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The effect of Self-Directed Learning Motives and Students' Cooperation on the success of Online Learning: The moderating effect of Resource Availability

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ABSTRACT

Technology and online education have become increasingly crucial components of education worldwide in the twenty-first century. Though online education is not a common practice in Sri Lankan higher education, the Covid-19 pandemic has forced it to embrace it. Self-directed learning motives and students' cooperation become critical factors in determining online learning success. As a developing country, however, resource availability will be a matter of achieving the intended outcomes in online learning. Against this backdrop, the purpose of this study is to examine the effect of self-directed learning motives and students' cooperation on the success of online learning, while also assessing the moderating effect of resource availability. Using a quantitative approach, an online survey was carried out to gather 229 respondents from fifteen public universities in Sri Lanka during the Covid 19 pandemic, and the data were analyzed using correlation and multiple regression analysis. The study discovered the positive effects of self-directed learning and students' cooperation on the success of online learning. However, resource scarcity is eroding these connections. This study adds to the theory by expanding on the existing literature on self-directed and corporative learning on online platforms. It gives policymakers, government officials, educators, instructors, and students with insights into how to improve online education.

Keywords: Cooperative Learning, Online Learning, Resource Availability, Self-Directed Learning, Students' Cooperation.

1. INTRODUCTION

Initially, the Internet was used to maintain relationships with humans for commercial or personal reasons, make new connections, or reconnect with long-lost friends and family (Arnott and Bridgewater, 2002). Rapid technological advancements, easy access to computers, global modernization, and greater use of smartphones have enabled consumers to access the Internet more frequently (Dol, 2016) and in a more user-friendly manner (Vanhaebost et al., 2014). In such a platform, Online education has become a vital aspect of the educational system in the modern world (Lengyel, 2020) as a result of scientific and technological advancements (Lengyel, 2020).Though online education is common in developed countries (Oye et al., 2011), Sri Lanka has forcefully moved to this new education platform due to Covid 19 pandemic (Khashunika et al., 2021).

The Covid-19 pandemic affected every element of people's lives across the globe (Tarkar, 2020), including Sri Lankaand wreaked havoc on everyone's day-to-day life (Chandasiri, 2020). People's travel was restricted (Li and Zhao, 2022), and as a result, services that previously relied on physical interfaces and direct face-to-face encounters had to find new ways to deliver their services (Vo and Tran, 2021). The education sector (Dreesen et al., 2020), particularly higher education in Sri Lankahas been forced to transition away from on-campus classroom-based instruction toward new modalities of academic program delivery via distance education (Hettiarachchi et al., 2021). This new normal presents difficulties for academics and students alike, since a lack of experience and unbalanced allocation of resources impede outcomes in education (Karunathilake and Galdolage, 2021). The majority of countries' educational institutions, including universities, have taken a new stride toward "e-learning"; a method of instruction facilitated by a digital platform such as online classrooms and portals for accessing subjects outside of the actual classroom (Hettiarachchi et al., 2021).

While online education is widespread in wealthy countries, poor countries had not previously planned to acquire such a status (Altbach and de Wit, 2020). Thus, in the majority of developing nations, including Sri Lanka, acceptance of online education is a result of Covid 19 rather than a natural progression of educational advancements (Ilankoon et al., 2020). Therefore, this movement poses a significant challenge, particularly for developing countries that have never had access to such high educational facilities. Thus, administrators, instructors, and students are having trouble figuring out how to accomplish the full spectrum of educational goals using these new online platforms amid this global pandemic (Singh and Arya, 2020).

The Sri Lankan higher education system is based on on-campus learning through face-to-face interactions between the teacher and the learner (Liyanagunawardena et al., 2014). This would fit into the global learning environment that has been placing great importance on cultivatingdeveloping high-level thinking systems in Sri Lanka.However, when the schools were forced to close in March 2020 due to COVID-19 infection, the typical practice of conducting on-site face-to-face teaching was utterly replaced with online education (Karunathilake and Galdolage, 2021). As a result, all universities and institutions attempted a transition to online platforms like Zoom, and many students enrolled in this education system despite their lack of expertise and training.

Education is a collaborative process that requires the active participation of both the teacher and the student to produce a fruitful outcome (Bullough Jr et al.,

2001). In classroom-based teaching, face-to-face contacts foster a high level of collaborative learning, enhancing bothstudent-teacher and student-student relationships (Summers et al., 2005). However, with online education, teacher-student interaction occurs via the computer screen. Students got isolated in online learning because they lacked the frequent relationships they had on-campus with their peers and faculty members (Leal Filho et al., 2021). While students in on-site education receive regular advice and instruction from academics and ample opportunity to address issues with colleagues and peers, students in online education grow more isolated and are expected to become more self-learners (George et al., 2021).

