

e-proceeding

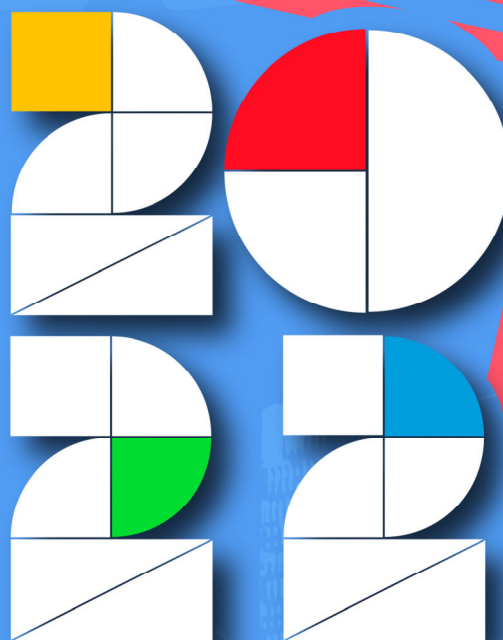
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Reengineering
Knowledge &
Creativity for
Global Excellence

30
June



***E-PROCEEDINGS
TECHNOLOGY, SCIENCE, SOCIAL SCIENCES AND
HUMANITIES INTERNATIONAL CONFERENCE
TeSSH I 2022***

**Reengineering Knowledge and Creativity
for Global Excellence**

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**Papers presented online at
Technology, Science, Social Sciences and Humanities
International Conference 2022 (TeSSH I 2022)
30 June 2022
UiTM Cawangan Kedah, Merbok
Kedah, Malaysia**

UNIVERSITI TEKNOLOGI MARA CAWANGAN KEDAH

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Foreword

The papers compiled in these e-proceedings are papers presented online at Technology, Science, Social Sciences and Humanities International Conference 2022 (TeSSH I 2022) held on 30 June 2022 at Universiti Teknologi MARA (UiTM) Cawangan Kedah, Kedah, Malaysia. With the theme, ***Reengineering Knowledge and Creativity for Global Excellence***, the conference has brought together presenters of diverse background who shared their conceptual and empirical papers in broad areas that are subsumed under the fields of Technology, Science, Social Sciences and Humanities. These e-proceedings comprise current researches that were undertaken with the rigorous endeavour of knowledge enhancement to ensure that the world of academia will continue to flourish. It is thus hoped that readers will significantly benefit from knowledge contained in these proceedings.

TeSSH I 2022 and these e-proceedings would not have been possible without the great efforts from the presenters, and the generous support from the TeSSH I 2022 committee members and the Rector of UiTM Cawangan Kedah, Prof. Dr. Mohamad Abdullah Hemdi. A heartfelt gratitude is extended to all involved. It is hoped that these e-proceedings will be an impetus to stimulate further studies and research that benefit the society at large.

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The Distraction That Affects Students Focus

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ABSTRACT

One of the most crucial indicators of a student's learning quality is concentration. Students, particularly university students, pay less attention in class as their level rises. Concentration is relative, and it can be enhanced and increased by changing some of the current components, and students' active engagement due to pleasant interaction with instructors leads to more concentration and better learning, in addition to motivation. Distractions come from both external sources, and internal sources. The significance of focus as a learning process is emphasised. However, it is impossible for one person to be aware of and pay attention to everything at the same time. This is substantially more difficult in school/university settings, especially when deliberate learning is involved. By surveying Faculty of Business Administration students at UITM Kedah on their distractions, the researchers discovered that university students are easily distracted by a variety of circumstances. This research looks into how technology, the classroom environment, and emotion may all distract students from their academics. The researchers suggest a deeper understanding of all the distractions that students may encounter during class.

Key Words: Student distraction, technology, class environment, emotion

INTRODUCTION

Manipulation of concentration to shut out any sort of distraction, such as checking smartphones for social media notifications, is an example of human cognitive control. Students with poor cognitive self-control or short attention spans are often distracted or bored, leading them to engage with their smartphones and social media. As students have become more competent at using personal technology, the risk of having a shorter attention span has grown (Carrier, 2018). University students who engage in intensive online social networking have also reported difficulty focusing (Carrier 2018). The widespread usage of smartphones is raising concerns that it may have a negative impact on the mind of a person and related psychological processes (Sha et al., 2019). For adolescents, multitasking with cell phones has become the norm. Students are distracted by multitasking, which has a negative impact on focussing and may lead to shallow processing (Carrier, 2018). The brain's psychological processing capacity, or maximal cognitive load, is restricted. Each task requires some mental effort. When students use their smartphones to send or receive text messages during class, they place a tremendous cognitive load on the information processing system, which causes memory to suffer.

The second factor is the ability of students to focus in the classroom. In a class, a teacher/lecturer cannot neglect a student who has been distracted to refocus. A lack of knowledge

or guidance can lead to frustration, which can cause students to lose interest in a subject, resulting in a reduction in attention span and concentration (Writers, 2022). This is also tied to the in-person school/university structure, and it's one of the most common ways online students suffer while learning on their own. Although friends and other students are typically a source of distraction in the classroom, there are several distractions, and it might be difficult for students to refocus without an authoritative figure setting expectations and objectives. Many students are attending online education nowadays. This is a significant adjustment to which they must immediately adjust. There's no way to speed up this process. Students must just complete their studies each day and adjust without having a teacher/lecturer there. When students have technical issues or are having difficulty adjusting to their surroundings (Writers, 2022).

