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Engaging Tertiary Students: A Comparative Study of Online Learning Tools with Arcs Motivation Model Integration

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Abstract: In recent times, the adoption of online teaching methods has become a noteworthy development. This trend gained momentum during the Covid-19 pandemic, as education transitioned entirely to online platforms. Even though our country has now entered an endemic phase, online learning remains pertinent. Many educational institutions continue to embrace online learning, but its success depends on collaboration with students. Several factors influence students' ability to adapt to this new teaching and learning approach. In this research, the aim is to investigate the motivational factors that affect the use of online learning tools. This study utilizes the ARCS Motivation model, which encompasses attention, relevance, confidence, and satisfaction, to explore the relationship between these factors with online learning tools. Data will be gathered from part five students enrolled in entrepreneurship and management courses at the UiTM Perak Branch. Questionnaires, divided into Parts A, B, and C, will be distributed and analyzed using the SPSS software. Consequently, this research has the potential to positively impact the education sector and government policies by promoting the integration of technology into the teaching and learning process. It also sheds light on the evolving landscape of education in the digital age and its implications for both students and educators.

Keywords: *Online learning, ARCS Motivation model, entrepreneurship.*

1. Introduction

The digital age has brought about a significant transformation in the way we acquire knowledge and skills, primarily through online learning. With technology advancing rapidly and the internet becoming increasingly accessible, online education has become a fundamental component of contemporary learning. This revolutionary approach to education transcends geographical boundaries, ensuring that individuals worldwide have access to high-quality learning, regardless of their physical location or time constraints.

In the current era of online learning, learners have the flexibility to choose when and where they engage with educational content, providing a personalized and adaptable learning experience. Whether you are a degree-seeking student, a professional seeking to enhance your skills, or simply someone eager to explore new interests, online learning offers a wide range of courses and resources tailored to your specific needs and aspirations. However, maintaining student engagement and motivation in online courses can be challenging, often resulting in higher dropout rates and diminished learning outcomes. Nowadays, students' characteristics and interests differ significantly from those before the Covid-19 era. Instructors must address these changes and adapt their approaches accordingly. Some students may find it challenging to cope with the changes and challenges present in today's education landscape, despite the evolution of our educational methods. The question remains: do students recognize these changes?

This paper aims to explore the motivational factors that impact the effectiveness of online learning tools. We will evaluate the ARCS Motivation Model, which encompasses Attention, Relevance, Confidence, and Satisfaction, to assess its influence on the effectiveness of online learning. There are two main research questions for this study which are:

- *What is the relationship between motivation factors and the effectiveness of online learning tools?*
- *How strong is the relationship between motivation factors and the effectiveness of online learning tools?*

Research objectives are prepared to answer the following research questions as stated below:

- *To identify the relationships between motivation factors and the effectiveness of online learning tools.*
- *To examine the strength of relationship between motivation factors and the effectiveness of online*

learning tools.

2. Literature Review

Online Learning: In the present day, online learning has gained significant practicality and acceptance within the field of education. Numerous tools and software have been developed to support educators in implementing and diversifying their teaching methods. Online learning is applicable in a wide range of fields, including marketing, business, healthcare, and education (Özhan & Kocadere, 2020). Anderson (2011) has compiled various insights related to online learning from multiple sources. Some of these insights highlight the importance of the tools used in online learning, as they facilitate student interaction with course materials. Consequently, for certain students, a computer functions as a tool that provides the necessary processing capabilities and delivers instructional content.

The terminology used for online learning can vary, encompassing e-learning, Internet learning, distributed learning, networked learning, virtual learning, web-based learning, and distance learning. Consequently, it can be challenging to formulate a universally applicable or generic definition for online learning, given its diverse interpretations and applications. Anderson (2011) offers a comprehensive summary, defining online learning as the use of the Internet to access learning materials, engage with course content, interact with instructors and peers, and receive support throughout the learning process. Ultimately, the primary objective of online learning is to acquire knowledge, construct personal understanding, and derive benefits from the overall learning experience.

