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EMPOWERING STUDENTS IN THE DIGITAL ERA: EXPLORING MOTIVATIONAL FACTORS IN ONLINE EDUCATION

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ABSTRACT

In the era of technology, practicality, and knowledge, online learning is an educational approach that has rapidly gained attention due to the use of technology and artificial intelligence and the convenience of internet accessibility. This study aims to investigate the factors that currently motivate students to engage in online learning at public universities in Malaysia. Maintaining students' and educators' excitement and participation is equally imperative as online education continues to gain popularity. Online learning empowers students to take responsibility for self-regulation, encourage self-discipline, increase motivation, and have the ability to set and accomplish personal learning goals. Therefore, it is crucial to enable students to continuously use online learning platforms to achieve the desired outcomes. In this study, a cross-sectional was conducted by randomly selected 565 students from public higher education. The questionnaire was adapted from the survey conducted by Fowler (2018) and analyzed using the Statistical Package for Social Science (SPSS). Multiple regression analysis was employed to determine the significant variables. The study found that instructor support and intrinsic goal orientation are the most critical factors influencing motivation in online learning among students. These findings are valuable insights into sustaining and enhancing motivation among students participating in online learning, contributing to the broader discussion on the practical implementation of digital educational approaches.

Keywords: *Motivation, Online learning, Educators, and Students*

1.0 INTRODUCTION

The advent of digital technology has dramatically changed the way that education is delivered and learned. Online platforms have become the new standard, and students must be able to regulate their learning. When students are motivated and in control of their learning activities, they engage more and receive better academic performance. Based on a study conducted by Kim and Frick (2011), students must quickly acquire the necessary skills and knowledge they need to succeed in the online learning environment. This is supported

by Tohidi (2012), who defines motivation as the driving force that encourages individuals to achieve outstanding success despite hurdles. It shows that students who can create a strong drive in their self-directed study are more likely to achieve exceptional academic results.

According to Fowler (2018), several factors, such as social interaction, instructor support, self-efficacy, control over one's own learning beliefs, task value, and intrinsic and extrinsic orientations, impact one's motivation to learn online. Understanding these determinants is crucial because they impact student motivation and engagement in the online learning environment. Hence, exploring these determinants can offer better outcomes, promoting continuous engagement in online learning. However, the advancement of digital learning environments has brought about several challenges, including technological issues, a lack of support systems, declining motivation, insufficient self-regulation strategies, decreased self-efficacy, and rising social anxiety. Online learning, which offers autonomy and reduced direct instruction, further compounds these challenges (Jansen et al., 2020).

This study aims to investigate the factors that currently motivate students to engage in online learning at public universities in Malaysia. The study will focus on the following question: What are the significant variables influencing students' motivation to engage in online learning? By addressing this research question, this study hopes to contribute to the existing body of knowledge and provide insights into the factors affecting motivation in online education. The findings of this study will offer a better understanding of how to sustain and increase the level of motivation among students, especially in virtual academic settings. At the same time, the findings will inform the best strategies to improve students' motivation and optimize the most effective online learning methods for the learners.

2.0 LITERATURE REVIEW

Theory of Learning Online

Basically, studies relate online learning with the internet and technology where the digitization of learning becomes possible for any form of pedagogy (Basar et al., 2021). Online learning is distinct from face-to-face (F2F) learning since it does not include a physical classroom. Instead, it relies on web-based technology to facilitate learning opportunities that may be accessed outside of traditional class settings, without constraints of time, location, or speed (Bernard et al., 2014). Within these digital learning environments, learners engage with educational resources and corresponding assessments, as well as communicate with fellow students or mentors and educators. The interactions between students and their learning environment have a significant impact on both their academic achievement and overall experience (Garrison & Cleveland-Innes, 2005).

Theory of Motivation

The theory-driven research conducted by many researchers provides the groundwork for more understanding of the theory of motivation. According to Cook and Artino (2016), the concept of motivation explains the process whereby goal-directed activities are instigated and sustained. For students to successfully self-regulate their learning, motivation is essential. Motivation is a conceptual framework that seeks to comprehend the factors that stimulate, guide, intensify, sustain, and determine the quality of behaviour, especially activities that are oriented towards specific goals (Brophy, 2010).