Emotions such as anxiety, tension, and depression are the third factor that also have an effect on student concentration. According to the *International Board of Credentialing and Continuing Education Standards* on their websites on Impact of Anxiety and Depression on Performance it states that students with these diseases are at risk of low academic performance and resistance to school-related activities. This can include a lack of academic involvement, strained relationships with teachers and classmates, and a lack of enthusiasm for pursuing interests and making plans for the future. Anxiety and depression can decrease working memory, making it difficult to retain new information and recall previously taught material. This has an impact on their learning. Anxiety and depression have a negative impact on academic performance and cause underachievement (Impact of Anxiety and Depression on Student Academic Progress, 2019).

Attention is essential at every stage of life and has an impact on one's quality of life. "To pay attention, to be all ears, to contemplate" are common statements in everyday life. Communication suffers when people are not paying attention, tiny distractions can lead to accidents, and careless reading can lead to misunderstanding. Attention is a mental state of attentiveness as well as a concentrating action (Cicekci, 2019). Attention cannot be kept at the same level on the same activity for a lengthy amount of time, and its length and intensity are related to the individual's age as well as the task and timing within a course (Cicekci, 2019).

The Internet has frequently been criticised for people spending less time with their families; it has an impact on relationships, productivity at work, and may lead to psychological disorders. A person may misuse the Internet as a behavioural response to a problem in his life. There might be various factors that include or exclude internet addiction. "A person becomes addicted when their psychological state, which encompasses both mental and emotional states, as well as their scholastic, vocational, and social relationships, is harmed as a result of excessive usage of the medium." (Agarwal, 2021). If students continue to use their cellphones for non-instructional purposes beyond their intended instructional function as clickers, the usage of smartphone-based clickers has the potential to produce harmful in-class multitasking distraction events (Ma, 2020). Therefore, this research is conducted to identify the factors that affect students' focus.

LITERATURE REVIEW

Distraction that affects students focus

Distractions divert students' attention away from their work and learning. Some students use their phones to scroll through social media, others to watch videos, and still others to play computer games. "To pay attention, be all ears, to take into consideration" are frequently used expressions in daily life because it has a very important place in every step of life and affects the quality of life. Communication is hampered when people are not paying attention, minor distractions can lead to accidents, and careless reading can lead to misunderstandings. Attention is a mental state of alertness and a focusing activity (Cicekci, 2019). When an individual focuses his or her attention on a specific signal, he or she is more likely to recognise the fit for purpose features, and a feature that is focused on is stored in the consciousness.

According to Lang (2020), the focus of concern shifts more and more to newly invented technology or media that steal our attention, weaken our cognitive abilities, and undermine our ability

to pay attention to one another with each passing century. Internet use is essential in education; however, when used excessively for distraction, it can be problematic and have a negative impact on students' academic performance and well-being (Brien, 2022). Students at universities are glued to the internet. They feature an abundance of free WiFi, which is part of the most recent educational pedagogy. Elements of the teaching-learning process in classroom settings include the instructor, students, material, learning process, and learning scenario. Furthermore, the author discusses how students are not interested in paying attention in class, how teachers' current method of communication is one-way communication, which students find boring, and how students cannot stop themselves from being distracted on social media. Learning difficulties associated with depression include decreased school interest, difficulty paying attention or concentrating on tasks, and difficulty engaging in positive academic behaviours such as attending class and studying (Cassady, 2019). Student is a manifestation of academic stress that occurs due to changes in the learning circumstances and the number of assignments received at the time of PANDEMIC. Difficulties and failures to complete these activities result in pupils suffering emotional strain in fulfilling these expectations, necessitating the use of psychological techniques to handle stress.