Attention: To sustain motivation, the first crucial factor that students must address is capturing their attention. Gaining their attention is important, but what's even more vital is keeping them engaged throughout the entire instructional process (Jokelova, 2013). When it comes to motivation, the central focus lies in both initially grabbing and subsequently maintaining one's attention. In the context of learning, the primary aim is to direct attention towards relevant stimuli. On a fundamental level, gaining attention can be relatively easily accomplished through various means, such as making a captivating statement, creating sudden loud noises, or even using moments of silence, among other techniques (Brewin et al., 1987). Keller (2016) highlights that the attention category encompasses a wide range of studies, including aspects like curiosity and arousal, as well as interest, boredom, and related topics such as sensation seeking.

Relevance: The concept of relevance is closely linked to how learners perceive the alignment of instructional requirements with their goals, compatibility with their preferred learning styles, and connections to their prior experiences (Keller, 2016). In simpler terms, it can be associated with the "Why?" question that students often ask when deciding whether to enroll in a course or how much effort to invest in an activity. Providing a satisfactory answer to this question implies that the course or the information offered is likely to be meaningful to the students. Consequently, they are more likely to be motivated and actively engage in achieving the instructional objectives (Jokelova, 2013).

Confidence: Students tend to exhibit higher motivation for learning when they have confidence in their ability to succeed based on their efforts, and when they realize that their success is influenced by their skills rather than external factors beyond their control (Jokelova, 2013). These confident characteristics can be categorized into internal and external loci of control (Jokelova, 2013). An individual with an internal locus of control believes that the outcomes of their actions are contingent on their abilities and personal traits. For instance, a student who studies diligently for a test because they believe that their performance depends on their skills and capabilities demonstrates an internal locus of control. On the other hand, a student with an external locus of control may not see the need to study because they believe that test scores are determined by luck and fate, and regardless of how hard they study, the score will not accurately reflect their efforts.

Satisfaction: Satisfaction constitutes the final element in the ARCS Motivation Model. It can be defined as the experience of a positive feeling or a sense of contentment with one's achievements (Jokelova, 2013). This factor is often referred to as the post-task component because it comes into play after all the tasks have been completed. Although satisfaction may not be an immediate necessity for the current task at hand, it serves as an essential prerequisite for any future tasks. Maintaining contentment with the outcomes of the instruction

is what consistently propels students' motivation to continue their learning journey beyond the completion of their current task (Jokelova, 2013).

Hypotheses Development: A set of hypotheses has been developed to address the questions introduced in the introduction section. These hypotheses are primarily based on prior research findings and are closely aligned with the research objectives.

Attention Factor and Effectiveness of Online Learning: Based on prior research, several studies have concurred on the significant impact of attention in the context of online learning. For instance, Conati et al. (2013) conducted a study focusing on influential factors affecting students' attention to adaptive hints in an educational computer game. They found that improving attention to hints is a valuable goal, especially in games like Prime Climb, as students who engage with and pay attention to hints tend to perform better in the game.

Furthermore, research conducted by Papanastasiou et al. (2016) supports the idea that leveraging information and communication technologies (ICTs) through gaming applications can enhance the learning experience for students with attention difficulties, ultimately improving their levels of attention and academic achievement. This approach is beneficial not only for students but also for children in general, highlighting the crucial role of attention in effective online learning. However, it's worth noting that a study by Chen et al. (2019) indicated no significant differences in attention between experimental groups. In this study, individuals engaged in a digital game with additional cartoon-like, animated, and interactive elements achieved significantly better scores on learning outcome tests compared to both a group using a less complex digital game and a group using traditional paper-and-pencil methods. Interestingly, the use of these digital games did not appear to negatively impact learning motivation and attention, contrary to some previous studies. Therefore, the hypothesis for attention factor support is as below:
H1: *Attention has a strong significant relationship with the effectiveness of online learning.*

Relevant Factor and Effectiveness of Online Learning: In this phase, the goal is to develop educational content that matches the specific learning needs of the students. According to a study carried out by Lajane et al. (2021) that assessed the motivation of nursing students in utilizing e-assessment, it was found that students perceived online quizzes as highly relevant. The relevance factor received a score of 3.93, with the lowest score being 3.8 and the highest score being 4.27. Therefore, the hypothesis on the relevance factor is described below:
H2: *Relevant has a strong relationship with the effectiveness of online learning.*