Past Studies on Self- Efficacy

Bandura (1977) introduced the concept of self-efficacy, which refers to an individual's confidence in their ability to achieve success. According to this concept, individuals are motivated to engage in activities that align with their beliefs in their own effectiveness. They

will exert effort and persevere in the face of obstacles based on their estimation of their own efficacy. Self-efficacy beliefs, which play a crucial role in the progress of self-regulated learning, refer to individuals' convictions regarding their ability to exert influence over their own level of functioning and over events that impact their life. In general, self-efficacy beliefs have a significant impact on individuals' emotions, thoughts, motivation, and actions (Bandura, 1997). According to Peterson and Arnn (2005), self-efficacy serves as the fundamental basis for human performance. Zimmerman and Schunk (2003) agreed that self-efficacy beliefs have been thoroughly validated as a reliable predictor of students' academic performance in the context of human learning.

The transition from traditional face-to-face education to online training has the potential to impact learners' self-efficacy perceptions. In the context of online learning, self-efficacy beliefs pertain to the convictions held by students regarding their capacity to effectively perform the tasks and activities offered within the online learning setting (Cai et al., 2017; Al-Rahmi et al., 2018). This includes having faith in their aptitude to utilize the learning management system provided by their educational institution. Furthermore, these technology tools are designed to adapt to educational processes and facilitate self-regulated learning, which necessitates increased autonomy and well-defined objectives, among other essential characteristics (Carter et al., 2020; Qetesh et al., 2020). When students are not provided with an instructional design specifically tailored for online courses, they tend to have low perceptions of learning (Chen et al., 2018) and low levels of academic self-efficacy (Casanova et al., 2018; Gopal et al., 2021). However, interacting with instructional media and content can enhance learners' sense of control, leading to improved satisfaction, enjoyment, and confidence (Luskin & Hirsen, 2010).

Past Studies on Control of Learning Beliefs

The concept of control belief, as described by Pintrich, et al. (1991), has a direct impact on cognitive performance. It refers to the assumption that one's efforts will lead to beneficial outcomes. According to Pekrun (2006), control belief serves an assessment role in relation to academic emotions. The level of learner control can vary based on the specific approach employed and the underlying theoretical framework utilised, as it is a multidimensional construct (DeRouin, Fritzsche, & Salas, 2005). Learner control refers to the degree to which students have the ability to determine what, when, where, and how they participate in the learning process (Kraiger & Jerden, 2007). DeRouin et al. (2005) conducted a review of the topic and identified several distinct types of learner control. These types include learner control over pacing, sequencing, task difficulty, optional content, method of presentation rewards, learner control with advice, and learner control with hypermedia. According to Lawless and Brown (1997), the practice of having control over one's instructional sequence has the potential to improve learning outcomes, foster positive attitudes, and build self-efficacy.

The immediate benefits of learner control have been observed in the context of online learning. The study conducted by Means et al. (2009) revealed that the efficacy of online learning can be augmented by the provision of learner autonomy in managing their interactions. According to Luskin and Hirsen (2010), prior research has indicated that learners' perception of control during their engagement with instructional medium and content can lead to heightened levels of satisfaction, enjoyment, and confidence. According to Maag's (2004) study, participants engaged in an interactive multimedia online class did not demonstrate any significant increase in knowledge and self-efficacy when compared to a control group. However, they expressed higher levels of satisfaction with the interactive technologies utilised in the lesson. Similarly, Jaffe's research (1997) demonstrates that the level of engagement does really impact learner self-efficacy. Conversely, Ebner and Holzinger (2007) observed that games improved learning, motivation, and self-efficacy as a result of a factor referred to as 'pleasure'. In a similar vein, Chang and Ho (2009) observed

that students who were given control over their web-based interactive instructional language programme achieved superior test scores and self-efficacy levels compared to those who were given control over the programme. Hence, in both traditional and online educational settings, students with a strong sense of control belief saw a rise in happy feelings and a decline in negative emotions (Bieg, Goetz, Hubbard, 2013; Lichtenfeld, Pekrun, & Stupnisky, Reiss, & Murayama, 2012; You & Kang, 2014).