THEORETICAL FRAMEWORK

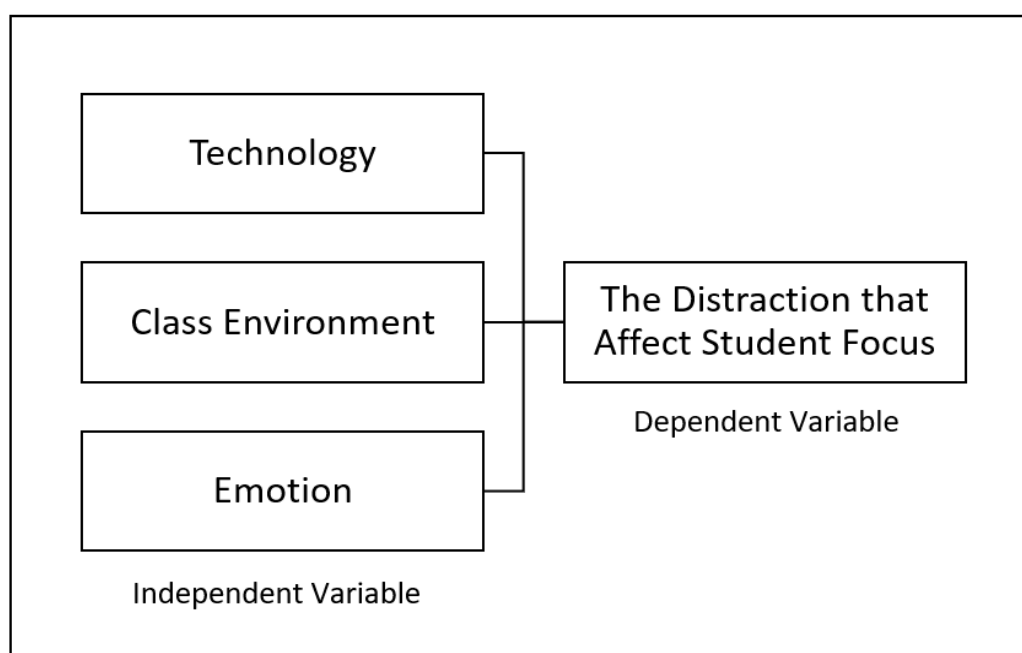


Figure 1

METHODOLOGY

Sample and population

The sample size is the number of participants chosen as a sample to represent the characteristics of the population. The population, on the other hand, is the total group of people, events, or objects that the researcher wants to explore (Bougie & Sekaran, 2020). This study's demographic consists of Bachelor of Business Administration students at UiTM Kedah. Researchers are interested in having them participate in this study as responders. The aggregate estimation of 100 students picked at random as respondents from Bachelor of Business Administration students at UiTM Kedah using simple random sampling. The researchers are using this sampling method for

the population to have an equal probability of being chosen and avoid bias. This enables us to statistically measure a selection of individuals chosen from a larger group or population in order to estimate the reaction of the complete group. As for the research, the researchers are using quantitative research which transfers numbers into meaningful words.

DATA COLLECTION METHOD

The source of data collection is primary. The data collection method for this research is questionnaire. Questionnaire is an efficient data collection method because it is the best way that researchers can use in order to save time and money constraints (Bougie & Sekaran, 2020). The questionnaire was divided into three sections. Section 1 will cover the background of the respondents then section 2 will be the question related to the independent variables. Lastly is Section 3 which will be the question regarding the dependent variables.

DATA ANALYSIS PROCEDURES

The current study's data was analysed using SPSS statistical software version 12.0. Frequency analysis, descriptive statistics, reliability analysis, Multiple Regression analysis, and correlation analysis were used in this study.

1. Frequency analysis

A frequency analysis of the subject under research revealed the number and percentage of participants for each demographic factor group. It is also utilised to aid in the study of the student's distraction and the rating categories for the distractions that affect students' focus.

2. Descriptive analysis

Descriptive analysis (mean and standard deviation) was also performed to supplement the examination of the average degree of the distraction that affects students' focus.

3. Reliability analysis

Reliability analysis was performed to assess the goodness of measure before creating a composite index to an independent variable from several dimensions of the students' distraction in order to explore concerns related to validity and reliability of measure. The same research was used to assess how bad the impact of students' focus was related to student's distraction.

4. Correlation analysis

A further correlation statistic was also run to see if there was a significant association between the three independent variables. The positive correlation (r) between a rise in one independent variable and an increase in another independent variable. The importance of the association between independent variables is shown by the P-value. If the P-value is less than 0.05, the association between the three variables is significant.

5. Multiple Regression analysis

Multiple Regression analysis was employed to examine the degree of significant relationship between students' distraction and the distraction that affects students' focus. The distraction that affects students' focus was made the dependent variable while students' distraction which include technology, class environment and emotion were made as independent variables.

For the validity of a Multiple Regression result, five assumptions must be met: linearity of the connection, constant variance of error terms (homoscedasticity), independence of error term (autocorrelation), normality of the error term, and independence of the independent variables. These assumptions were put to the test using regression variation. The scatter plot of the dependent variable vs the regression standardised residual was used to diagnose the homoscedasticity assumption, while the partial regression plots of the dependent variable versus each of the independent factors were used to evaluate the linearity assumption. The normality assumption was seen using a histogram of dependent variable vs frequency and a normal P-P plot, whereas autocorrelation was discovered using the Durbin-Watson statistic; D. The last assumption was evaluated using the Tolerance and Variance Inflation Factor (VIF).

The statistical significance of the regression model may be described by analyzing the coefficient of determination (R^2), F-ratio, and regression coefficient significance test (p). R^2 represents the model fit or the percentage of variance in dependent variables explained by the independent variables. The significance of T value (p) indicates the amount of importance of independent variables in relation to the dependent variable. If $p = 0.05$, the t value is considered significant. This shows that the independent and dependent variables have a considerable connection. As a result, the assumptions should be accepted.