Confidence Factor and Effectiveness of Online Learning: Confidence plays a pivotal role in ensuring that students can effectively use and are motivated to use online learning tools. In previous research, through multiple regression analyses, it was revealed that students' confidence in their ability to learn online emerged as the most robust and positive predictor of satisfaction and the perceived usefulness of online classes (Landrum, 2020). Additionally, other studies incorporated the Technology Acceptance Model (TAM) along with other factors, such as self-confidence and subject norm, in the context of e-learning among accounting students at Malang State University. The findings from this study indicate that perceived usefulness, perceived ease of use, self-confidence, and subjective norms significantly influence the utilization of e-learning. Therefore, the new similar hypothesis also used in this research as below:
H3: *Confidence has a strong significant relationship with the effectiveness of online.*

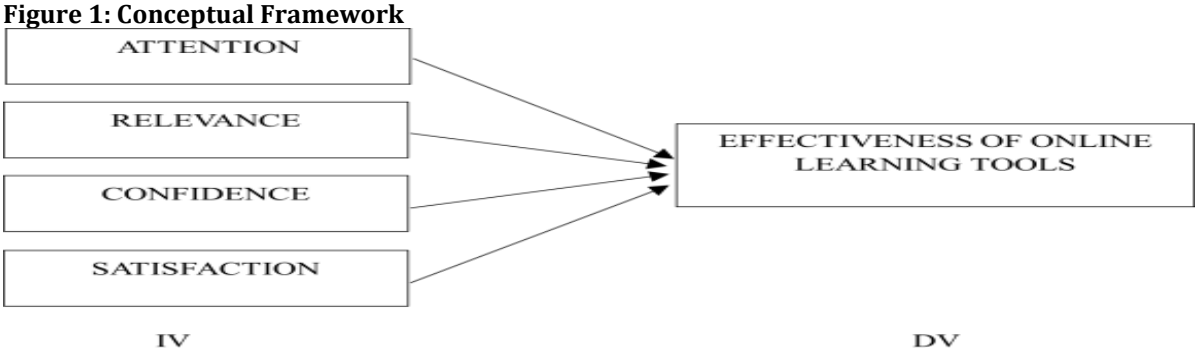
Satisfaction Factor and Effectiveness of Online Learning: Satisfaction can be viewed as a facilitating factor that can positively influence students' motivation to engage with online learning tools. In a study by Hampton et al. (2020) that examined self-efficacy in teaching and overall satisfaction among online nursing faculty members, the participants displayed notably elevated levels of self-efficacy in online teaching and reported high levels of satisfaction. Additionally, they reported that instructor satisfaction due to the benefits of the online environment, such as flexibility, convenience, and access to learning tools, received the highest score. Furthermore, Gopal et al. (2021) recommended that student satisfaction positively impacts online teaching and student performance. Their study aimed to explore whether four factors (quality of instructor, course design, instructor's prompt feedback, and student expectations) had an impact on perceived satisfaction. The

findings indicated that these four distinct factors had a positive influence on student satisfaction, and higher levels of student satisfaction were associated with improved student performance.

However, in contrast, a study conducted by Wei & Chou (2020) found that the relationship between online learning perceptions and both online learning performance and course satisfaction was not statistically significant. This contradicted the hypotheses from that research, which suggested that college students' online learning perceptions significantly and positively affect online learning performance and course satisfaction. Thus, the satisfaction factor will be tested under the hypothesis that:
H4: *Satisfaction has a strong significant relationship with the effectiveness of online.*

Conceptual Framework: Figure 1 below presents the framework utilized to ascertain the motivation factors that influence the effectiveness of online learning tools. The first independent variable pertains to the attention factor, which affects the effectiveness of online learning. The second variable is relevance, followed by confidence. The subsequent independent variable is satisfaction. Lastly, the dependent variable is the effectiveness of online learning tools.