Past Studies on Intrinsic Goal

In the past few years, online learning has emerged as a convenient and adaptable alternative to traditional classroom-based education. The Covid-19 pandemic has necessitated the transition of numerous higher education institutions in Malaysia to online learning. Due to the increasing prevalence of online learning, researchers have begun to investigate the factors that may affect motivation and engagement in this form of learning environment. Intrinsic goal orientation is one such factor of interest. This term denotes an individual's likelihood to engage in activities for the intrinsic delight and satisfaction they provide, rather than for external rewards or outcomes (Kadous et al., 2019). Including online learning, it is crucial for motivating individuals in a variety of contexts.
Many studies have investigated the relationship between intrinsic goal orientation and motivation in the context of online learning. One study conducted by Tiauw (2022) discovered that the transition to online education led to a decline in student motivation. Nevertheless, the study highlighted the importance of intrinsic motivation in online learning, as it was designated as a critical aspect of this educational approach. In the online learning environment, it is evident that intrinsic motivation is vital for fostering student engagement and success.

The research conducted by Cirak et al. (2023), concentrated on the correlation between academic achievement and goal orientation in online learning. The academic achievement of pupils in online learning was significantly predicted by their intrinsic goal orientation, as they discovered. In an effort to improve students' motivation, engagement, and academic performance, these results underscore the significance of cultivating intrinsic goal orientation in online learning environments. Furthermore, Sahan and Aypay (2021) demonstrated that students who exhibit a more robust intrinsic goal orientation exhibited higher levels of academic motivation when learning online. The findings indicate that the online learning environment necessitates an inherent motivation and engagement to fulfil objectives.

Furthermore, Mehta et al. (2022) conducted a study that examined the impact of student characteristics on the development of active learning strategies. Students' intrinsic goal orientation can be fostered by satisfying three psychological needs: autonomy, competence, and relatedness, according to the researchers. Consequently, the establishment of an online learning environment that accounts for psychological requirements can indirectly enhance intrinsic motivation and goal orientation. Generally, research consistently indicates that students are more likely to engage and succeed in online learning when they have an intrinsic goal orientation. Online learning is significantly influenced by motivation, as it directly impacts students' engagement and subsequent success.

Past Studies on Extrinsic Goal

When individuals are motivated to complete a task, they are more likely to do so. They become more motivated to succeed when an external incentive is present. The term for this is extrinsic motivation. The practice of performing an action for external reasons, such as earning a high grade, is known as extrinsic motivation (Oclaret, 2021). There are situations in which extrinsic motivation seems to be beneficial, such as when people are

striving to complete specific tasks and tangible rewards can be useful in that regard. This is comparable to the dedication and drive that students exhibit in their academic pursuits. The implementation of a reward system has the potential to greatly enhance the academic performance of students. He concurred with a number of other studies, according to a research study by Covington and Mueller (2001), that extrinsic motivation strategies, such as rewarding students, are effective in increasing their learning engagement. According to the findings of the study analysed by Che Soh et al. (2022), students affirmed that achieving high grades and performing well in class satisfy their extrinsic goal orientation, which in turn enhances their motivation to learn.

Some studies, however, contend that the effects of goal orientation on extrinsic motivation are typically ambiguous. At first glance, there may appear to be a positive correlation between extrinsic motivation and academic achievement, as students who are motivated primarily by extrinsic factors tend to achieve higher grades. However, in contrast to students who possess intrinsic motivation, students with external motivation fail to acquire the material in a more profound or lasting manner by the end (Midgley et al., 2001).

Involvement of students in their peers, instructors, classroom, or teachers is another indication of an extrinsic goal orientation. Students are more likely to attain favourable learning outcomes when they are actively involved in the educational process and derive enjoyment and significance from their endeavours. Vezne et al. (2023) defined extrinsic goal orientation as student engagement in instructional activities due to the correlation between learning effort and desired outcomes, which necessitates an external incentive or factor (e.g., material rewards, recognition, promotions, etc.). This is supported by the findings of Esra and Sevilen (2021), who discovered that learners were more engaged in activities, classes, and assignments that they perceived as relevant and purposeful. Self-control and engagement with the course material were factors that contributed to the students' increased motivation.

Past Studies on Task Value

In the expectancy–value theory, the term task value refers to the extent to which students perceive a particular task as essential, engaging, and advantageous. According to Alanazi et al. (2020) students' perceived performance and engagement in online courses are significantly influenced by task value. As the task value increases, so does the level of engagement and performance. He said further, task value and content quality are the strongest predictors of student performance in graduate-level online courses, while usability and technology satisfaction have weaker relationships. In addition, study conducted by Wei et al. (2023) found that learning motivation in online learning is positively influenced by task value, which is mediated by self-efficacy. The same conclusion had been made by Liu and Yu (2021) when they summarized that the perception of the worth of a task has positive effects on rote learning activities, which is mediated by both extrinsic and intrinsic goal orientations.