The standardised regression coefficient (Beta) was utilised to examine the relative influence of each potential student's distraction on students' focus. A larger Beta value indicates that distraction has a greater impact on students' focus. For each unit change associated with student distraction, the coefficient of the regression equation (B) would represent the expected change in student focus. The Multiple Regression equation was formulated as follows based on the value of the regression coefficient:

$$Y = a_0 + a_1X_1 + a_2X_2 + \dots + a_pX_p + e$$

Where Y = dependent variables
 a_i = regression coefficient
 X_i = independent variables
 e = random error term

FINDINGS

A wide range of demographic traits were evaluated from the 126 respondents who responded to the 126 questionnaires that were issued in this sample (100 percent response rate). In terms of gender, there were 66.7 percent more girls in the sample than males (33.3 percent). Human Resources and Finance, with 45.2 percent and 19 percent respectively, dominated the sample's course. Operations management and business economics came in second and third, respectively, with 14.3 and 10.3 percent. International Business and Islamic Banking have the fewest respondents, at 7.1% and 4%, respectively. This number might be a result of the questionnaire's random distribution and may not accurately reflect the makeup of the general population.

A check at the age component revealed that 38.1 percent of respondents were between the ages of 21 and 23, followed by 27.8 percent of respondents between the ages of 21 and 22, and 15.1 percent of respondents between the ages of 22 and 23. Only 13.5% of respondents fell into the 24–24 year age range, and 5.6% fell into the 25–24 year age range. This was a result of the questionnaire's random distribution, which may not have represented the entire population.

Table 1: Results of Reliability Analysis

Variable	Total Items	Item Deleted	Cronbach's Alpha
Technology	5	0	0.585
Class Environment	5	0	0.562
Emotion	6	0	0.743
Distractions that affect student focus	5	1	0.638

From the reliability analysis, it was found that the last variable (Distraction that Affects students focus) had a weak significant result (0.522). However, to improve the reliability of Alpha values for each variable, inappropriate questions were removed for further use in present study. Thus, it increases the Cronbach Alpha value to (0.638). Starting from the first variable which is technology recorded at 0.585 and followed by class environment at 0.562, Emotion has the highest value recorded Cronbach's alpha which is 0.743 indicating the good internal consistency and finally Distraction that affects students focus ends up with 0.638. On the other hand, the other variables showed significantly acceptable readings (above 0.5), and therefore reflected that the items used in the study were reliable for the analysis to proceed as planned.

Table 2: Regression Analysis

Model	Standardised Beta	Coefficients	Sig.
Technology	0.066		0.324
Class Environment	0.376		<0.001
Emotion	0.468		<0.001
R ² value: 51.6%			
Significant value: <0.001			

Referring Regression analysis table, shows there is a significant relationship between model and dependent variable, the value of r squared 0.516 or 51.6% of the independent variables represented by all three factors in independent variables including technology, class environment and Emotions that contribute to variance dependent variables which is Distraction that affects students focus. The remaining 48.4% of the variance in individual variables is not explained by the independent variables in the study.

The R² value is 51.6%, indicating that the outcome data variability can be explained by the variables. In addition, this study revealed that two independent variables have a significant relationship with distractions that affect students' focus. Hence, Hypothesis 2 and Hypothesis 3 are accepted. The highest standardised beta value of 0.468 indicates that emotion is the most dominant variable to distraction that affects students' focus. However, there is one independent variable that does not have a significant relationship with distractions that affect students' focus in UiTM Cawangan Kedah, and that variable is Hypothesis 1. This is due to the fact that it shows the same standardised beta value of 0.066.

CONCLUSIONS

Emotional factors have the largest influence on distraction that impacts students' attention at UiTM Cawangan Kedah, according to research findings. Many students acknowledged to be easily agitated, which is one of the reasons they get distracted and therefore unable to maintain a balance between personal issues and academic achievement, according to the surveys. To back up the conclusions of the study, it was observed that many UiTM Kedah students agreed that personal

difficulties cause stress. Based on the research, many students got easily distracted throughout the teaching process, therefore the classroom environment had the second greatest influence on the distraction that impacted students' attention at UiTM Cawangan Kedah. According to the survey findings, students regularly complain about their studying environment, including noise, comfort, lighting, and task appropriateness. Much research have been conducted to explore the impact of various factors on students' performance and accomplishments by comparing their findings obtained after lecture in order to modify the teaching and learning process as well (Uzelac, 2015). Finally, technology had no major impact on student attentiveness at UiTM Cawangan Kedah. Technology has a good influence on student learning, which supports this result.

The current study's findings have practical ramifications in both theoretical and managerial areas. The theoretical consequence includes significant theory created from the outcomes of this study regarding the relationship between student distraction and distraction that affects student focus at UiTM Cawangan Kedah. The current study's managerial implications provide significant insights into the factors that need to be improved and the strategy to be imposed by decision makers in order to increase distraction that affects students' focus at UiTM Cawangan Kedah.

The current study was generated from previous literature and was built on a conceptual framework without prior statistical support, more in-depth research on the distractions that affect students' focus at UiTM Cawangan Kedah have been conducted. Furthermore, other important determinants should be included in the next study to examine moderating and intermediary effects on the independent and dependent variables. This will allow researchers to investigate a broader range of hypotheses and better solve the issue of the relationship between distraction and student focus at UiTM Cawangan Kedah. Furthermore, the scope of the next study could be broadened by including more target respondent possibilities rather than focusing solely on a subset of respondents in one area. In this case, it is among UiTM Cawangan Kedah students. This can be explained that if one keeps their concentration properly, they will acquire all the knowledge or information given to them and will be able to utilise it to deal with current events as well as apply it in the future.