Therefore, Self-Directed Learning (SDL) is gaining prominence in the online education system (Song and Hill, 2007). A self-directed learner must be capable of participating independently in learning activities such as information access, program organization, and evaluation. Active learning practices can help students become more involved in the learning process and enhance their performance (Kim et al., 2014). Self-directed learners can define their own learning needs and determine the extent to which they wish to acquire knowledge through lifetime learning (Candy, 2004). Individuals who have acquired knowledge autonomously understand how to arrange their education, apply new knowledge to more extensive contexts, and overcome obstacles (Chou, 2012). They are adaptable to change and progress, confident and aware, willing to learn, capable of utilizing various approaches, and aware of their learning styles, interests, and talents (Oladoke, 2006). In self-directed learning, students understand their role in learning (Sumuer, 2018); thus, it becomes increasingly critical to online learning's effectiveness (Kohan et al., 2017).

Given that online teaching and learning is a novel experience to most academics and students, their cooperation in this new teaching-learning environment is critical for beneficial outcomes. Thus, students' cooperationwith this new learning platform and methodologies becomes a critical criterion that is inextricably linked to students' learning and might impact an online learning environment (Li et al., 2021). If students refuse to cooperate and adapt to this significant change in the educational system, they will be left with no other options during this pandemic period. Cooperation is a concept of engagement and a way of life in which students take responsibility for their education, life progression, and careers (Kagan and Kagan, 1994). Cooperative learning is an active teaching-learning method that encourages students to collaborate with education and obtain win-win benefits (Felder and Brent, 2007). Even when different strategies are used in diverse circumstances, cooperative learning produces higher academic outcomes than individualistic and competitive learning (Johnson, 1994).

Though moving toward online education is the only option during this pandemic, its success is limited by resource availability (Hamid et al., 2020). Developing countries, including Sri Lanka, do not possess the adequate resources required for online education (Dulle, 2015). Mainly due to the non-availability of resources or not equally distributed available resources, while some students easily adhere to this new normal some others suffer in their academic life (Datta, 2011). Non-availability of suitable devices, network problems become critical in online education (Adarkwah, 2021). Another reason to resist online learning is the lack of skills on the technological apparatus and change in the structures from the traditional methods (Hylén, 2021)

In summary, Sri Lanka has practiced the conventional,face-to-face, on-site teaching-learning method from primary to higher education. Therefore, it is pretty challenging to adopt an online learning environment. Though students used to have regular guidance and instructions in on-site learning, they become more independent in online education. Thus, their self-directed learning and cooperation with this new movement in education become critical in achieving success. However, being a developing country, resource availability also influencesthe success of online education. However, the scholarly attention given to understanding this phenomenon is sporadic. Therefore, this study aims to examine the effect of self-directed learning and students' cooperation on the success of online learning while assessing the moderating effect of resource availability. The specific research objectives are,

- To examine the effect of Self-Direct Learning motives on the success of online learning among state sector university undergraduates in Sri Lanka.
- To examine the effect of Student Corporation on the success of online learning among state sector university undergraduates in Sri Lanka.
- To examine the relationship between self-directing learning motives and students' corporation in the success of online learning among state sector university undergraduates in Sri Lanka.
- To examine the moderating effects of resource availability on the relationships between self-directed learning motives and the success of online learning among state sector university undergraduates in Sri Lanka.
- To examine the moderating effects of resource availability on the relationships between students' cooperation and success of online learning among state sector university undergraduates in Sri Lanka.

The remainder of the paper is divided into the following sections: The next section contains a literature review that elaborates the current scholarly discussions on online education and other related concepts followed by the study's methodology. The data analysis and discussion of the findings are then described. The paper ends with a review of the study's theoretical and managerial implications and its limits, and future research direction.

2. LITERATURE REVIEW

2.1 Online Learning

Online learning is frequently used interchangeably with e-learning, open learning, computer-assisted learning, blended learning, and m-learning (Kumar Basak et al., 2018). All of these terms refer to the possibility of using a computer connected to a network to learn from anywhere, at any time, at any pace, and through any means. Numerous studies define online learning as the system's technique of teaching-learning, also known as the e-learning strategy (Behera, 2013). Recent advancements in digitalized processes have resulted in developing a learning system that incorporates both face-to-face and computer-based interaction (Kentnor, 2015). Globalization and the associated information sharing are the primary aspects that contribute to the facilitation of online learning (Dabbagh et al., 2015).