Figure 1: Conceptual Framework



3. Research Methodology

Operationalization of Construct: This study adopted a quantitative approach to gather data, which involved the use of a survey instrument distributed to selected participants. As Mukesh et al. (2013) highlight, quantitative research involves the application of statistical methods with a substantial dataset, and one common technique is the use of surveys. In this case, the researchers chose to utilize a questionnaire as it aligned with the study's objective of evaluating the factors influencing the effectiveness of online learning. Moreover, there are several advantages associated with the use of questionnaires that can be discussed here. Firstly, the questionnaire method offers a cost-effective, prompt, efficient, and precise means of collecting information from a population (Zikmund, 2003). Additionally, it provides greater flexibility compared to alternative methods. This is often referred to as respondent convenience, as individuals have the liberty to respond to questions at their own pace and in their preferred setting.

However, this method also has certain limitations. These include challenges related to the return of completed questionnaires, with researchers having limited control over when respondents choose to return them, as it falls outside their jurisdiction. Additionally, there is the potential for a low response rate due to unreturned questionnaires. Nevertheless, these drawbacks have been mitigated by the distribution of questionnaires through electronic devices. The questionnaire has been developed based on the variables identified in the literature review. It will use the Likert scale technique, which employs a one to five scale (1=strongly disagree, 2=disagree, 3=not sure, 4=agree, and 5=strongly agree) to assess each item within these variables. In this study, the questionnaire method has been chosen as the primary means of data collection, and it will be administered in the English language. The questionnaire consists of about 22 questions, divided into three parts: Part A for demographics, Part B to examine the ARCS Motivation Model, and Part C to assess the effectiveness of online learning tools. The construction of this questionnaire is presented in Table 1 below.

Table 1: Construct of Questionnaire

Part	Category	No. of Items
A	Demographic	4
B	ARCS Motivation Model	15
C	Effectiveness of Online Learning Tools	3
	Total	22

Part A: Demographic: This section is designed to collect information about the respondent's profile, which includes details such as gender, semester, and program. The purpose of this section is to gain initial insights into the background of the respondents. Respondents were instructed to select only one option from the provided columns. Please refer to Table 4.2 for a visual representation of the items included in this section.

Table 2: Items Measuring Background of Respondent

No.	Items	Source
1.	Gender	Ma & Chei (2021)
2.	Semester	Ma & Chei (2021)
3.	Program	Ma & Chei (2021)

Part B: Examine ARCS Motivation Factors: All the questions in Part B are related to the motivation model, specifically focusing on attention, relevance, confidence, and satisfaction. These items were developed based on a previous study conducted by Hao & Lee (2019). There are a total of 15 items in this section, and they are assessed using the Likert scale. These items have been suitably modified to align with the research topic, which is motivation factors. Please refer to Table 3, Table 4, and Table 5 for a comprehensive list of the items developed under the ARCS Motivation Model.

Table 3: Items Developed for Attention Factor

No.	Items	Source
1.	This material allows me to become even more focused than before.	Hao & Lee (2019)
2.	This material deeply fascinates me.	Hao & Lee (2019)
3.	This material boosts my learning motivation.	Hao & Lee (2019)
4.	This material can help me become focused on my studies	Hao & Lee (2019)

Table 4: Items Developed for Relevance Factor

No.	Items	Source
1.	This material teaches me how to apply knowledge that I have learned from class.	Hao & Lee (2019)
2.	This material helps me understand basic knowledge of “Where Are You Going?” and “What Do You See?	Hao & Lee (2019)
3.	This material allows me to fully understand the concepts that are being expressed.	Hao & Lee (2019)
4.	This material allows me to fully understand the concepts that are being expressed.	Hao & Lee (2019)

Table 5: Items Developed for Confidence Factors

No.	Items	Source
1.	This material makes me work diligently and achieve good learning results.	Hao & Lee (2019)
2.	This material provides me with the confidence that I need to complete my studies.	Hao & Lee (2019)
3.	This material gives me the confidence that I need to achieve my learning targets.	Hao & Lee (2019)

Table 6: Items Developed for Satisfaction Factor

No.	Items	Source
1.	I feel satisfied when I see myself making progress using this material.	Hao & Lee (2019)
2.	This material motivates me to work hard to learn and practice even if I am unable to completely master the course material.	Hao & Lee (2019)
3.	I am happy to learn entrepreneurship using this digital software.	Hao & Lee (2019)
4.	Time flies when I use this material because it is fun to use.	Hao & Lee (2019)

Part C: Effectiveness of Online Learning: This part consists of only three items and is primarily focused on assessing the effectiveness of online learning tools. The items used in this section were adapted from Bahasoan et al. (2020). Please refer to Table 7 below for a list of all the items within this part.