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The Effects Of Varying The Duty Cycle To The Output Voltage In Buck Converter

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ABSTRACT

This research investigates the influence of variation duty cycle on the output voltage of buck converters. The high DC voltage is transformed into a low voltage value using a DC-to-DC buck converter. By varying the duty cycle, the performance of a buck converter in terms of output voltage is obtained and analysed. There have been four different values of duty cycle tested. To analyse the effects, a simulation is conducted. The converter circuit was constructed and simulated using MATLAB Simulink. The circuit made up of components such as a switch/IGBT, capacitor, inductor, and resistor. The findings of this investigation have been recorded, and it has been demonstrated that the increasing of the duty cycle will contribute to an increase the output voltage.

Keywords: Buck Converter, Duty Cycle, MATLAB, Simulink.

INTRODUCTION

Convertors are commonly employed in modern electronic applications nowadays. Converters are found used in a variety of portable devices, including laptops, smartphones, tablets as well as application in power systems such as flexible AC transmission systems and high-voltage DC (HVDC). It also becomes an important part of modern micro grids and energy storage systems (Jung et al. 2018). According to (Biswas, Majhi, & Nemade, 2021), a DC-to-DC buck converter is widely used in a variety of non-isolated type applications such as battery chargers, voltage regulator modules for microprocessors, telecommunication, power systems, LED drivers, and automotive applications due to its simple structure and cost-effectiveness. In addition, converters are frequently used in renewable energy-based applications (Baharudin et al., 2018).

In recent years, a significant number of researchers have been focusing their attention on the generation of power using renewable technologies such as solar systems. In order to utilise the photovoltaics for delivering power to specific loads, the output needs voltage conversion (Ettappan et al., 2021). Because of this, the buck converter has indirectly become one of the researcher's concerns as well. Buck converter is used to decrease the voltage from the source, as a solar panel need to charge the power of battery at the certain voltage (Zulkifli et al., 2019). The buck converter acquires the highest efficiency among other DC conversion techniques (Ghani et al., 2019). Therefore, battery lifetime can be safe, and also other electronic devices which use Buck Converter (Cistri & Iskandar, 2017)

Based on their usability, DC-to-DC converters are categorised into three groups. Buck Converter has the capability of lowering the voltage while simultaneously ensuring that the output voltage is lower than the input voltage. On the other hand, the Boost converter can raise the voltage and it will result in a higher output voltage compared to the supply voltage. While, Buck Boost Converters have the ability to both lower and raise the voltage coming from their respective sources (Cistri & Iskandar, 2017). The duty cycle, D determines whether the output voltage will be lower than or higher than the input voltage (Palanisamy et al., 2019). In this paper, the analysis of the effect on the output voltage with various duty cycle values is carried out. MATLAB Simulink is used to perform the verification of the system.

TOPOLOGY BUCK CONVERTER

Basically, a DC-to-DC buck converter is composed of power switches like MOSFET or BJT which have the function of controlling pulses by acting as switches (Ounnas et al., 2019). Figure 1 shows the circuit topology of buck converter. In this circuit, a MOSFET acts as a power switch, and the circuit will step-down the high-level DC voltage to the low-level DC voltage. The output voltage produced from this circuit is always lower than its input voltage (Abhishek, et al., 2020). A LC low pass filter was added to the circuit to smooths out the MOSFET switching action and produces a nice, smooth, DC voltage by reducing current and voltage ripples. The whole operation of the circuit takes place in two modes. The freewheeling diode becomes reverse biased and provides power to the load and inductor in the first mode when the power MOSFET is turned ON. The freewheeling diode becomes forward biased and inductor current flows through it while the power switch MOSFET is turned OFF. The energy stored in the inductor before, then released to the load.

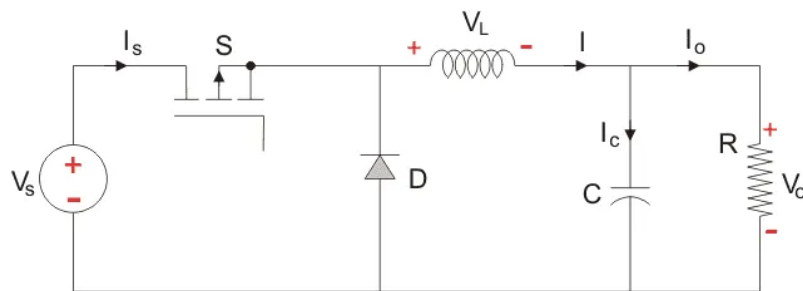


Figure 1: Buck Converter Circuit Diagram

The buck converter's output voltage, often known as V_o , has a value that is dependent on the duty cycle, D . To determine the output voltage, V_o it can be done by calculating using equation (1) and (2)

$$D = \frac{V_o}{V_s} \quad (1)$$

$$V_o = DV_s \quad (2)$$

Where V_o is the output voltage, V_s is the supply voltage and D is the duty cycle.