Throughout the decades, many developed countries have adopted a combination of online and on-site learning (Naresh and Reddy, 2015). Online education has become the most popular and preferred option of higher education in these countries, as daily activities are inextricably linked to web-based and online activities (Salmon, 2013). Developed nations naturally gravitated toward e-learning due to globalization, technological growth, and unforeseen changes in society and the environment (Naresh and Reddy, 2015). They believed thathigher education providers' role is to make students aware of and prepared to adopt new modes of learning, training, and work reporting as part of the education system. Changes in society, culture,and technological landscape have also influenced the preferences of the younger generation of students for new learning methods such as online learning, distant learning, and digitalized self-learning platforms (Anthonysamy et al., 2020). Additionally, it can be viewed as one of the aspects contributing to students' self-satisfaction because they are able to choose their own learning requirements (Loeng, 2020).

On the other hand, online education is a novel experience and a significant challenge for many developing countries (Aboagye et al., 2021). Thus, online learning adoption becomes more difficult in developing nations (Bhuasiri et al., 2012) due to resource constraints, despite the number of students and teachers in developing countries being more than in wealthy countries (Mathrani et al., 2021). As a result, acceptance of online learning is being delayed in developing counties until everyone is facilitated and made aware of and comfortable with online learning (Gulati, 2008). Additionally, developing countries continue to face a scarcity of effective technological advancements, capacities, and facilities (Ayodele et al., 2018). In comparison to the Asian region, Africa's countries continue to suffer from a severe shortage of infrastructure (Oye et al., 2011). Similarly, due to infrastructure and information technology constraints, countries such as Kenya and Nigeria have not fully integrated online learning (Bliuc et al., 2010).

Rather than a natural evolution of new technology, the COVID 19 pandemic forced many underdeveloped countries (Aboagye et al., 2021), including Sri Lanka, to transition to online education (Haththotuwa and Rupasinghe, 2021). In underdeveloped nations, the amount of adoption, particularly the time required to transition to online platforms and the proportion of beneficiaries who achieved the truly desired education outcomes, were not satisfactory (Priyadarshani and Jesuiya, 2021). Obviously, online learning arrangements require a digitalized and electronic learning environment; infrastructure, computer skills, and technical help all contribute to the successful implementation of online learning arrangements (Paudel, 2021). Compared to other developed countries, Sri Lanka is impoverished and sluggish to adopt online learning (Gunawardana, 2005). As a result, it was more difficult for teachers and students to utilize digital learning tools and techniques. Amidst such issues, the Sri Lankan government and independent educational bodies develop strategies for a more digitalized approach to education (Gunawardana, 2005).

2.2 Online Learning Movement in Sri Lankan Higher Education

An educational system is a critical tool for defining human resource skills and knowledge. Human resources are essential in ensuring the productivity of other resources through effective management. A significant portion of a country's budget is dedicated to the educational system and related developments, as today's students will be the nation's future leaders (Khashunika et

al., 2021). Each nation values human resources and has invested in them across a variety of areas (Kaurani et al., 2021).In Sri Lanka, free education fulfills the universal right to education. It is a necessary component of a democratic society to minimize public identity deficits and foster widespread social and economic mobilization (Weerasinghe and Fernando, 2018). This process began with the adoption of international declarations, covenants, and conventions, and it took nearly fifty years for education for all to become a worldwide standard (Jayaweera, 2007).

Sri Lankan higher education is comprised of sixteen public universities established by the University Grants Commission (University Grants Commission, 2021). Apart from that, the private sector contributes significantly to higher education in the current context. However, both the public and private sectors relied heavily on on-campus education (Ushantha and Kumara, 2016). The state-owned education system could not invest large sums of money in new technology and related infrastructure to facilitate online learning. It was a tragedy to adapt to new online education technology (Hayashi et al., 2020). Some students cannot purchase required devices to access learning, and many of them are experiencing network issues. As a result, Sri Lanka's education system was severely impacted, particularly in comparison to developed and other South Asian countries (Ilankoon et al., 2020)

Additionally, the country's economic decline during the Covid 19 pandemic, the loss of income and jobs, reduces the affordability for children's education and purchasing power of requirements in online education (Dissanayake, 2021). Throughout the crisis, most imports, including mobile devices, were prohibited, and the prices of such products have risen. The academic colanders and schedules such as examinations were changed time to time due to pandemic, reducing students' confidence and devotion to their studies and life goals. Thus, this transition had a substantial impact on the quality of education (Howshigan and Nadesan, 2021) though certain individuals are optimistic about distance education due to its' convenience and safety, especially during such a pandemic situation (Nafrees et al., 2020).