Past Studies on Social Engagement

Online learning provides students with the opportunities to learn, interact, share their views, be independent in learning, and use time on their own (Azzi et al., 2021; Hwang et al., 2021). Students are more comfortable in online classes when interacting with their classmates since it allows them to express their thoughts in their own unique ways and without fear. According to Esra and Sevilen (2021) in their study, it is reported that higher levels of engagement in the activities, classes and tasks were relevant and meaningful to the learners. Subsequently, it leads to the perceived and the acceptance of online learning.
Additionally, it encourages a positive attitude and mindset when they have an online class. It has been suggested that participation enhances learner motivation (K. Vimala et. al., 2021).

In the study by Qunfei et al. (2020), they figured out that, according to the online English learning platform records of attendance and the performance, students are inclined to compare with their peers, which means peers can have a positive or negative influence on students' learning motivation. Despite having different opinions on how online participation should be set up, several academics seem to agree that it is a crucial component of learning (Hrastinski, 2008). Thus, it is proved that students' involvement in online learning has a significant impact on their motivation.

The engaging design and material of the online course, technology adaptation, as well as the chance for contact with other students, can affect how much a learner participates simultaneously drives to online learning motivation. In a study conducted by Hirumi (2006), he emphasised that students can actively contribute to knowledge acquisition through online conversation with the help of technology.

Apart from that, students are more passionate about online learning when there is an engagement between students, teachers, facilitators, online reading materials and resources. The attractive format and content of the online course and the ability of interaction with other peers can also influence learner's participation (Vimala et. al., 2021). This element appears a strong driver and factor of motivation in online learning.

Past Studies on Instructor Support

Student – instructor interaction brings a good impact in online learning motivation. In certain situations, it indicates students' satisfaction and perceived in learning (Kuo et al.,2014 ; Arbaugh & Benbunan-Fich, 2007). Furthermore, this can encourage the student's growth intellectually when they engage in constructive learning activities (Fozi et. al., 2022). Previous studies show that students who integrate the learning and their instructor stimulates the positive learning outcomes. A study conducted by Boling et al. (2012) found out that courses with little interaction with students were less helpful and the students felt that they were disconnected from both their peers and instructors. It appears that instructor support is very important in students' interaction in learning.

In online classes, instant feedback and interactions with peers and the teacher tend to increase students' motivation. Students' learning levels and overall course satisfaction increased as a result of daily interaction with teachers. The social interaction with peers and instructors in online learning can ameliorate motivation of students (Gedera et. al., 2015). This is in line with Johnson (2017) findings that instructors can motivate their students to learn by providing them with positive and frequent feedback. Additionally, it is crucial to promote and maintain student contact in which it results in enhancement of student participation significantly.

Moreover, instructors' engagement and support in student learning might enhance student's motivation in online learning. Since COVID-19, the educational system has been forced to incorporate online learning, although not all teachers and students would be amenable to it. Here, the instructor plays a vital role in motivating the student to get engaged in online learning. Numerous studies have noted the importance of instructors in raising student motivation in online courses. According to Mese and Sevilen (2021), in their study, the significance of teachers in the areas of teaching methodology, lesson presentation, feedback, and interaction was emphasized by students. They claimed that the main extrinsic factor affecting students' motivation was teachers' competence.

Online learning required students to engage with the instructors frequently. Transition from virtual classroom to online classroom really challenges the student's learning ability. Students positively believe that the instructors is efficient when they are responsive, enthusiastic, student- centered, professional, and expert (Onwuegbuzie et al., 2007). While

employing online modes, there is probably the instructors unable to uphold all the teaching standards thereto hindering the student's learning performance. This might influence the teacher-student relationship in which it is particularly important for laying the groundwork for students' educational experiences and expectations.

Past Studies on Motivation in Online Learning

Nevertheless, the pandemic COVID-19 gave a major impact to the economy landscape, people livelihood, health, working style and economy industries including education sectors. Universities are struggling to deal with the pandemic after it landed the educational system in the international spotlight. This partly will affect the learning motivation among students as it changed students' learning style, from virtual classroom to online classroom. Aviv (2004) suggested that the strongest motivator for pursuing an online education was the learner's motivation and life situation. Students must have a strong will to continue online study and be motivated always. Cole et. al. (2004) defined student motivation as the power, creativity, and readiness of students to learn and participate in classroom learning.