SIMULATION AND RESULTS

Simulation

To determine the effect of varying duty cycle, D to the output voltage, V_o of buck converter, the circuit was constructed and simulated using MATLAB/Simulink. The circuit diagram represents a buck converter is shown in Figure 2. The simulation was carried out using the parameter presented in Table 1. The duty cycle of 0.2, 0.4, 0.6 and 0.8 was tested to investigate the influence on the output voltage. The measured value of the output voltage, V_o will be seen on the display. To provide a voltage that is purely DC, a low pass filter has been included in the circuit.

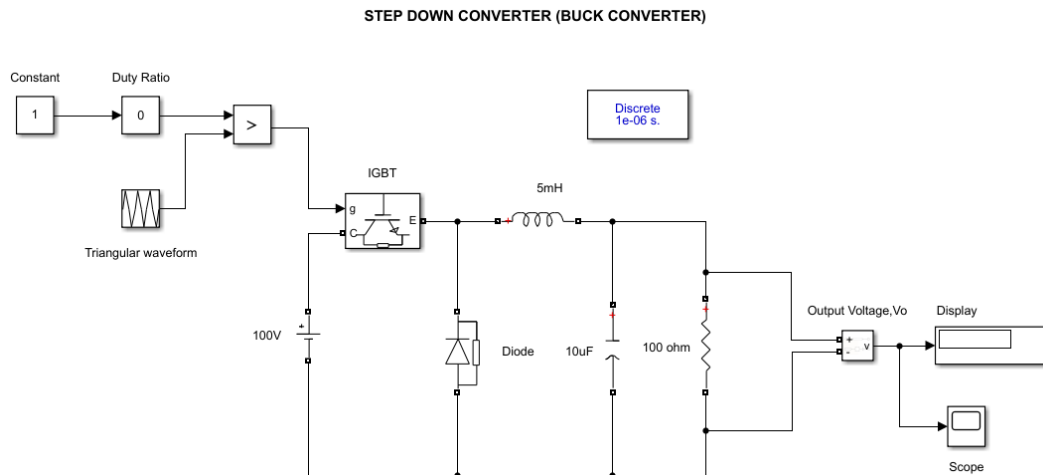


Figure 2: Circuit diagram of Buck Converter constructed in MATLAB

Table 1: Parameter for circuit simulation

Paramater	Value
DC Voltage Source, Vs	100 V
Resistor,R	100 Ω
Capacitor,C	10 μ F
Inductor,L	5 mH
Duty Cycle,D	0.2,0.4,0.6,0.8

Result

Figure 3 - 6 show the output voltage measured by simulation when the duty cycle, D was varying from 0.2 up to 0.8. The result obtained for the output voltage; V_o was recorded in Table 2. While Figure 7 (a) – (d) shows the output voltage, V_o waveform respectively.

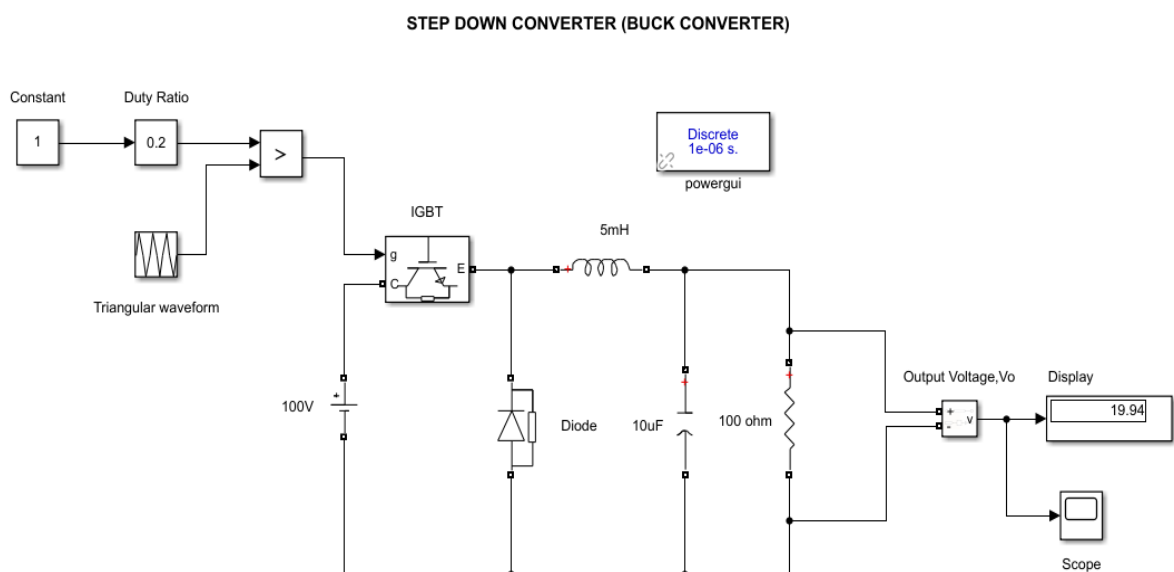


Figure 3: Simulation result of output voltage when D = 0.2

STEP DOWN CONVERTER (BUCK CONVERTER)