Table 7: Items Developed for Effectiveness of Online Learning Tools

No.	Items	Source
1.	Level of satisfaction	Bahasoan et al. (2020)
2.	Obstacles during usage of online learning	Bahasoan et al. (2020)
3.	Materials delivered during online learning tools	Bahasoan et al. (2020)

Research Instrument: The questionnaire was specifically designed to collect data from students at the UiTM Perak branch, aiming to assess the effectiveness of online learning tools. All the questions included in this questionnaire were developed by drawing from previous studies that explored various concepts. In the context of this research, these items were adapted and modified to align with the scope and objectives of the study. Moreover, this research employed the Likert scale technique to measure the effectiveness of each motivation factor. The Likert scale rating was chosen as it is well-suited for this study, making it easy to measure each construct and more straightforward for respondents to understand and provide their responses. To distribute the surveys, a Google Form was utilized as the online platform. Each participant received guidance on how to complete the Likert scale questionnaire for evaluating various factors.

Population and Sampling: The scope of this study focuses on UiTM students at the Perak branch, specifically within one campus, which is Tapah. The selection of the UiTM Tapah campus is based on the higher number of students enrolled in entrepreneurship courses during this semester. The student population was determined through consultation with lecturers who use online learning tools as supplementary teaching materials, and it was found that about 111 students needed to participate in this study. This research exclusively targets students in part 5 of their academic program. According to statistics provided by the lecturer in charge (LIC), there are approximately 814 students enrolled in entrepreneurship and management courses at UiTM Seri Iskandar. However, only students under the instruction of lecturers who implement online learning tools were chosen for this study. The sampling technique was determined based on the Krejcie and Morgan Table for Sample Size Determination. Given a population of 111 students, it was calculated that 86 samples were required for data collection.

Data Analysis Procedure: The data analysis process begins with the commencement of correlation analysis. This initial step is primarily focused on exploring the connections between the independent and dependent variables. Moreover, it aims to assess the magnitude or strength of any such relationships that might be present.

Correlation Analysis: Correlation analysis is one of the functions available in SPSS software. It is used to clarify the relationship between two different variables. The Pearson correlation coefficient, which falls within the range of -1 to +1, is employed for this purpose. The sign associated with the coefficient indicates whether the correlation is positive or negative (Pallant, 2011). Additionally, this analysis can assist in determining the strongest relationship that influences the independent and dependent variables.

Research Timeline: The project is expected to be completed within a 20-week timeframe, with the following specified durations for each segment of the research project:

Research Section	Duration
1. Title	1 week
2. Introduction	2 weeks
3. Need for this Study	1 weeks
4. Background	2 weeks
5. Objectives	1 week
6. Research Questions and or Hypothesis	1 week
7. Research Methodology	3 weeks
8. Data Collection	3 weeks
9. Data analysis interpretations and discussions	3 weeks
10. Summary conclusion and recommendations	2 weeks
11. Reviewing work for final submission	1 week

4. Conclusion

The importance of conducting a conceptual study on the application of the ARCS Motivation Model to online learning tools in higher education-level entrepreneurship courses cannot be overstated. This research is significant because it empowers tertiary educational institutions to implement effective strategies that not only attract but also motivate students to extensively utilize online learning tools for entrepreneurship and management courses. To further enhance the adoption of these tools in the classroom, particularly among tertiary education students, instructors and lecturers should leverage the factors that hold value for these students. Numerous studies have shown that the use of online learning tools has a positive impact on the learning experience, inspiring students to engage with information enjoyably and creatively.

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