On the other hand, previous studies found several constituents in online learning motivation. According to Esra and Sevilen (2021), they found that by comparing face-to-face learning and online education, the participants' extrinsic and intrinsic motivation much better in face-to-face learning. The researchers also argued that peer and teacher interaction are important as it leads to online learning motivation. This is supported in a study done by Ushida (2005) that teachers play an important role in being responsive and providing adequate communication to students, resulting in higher motivation among students.

3.0 METHODOLOGY

This quantitative study is being conducted to investigate students' motivation in online learning. 565 students were specifically chosen from a Malaysian public university. According to Sekaran & Bougie (2016) the minimum number of sample sizes with a large population is 384, therefore the number of samples is adequate in this study. The instrument of study (refer to table 1) used here is a survey adapted from a study by Fowler (2018). The questionnaire was disseminated to the students over the online platform using Google Form. Apart from the demographic profile, section A has 8 items to measure the self-efficacy, section B, C and D has 4 items to measure the control of learning beliefs, intrinsic goal orientation and extrinsic goal orientation, respectively. While section E has 6 items on task value and section F has 5 items on social engagement. Section G and H has 7 items each on instructor support and motivation in online learning.

Table 1: The distribution of items in survey

Section	Variables	No. of items
A	Self-Efficacy	8
B	Control of Learning Beliefs	4
C	Intrinsic Goal Orientation	4
D	Extrinsic Goal Orientation	4
E	Task Value	6
F	Social Engagement	5
G	Instructor Support	7
H	Motivation in Online Learning	7
Total		45

The dependent variable in this study is defined as motivation in online learning, while the independent variables are self-efficacy, control of learning beliefs, intrinsic goal orientation, extrinsic goal orientation, task value, social engagement, and instructor support. The conceptual framework of the study is shown in figure 1. To calculate the internal consistency of an item's reliability, Cronbach's alpha is employed. The bottom limit of acceptable range was determined to be between 0.6 and 0.7 (Hair et al., 2010). The analysis begins by exploring the relationship between the independent variable and dependent variable using the Pearson product-moment correlation coefficient. The correlation coefficient close to ± 1 is categorized as a strong relationship between the dependent and independent variable. While the significant independent variables are determined using multiple regression analysis. The statistical F-test is used to test the null hypothesis that there is no significant relationship between independent variable and motivation in online learning, while the alternative hypothesis suggests that at least one independent variable has a significant relationship to the dependent variable. Other than F-test to assess the model fit to the data, R-squared is also discussed to measure the proportion of variation in motivation in online learning that can be explained by the significant independent variables in the model. Next, a test of regression coefficient, the statistical t-test, is employed to identify the variables for the motivation to learn online that are significant.