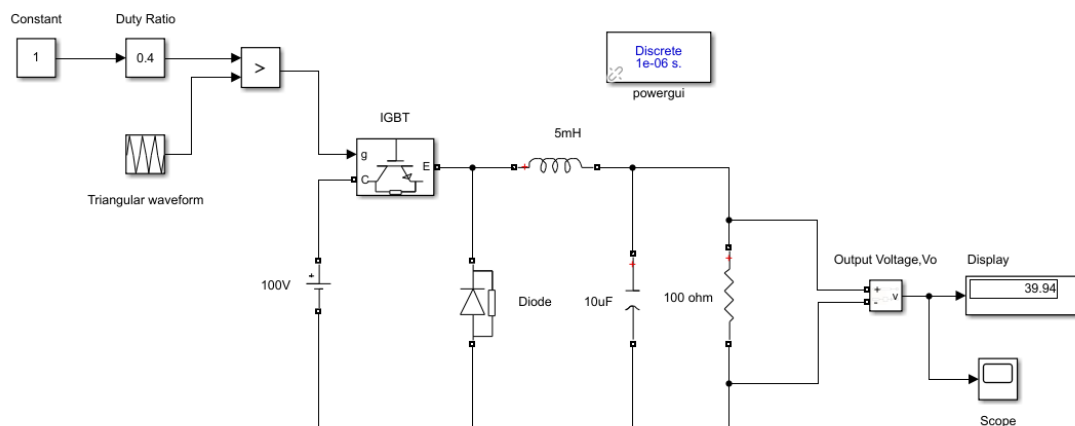


Figure 3.4: Simulation result of output voltage when $D = 0.4$

STEP DOWN CONVERTER (BUCK CONVERTER)

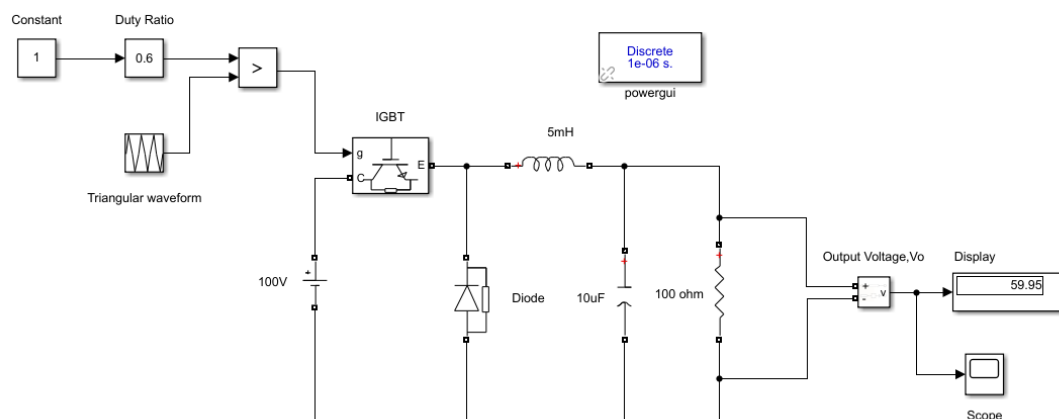


Figure 3.5: Simulation result of output voltage when $D = 0.6$

STEP DOWN CONVERTER (BUCK CONVERTER)

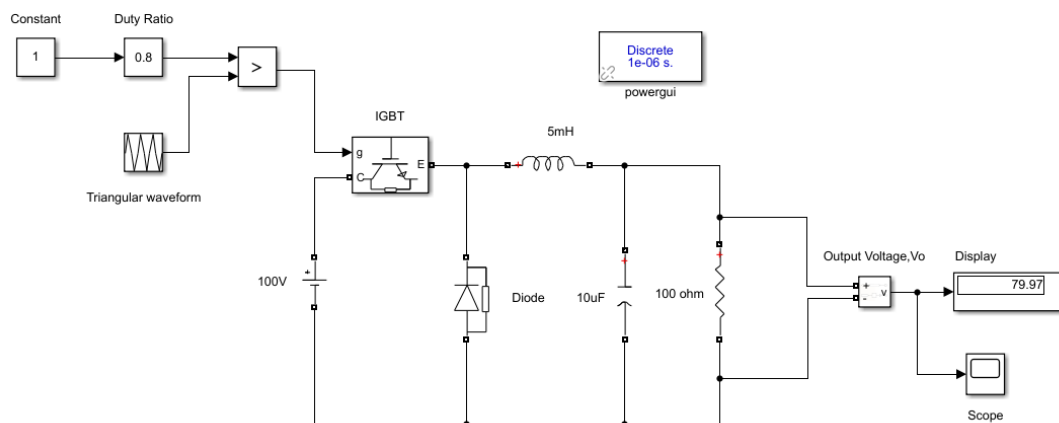
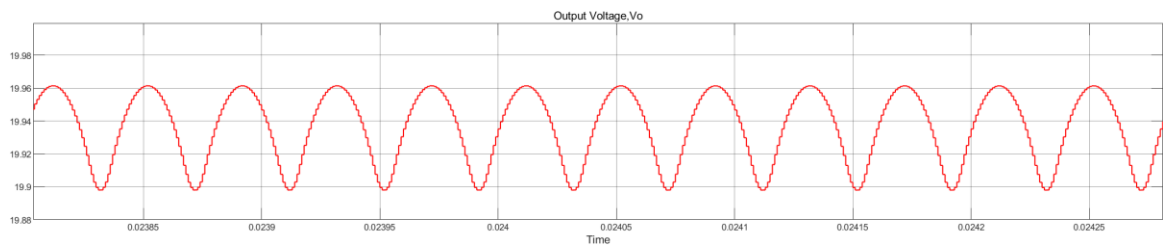
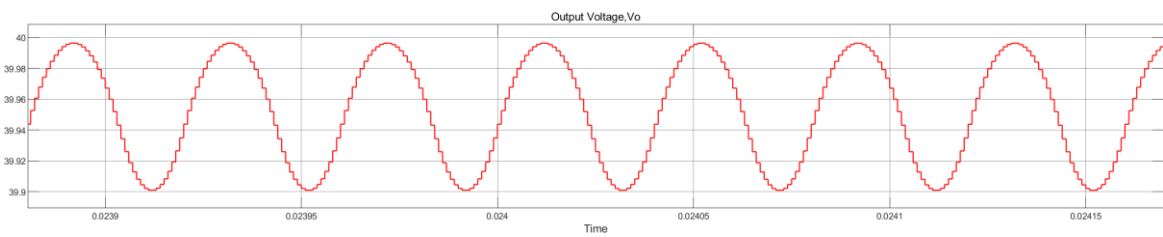


