasks and targets, including teaching, research, and administration. While maintaining the information about key targets and performances, the app will also assist in highlighting areas of improvement.

'FlexiWork App' will provide monthly data to the faculty and the university on the staff's level of productivity. It will also serve as an information repository for users' monthly work achievements, which can be retrieved anywhere and anytime. Recent research reports similar pilot testing of mobile applications for the banking sector (Lee & Chen, 2022; Shahid et al., 2022), government services (Ali, 2021; Desmal et al., 2021) and online newspapers (Zheng et al., 2021). They report appropriate, positive acceptance of mobile applications for these industries.

The novelty of this research is that the FlexiWork App is created to allow users to record and monitor their monthly work achievements. It will be a trendsetter for a new revolution in measuring academic productivity in Malaysia. As a result, the 'FlexiWork App' will inspire academics to achieve their KPI or beyond. Wolf et al. (2021) reported that such technology-driven assistance drives goal achievement among individuals. The pilot results also indicate that the respondents are optimistic about this app's adoption and find the app very useful for achieving their monthly goals for academic targets while working under flexible working conditions, such as working from home.

The following section discusses the 'FlexiWork App's optionality and access screens to introduce the readers to the suitability of this app for managing academic workloads and measuring productivity.

4.1 The 'FlexiWork App.'

This app helps provide ease to users to record their monthly work achievements. In addition, the app assists users and organisations in monitoring their monthly achievements and KPIs. Figure 7 shows the flow of the app's screen. First, the user will be diverted to the Productivity Screen shown on the app after login. There are three main divisions: Productivity Screen (the main screen), details described in section 4.1.1, followed by the User Contact Screen and the Log Out or Confirmation Screen.

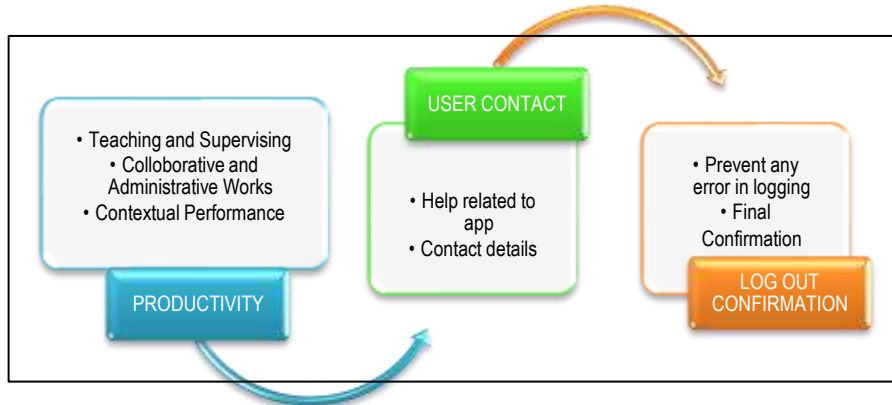


Figure 7 - The flow of the App screen

4.1.1 The Log-in Screen

Figures 8(a) and (b) show the app's first look and login page. As observed, the login requires users to input their username and password to record the information.

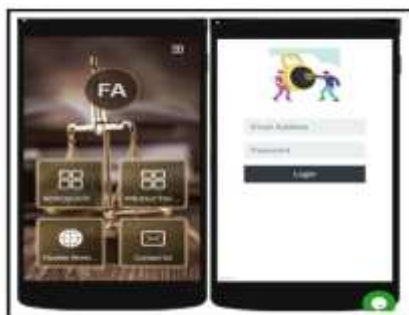


Figure 8. (a) App Outlook – First Page

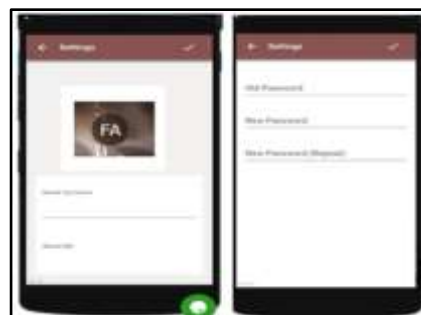


Figure 8 (b) App Login page

After login, the user can view the Introduction page, which provides brief information about the app and FWA.

Then, the user can browse the next page, the Productivity section. There are three subsections on this page, which are:

1. Teaching and Supervising
2. Collaborative and Administrative Works
3. Contextual Performance

Users can insert information about their teaching and supervision in the Teaching and Supervising form. The questions are simple to read, understand and act upon. Users need to click on the stars that represent their effort. Five stars are given for each question so users can input their answers efficiently.

The second section of Productivity is about collaborative and administrative work. Users are asked questions about their internal and external involvement, such as thesis examination, participation in seminars, conferences, community services and industrial linkages. This information will help management to view the staff's external commitment.

The third section of Productivity is about contextual performance. Here the user can score on their planning, setting priorities, and conducting their planned work on time. By doing this, not only will employers have the input of answers, but it will also boost self-confidence among the users when they rate themselves as they try to achieve their target.

4.1.2 The Final Screen

After entering their inputs, the Final Confirmation screen will pop up before logging out. After that, the app will seek confirmation from the user whether they want to log out. This confirmation is necessary to prevent any error in logging out if the user did not finish their input. Figure 9 shows the confirmation before the logging out screen.



Figure 9 – A confirmation page

4.1.3 User Contact Form

If the user needs help with the app, the user can fill out the contact form. Figure 10 shows the user contact form.



Figure 10. User contact form

5.0 Conclusion

The main objective of this research was to devise a self-monitoring app to self-measure the impact of workplace flexibility on productivity and to enable the institution to monitor the academic's KPI achievement. This user-friendly app is designed with the objective of not only increasing the productivity of the employees in the workplace but also providing them with the choice of work-time and workplace. Such flexibility is needed, mainly when employees are homemakers and breadwinners for the family. Moreover, 'flexiwork' has become a new normal in many post-pandemic workplaces and has contributed to employee well-being, job satisfaction and productivity, especially for women in higher education.

As for the novelty of the research, the 'FlexiWork App' will be a trendsetter for a new revolution in monitoring and measuring academic productivity in Malaysia. As for the impact, the 'FlexiWork App' will inspire academics to achieve their KPI or beyond. The app is created to allow users to record their monthly work achievements and to assist them in monitoring their monthly achievements.

Limitations of the Research and Suggestions for Future Research

With accelerated growth within academia and a sudden transition to a new normal, the potential acceptance of FWAs amongst the academic fraternity in Malaysia is pertinent. Further research may explore this area to help academics lead better WLB with reduced stress levels, resulting in higher productivity and happiness. This will lead to the well-being of academics. Many areas of interest can be explored, such as measuring the actual effect on the productivity of academics for the goal-setting activity using the app. Studies can also investigate further and identify drivers that push academics to achieve goals for using the application. The cross-national interest can also be compared by taking an international sample for further studies.

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Paper Contribution to Related Field of Study

With a sudden transition to a new standard due to the pandemic, the potential acceptance of FWA amongst the academic fraternity in Malaysia is pertinent. Furthermore, the study shows how FWA can be monitored by academics using an app, which may increase academic productivity.

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