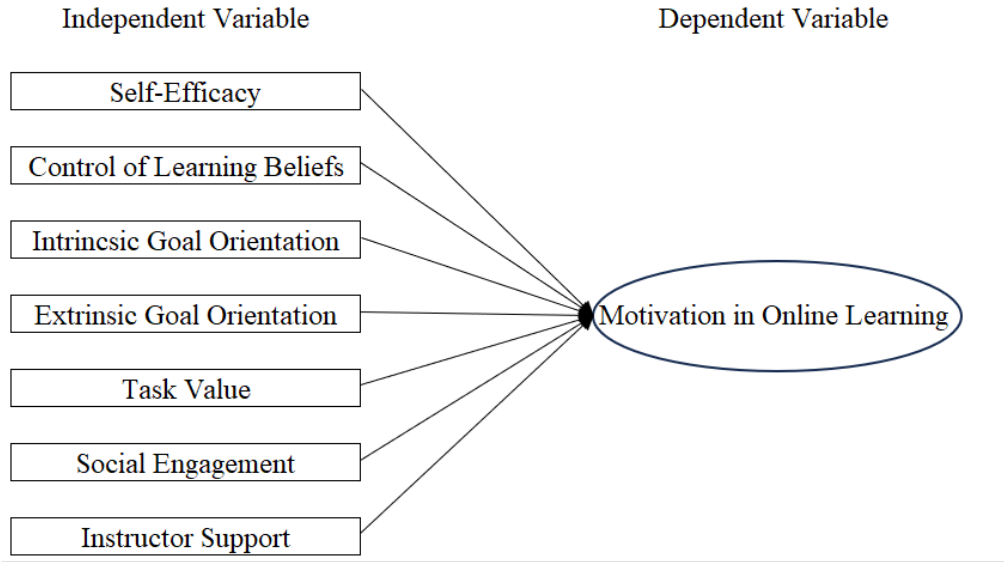

Figure 1: The theoretical framework of the study

The quality of the model is also discussed by evaluating the multicollinearity, and residual analysis which must follow the assumption of linearity, normality, independence and homoscedasticity of error terms (Kutner et al., 2004).

4.0 FINDINGS

Table 2 summarizes the descriptive statistics of gender and program. From a total 565 students, 65.5% of them are female and 34.5% male. According to the programme, most of the respondents are from Diploma in Computer Science (CS110) with 20.5 %, followed by students from Bachelor of Business Administration (Hons.) Finance (BA242) with 12.6%, and 11.7% respondents are from Bachelor of Administration (Hons.) Islamic Banking (BA249). The least number of respondents are from Bachelor of Record Management (Hons.), Diploma in Business Studies and Diploma in Banking with 0.5%, 0.4% and 0.2% respectively.

Table 2: The crosstabulation table of gender and program

		Gender		Total	Percent (%)
		Female	Male		
Programme	AC110	12	5	17	3
	AC220	30	19	49	8.7
	BA111	2	0	2	0.4
	BA114	20	18	38	6.7
	BA119	1	0	1	0.2
	BA240	44	4	48	8.5
	BA242	51	20	71	12.6
	BA244	24	7	31	5.5
	BA246	19	5	24	4.2
	BA249	49	17	66	11.7
	BA251	22	21	43	7.6
	BA252	16	12	28	5
	CS110	62	54	116	20.5
	CS143	3	4	7	1.2
	IM110	12	9	21	3.7
	IM246	3	0	3	0.5
Total		370	195	565	100
Percent (%)		65.5	34.5		

The reliability analysis was assessed using Cronbach Alpha (refer table 3). The coefficient of Cronbach Alpha lies from 0.706 to 0.967 exceeded the cut off value 0.7 indicating the higher internal consistency and greater reliability of the scale. Table 4 shows the relationship between each independent and dependent variable. Based on the result, the relationship between independent variable and dependent variable are significant at a 5% level of significance. Self-efficacy has moderate positive correlation ($r=0.548$; $p<0.001$) with motivation in online learning. There is also a moderate positive correlation between variable of intrinsic goal orientation ($r=0.507$; $p<0.001$), task value ($r=0.473$; $p<0.001$), social engagement ($r=0.481$; $p<0.001$) and instructor support ($r=0.413$; $p<0.001$) towards motivation in online learning. Meanwhile, the correlation between the variable of control of learning beliefs and extrinsic goal orientation towards motivation in online learning were found to be 0.342 ($p<0.001$) and 0.313 ($p<0.001$), respectively. This suggests a weak positive relationship between the control of learning beliefs and extrinsic goal orientation towards motivation to learn online.

Table 3: The distribution of items in survey and reliability test

Section	Variables	No. of items	Cronbach Alpha
A	Self-Efficacy	8	0.936
B	Control of Learning Beliefs	4	0.864
C	Intrinsic Goal Orientation	4	0.868
D	Extrinsic Goal Orientation	4	0.897
E	Task Value	6	0.935
F	Social Engagement	5	0.706
G	Instructor Support	7	0.946
H	Motivation	7	0.967

Table 4: Result of Pearson Correlation Coefficient

	Pearson Correlation	P-value
Self-Efficacy	0.548	<0.001***

Control of Learning Beliefs	0.342	<0.001***
Intrinsic Goal Orientation	0.507	<0.001***
Extrinsic Goal Orientation	0.313	<0.001***
Task Value	0.473	<0.001***
Social Engagement	0.481	<0.001***
Instructor Support	0.413	<0.001***

Note: ***p <0.01

A multiple linear regression model was developed to examine the significant relationship between independent variable and dependent variable. Based on table 5, R-squared value was found to be 0.353 indicating that 35.3% variation in motivation in online learning is explained by the seven variables. The F-test of the regression model was found to be 43.423 (df=7, 557), p-value < 0.001 indicating that the regression model is statistically significant. The null hypothesis is rejected and suggests that at least one independent variable has a significant relationship to the dependent variable.