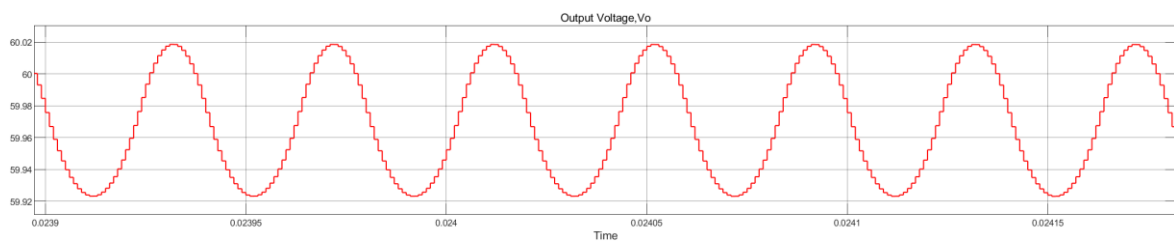
Figure 3.6: Simulation result of output voltage when $D = 0.8$



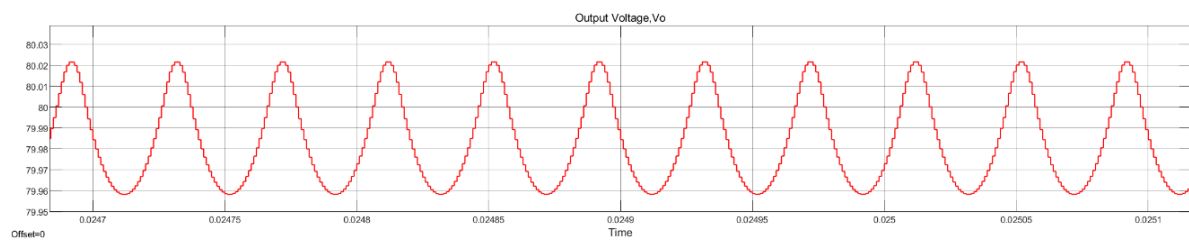
(a)



(b)



(c)



(d)

Figure 3.7: Output voltage, V_o waveform (a) $D = 0.2$, (b) $D = 0.4$ (c) $D = 0.6$ (d) $D = 0.8$

Table 2: Result of output voltage, V_o from simulation

Duty Cycle, D	Output Voltage, V_o (Simulation)	Output Voltage, V_o (Expected Value)
0.2	19.94 V	20V
0.4	39.94 V	40V
0.6	59.95 V	60V
0.8	79.97 V	80V

Table 2 presented the value of the output voltage, V_o measured compared to expected value. According to the findings of the simulation, the value of output voltage, V_o is proportionally dependent on the duty cycle, D . When the value of the duty cycle, D , is reduced, the output voltage that is lower; conversely, when the value of the duty cycle, D , is increased, the output voltage produced is higher. However, the output voltage, V_o produced from the simulation is significantly smaller than input voltage, V_s . Referring to the simulation result, the value of output voltage, V_o obtained from the simulation is almost approaching the expected value (with below than 0.01% error). This happened possibly due to losses caused by voltage drops across the diode or harmonic problems (Baharudin et al., 2018).

CONCLUSION

In this work, an analysis of the effects on the output voltage, V_o , when adjusting the duty cycle, D of buck converter was proposed. This analysis can be used for applications involving renewable energy application where the input voltage of the buck converter can be reduced or stepped down to a lower level depending on the load condition. The results of the simulation show that the output voltage, denoted by V_o raise linearly proportional with the duty cycle, D . The investigation on the efficiency of buck converters is expected to be continued in future study.

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