Table 5: The fitness of a multiple linear regression model

Statistical Test	Value	P-value
R-squared	0.353	
Adjusted R-squared	0.345	
F-test	43.423	<0.001

Table 6: T-test of regression coefficient

Variable	Unstandardized Coefficients	Standardized Coefficients	t-test	p-value	Findings
Constant	0.339		1.522	0.129	
Self-Efficacy	0.320	0.248	4.835	<0.001***	Significant
Control of Learning Beliefs	-0.067	-0.052	-1.067	0.286	Insignificant
Intrinsic Goal Orientation	0.159	0.132	2.716	0.007***	Significant
Extrinsic Goal Orientation	0.022	0.019	0.400	0.690	Insignificant
Task Value	0.143	0.106	1.805	0.072*	Significant
Social Engagement	0.163	0.119	2.336	0.020**	Significant
Instructor Support	0.170	0.134	2.712	0.007***	Significant

*Note: ***p <0.01; **p<0.05; *p<0.10*

Table 6 gives the summary of significant variables in the regression model. It was found that self-efficacy (β=0.32, t=4.835, p<0.001), intrinsic goal orientation (β=0.159, t=2.716, p=0.007) and instructor support (β=0.170, t=2.712, p=0.007) were statistically significant at 1% level of significance. While social engagement (β=0.163, t=2.336, p=0.020) was statistically significant at 5% level of significance and the task value (β=0.143, t=1.805, p=0.072) was statistically significant at 10% level of significance. However, control of learning beliefs (β=-0.067, t=-1.067, p=0.286) and extrinsic goal orientation (β=0.022, t=0.4, p=0.69) were found to be insignificant predictors of motivation to learn online.

The adequacy of the multiple regression model was also assessed by analyzing the assumptions of residuals, linearity and multicollinearity. Figure 2 shows the scatterplot matrix of the dependent variable and independent variables; it clearly demonstrates that the relationship is assumed to be linear. Figure 3 explains that there is no systematic pattern as the residual is scattered evenly, thus the multiple regression model met the assumption of homoscedasticity. Test of normality of the residuals was assessed by Kolmogorov-Smirnov and the value was found to be 0.109 (df=565, p<0.001) indicating that the residuals are

normally distributed. Then, the test statistic of the Durbin- Watson test is equal to 1.882 which is close to 2 indicates no autocorrelation in the residuals of a regression model.

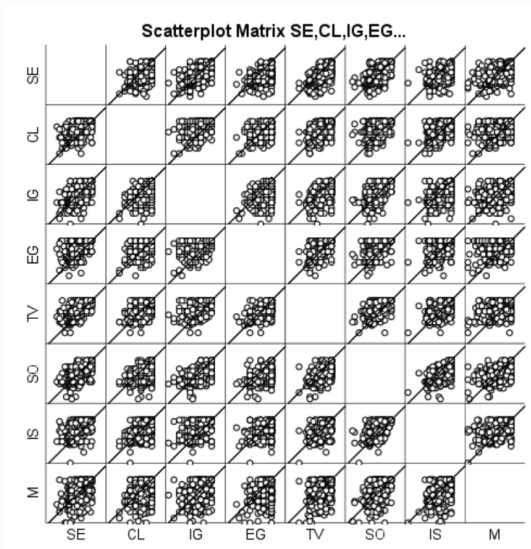

Figure 2: The scatterplot matrix

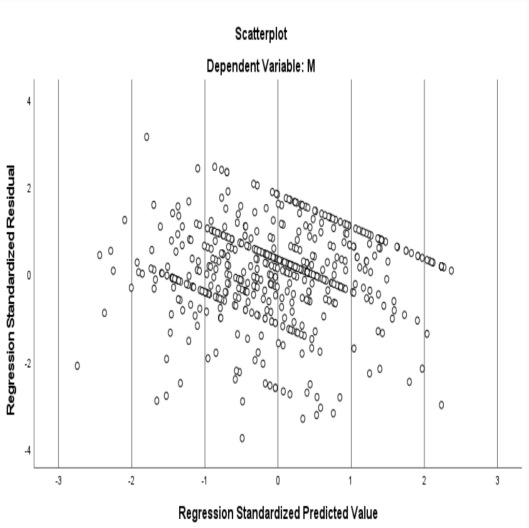

Figure 3: The scatterplot of residuals against predicted value

Table 7 discusses the findings on the multicollinearity assumption by indicating the variance inflation factor (VIF) and tolerance value. The VIF values do not exceed threshold above 5 or 10, thus it can be concluded that the independent variables are not highly correlated. The tolerance values above 0.1 shows that the independent variable has low multicollinearity with the other predictor variables. All the assumptions of multiple regression models hold true; thus the model is adequate and well fits to the observed data.

Table 7: Multicollinearity results

	Tolerance	VIF	Findings
Self-Efficacy	0.441	2.266	No multicollinearity
Control of Learning Beliefs	0.497	2.014	No multicollinearity
Intrinsic Goal Orientation	0.491	2.035	No multicollinearity
Extrinsic Goal Orientation	0.528	1.894	No multicollinearity
Task Value	0.340	2.942	No multicollinearity
Social Engagement	0.447	2.237	No multicollinearity
Instructor Support	0.474	2.112	No multicollinearity

5.0 CONCLUSION

Intrinsic motivation plays a pivotal role in successfully implementing online learning initiatives. Developing a comprehensive understanding of the factors that foster intrinsic motivational goals, integrated with technology-mediated strategies, can contribute to creating effective online learning environments that promote engagement, persistence, and positive learning outcomes. However, further research is needed to explore novel approaches to enhance intrinsic motivation within the rapidly evolving landscape of online education.

Educators and instructional designers can create more effective and engaging online learning environments by understanding the factors influencing task value and incorporating

captivating activities. Motivation is crucial in online learning, especially in the digital era, where students and educators must adapt to new educational innovations. Encouraging and fostering motivation is essential to keeping students on track with their studies and reducing the risk of dropping out.

The findings of this study suggest that self-efficacy is a crucial factor in motivating individuals to engage in online learning. This finding is supported by Xiao (2012), who indicated that successful distance learners must display a strong intrinsic motivation, possess an internal locus of control, exhibit high levels of self-efficacy, and can tolerate substantial anxiety during the learning process. Self-efficacy emerged as the most dominant predictor of motivation to engage in online learning. While self-efficacy was the most significant predictor of motivation to study online, intrinsic goal orientation and instructor support were the second and third most influential factors.

A study conducted by Tan et al. (2013) indicated that Herzberg's Two-Factor Theory holds an advantage over other motivation theories, as it integrates individuals' intrinsic and extrinsic motivational components. However, the results of the present study demonstrate that only intrinsic goal orientation is significantly related to the motivation to learn online. This finding aligns with the study by Robin and Judge (2013), which claimed that organizations should concentrate on providing intrinsic or motivational factors to motivate employees. In addition, Yusop et al. (2022) summarized that social support, expectancy, and value elements should be considered to encourage motivation in students, particularly in online learning environments.

This study found that social engagement and task value were significant motivational factors in online learning. The focus of the communication issue here extends beyond the communication tools, encompassing the content, how the instructor delivers instructions, and how students receive feedback (Baber, 2022). The result also aligns with the study by Jenkins (2001), which showed that some students are intrinsically motivated to learn programming, while others may value it more for external reasons as they gain knowledge.
However, the results also suggest that the factors of control of learning beliefs and extrinsic goal orientation were not significant predictors for motivation of online learning. Some studies claim that the effects of goal orientation on extrinsic motivation are typically uncertain. At first glance, there may appear to be a positive correlation between extrinsic motivation and academic achievement, as students who are predominantly motivated by extrinsic factors tend to achieve higher grades. However, in contrast to students who possess intrinsic motivation, those with external motivation fail to acquire the material in a deeper or lasting manner by the end (Midgley et al., 2001).

Pedagogical Implications and Suggestions for Future Research

As the learning environment transitions from face-to-face to online education, educators and students must quickly adapt to the new environment. The findings from the study summarize four significant variables contributing to motivation in online learning: self-efficacy, intrinsic goal orientation, social engagement, and instructor support. These insights may assist educators and students in navigating the new educational environment, and it is hoped that the significant factors identified will be considered motivational factors to enhance the effectiveness of online learning. Future research should prioritize investigating time management, as students must possess high self-motivation and discipline to organize their schedules independently.

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