2.3 Self-Directed Learning Motives in Online Learning

Self-directed learning is a well-established technique in adult education that promotes active involvement (Galdolage, 2020) and personal responsibility for self-development and fulfillment (Caffarella, 1993). Self-Directed Learning promotes ownership of one's own education and often refers to a technique of learning without the assistance of a large number of teachers. Unlike traditional education, where teachers are the conduits for knowledge transfer, self-directed learning recasts teachers as facilitators (Garrison, 1997). In addition, it also should be noted that self-direct Learning is not always mean the learning approach without teachers' intervention (Mezirow, 1985). In some cases, the teachers will interact to provide guidance instead of sharing knowledge (Oddi, 1987). Self-directed learning can be outlined as the act of embarking on new ventures independently of others (Towle and Cottrell, 1996). It comprises planning and assessing actions based on personal experiences (Loyens et al., 2008)or utilizing mobile devices and associated materials. Additionally, because it takes place outside of typical classrooms, it could be called an informal style (Song and Hill, 2007).

In self-directed learning, students are responsible for determining their learning requirements (Candy, 2004), developing their learning goals and objectives,

identifying sources and materials in matching their set goals, formulating and implementing learning strategies, and evaluating their learning achievements (Kim et al., 2014). Therefore, the key in self-directed learning is learning directly without others' extended level of intervention (Chou, 2012).Coordination and teamwork in face-to-face classrooms have been found to improve learning and accomplishment while also improving social skills, self-esteem, and attitudes toward classmates and school (Sumuer, 2018). These features are available online, which creates opportunities for improving student involvement in an online learning environment (Song and Bonk, 2016).

2.4 Self-Directed Learning Theory

Self-directed learning is a foundational theoretical notion and a well-studied area of adult education (Merriam, 2001) because it encompasses three critical components: self-management, self-monitoring, and motivation (Brockett and Hiemstra, 1991, Long and Redding, 1991). Self-management is centered on the application of learning intents as well as peripheral activities involved with the learning process. It is concerned with how an individual accomplishes his or her learning objectives and manages the resources associated with the learning (Pintrich and de Groot, 1990, Corno, 1994). Additionally, it encompasses the process of establishing contextual conditions for the execution of goal-directed activities and does not imply that individuals are solitary learners. Rather than that, facilitators can aid the customer learning process by giving various forms of assistance, direction, and standards as needed to ensure a successful educational outcome (Prawat, 1992, Resnick, 1991). Additionally, self-management is connected to the other two dimensions and combined to provide a complete view of the learning process. Self-monitoring guarantees that the learner is accountable for building a personal meaning or is dedicated to doing so through critical reflection on his or her learning. Self-monitoring can be viewed as being conditional on both internal and external feedback. (Brockett and Hiemstra, 1991, Long and Redding, 1991). Motivation is crucial at the start and throughout the process of learning and goal attainment (Howe, 1987). Two distinct motivations are discernible; entering motivation and task motivation which motivates starts and proceed the tasks.

Brockett and Hiemstra (2018) argue that self-directed learning refers to the instructional process and ‘learner self-direction’. Brockett and Hiemstra (1991) maintain that self-direction in learning includes both the instructional process (external characteristics) and the learner (internal factors). The people involved in this Learning decide the contents, resources, and related decisions regarding the Learning based on the desired result in the provided timeframe.

Brookfield (1981) discusses the critical function peer contact plays throughout the learning process for autonomous adult learners – from initial decision to begin learning to reinforcement during learning and evaluation of what has been learned. The primary advantage of self-directed learning is that resources and time are allocated according to the learner's preferences. Additionally, it is possible to seek assistance from peers or other specialists in order to better comprehend lessons (Bliuc et al., 2011). However, those with low levels of literacy cannot be lacking in confidence or independence.

Self-Regulated Studying is an educational psychology paradigm that encompasses a variety of tactics that enable learners to manage and monitor their metacognitive, behavioral, and encouraging characteristics while they are learning in order to attain their academic goals (Oladoke, 2006). Such

self-regulated and self-directed learning demands a virtual learning environment, and students can adopt such learning approaches through the use of advanced technology (Kohan et al., 2017).

2.5 Students' Cooperation in Online Learning

Technology-driven perspectives were rapidly rising in popularity and were widely acknowledged as necessary for combating challenges in environmental changes (Kohan et al., 2017). In general, students' corporate goals are the motivating variables that determine their ability and desire to adapt to new educational obstacles (Shanshan, 2014). Kitchen and McDougall (1999) studied cooperative learning and the student's satisfaction, and students were rated as excellent in their cooperative Learning.

Numerous learners collaborate with e-learning methods to define and refine their educational objectives and expectations (Hamid, Saoula, Saidin, & Rahman, 2020). On the other hand, some students prefer a high level of teacher intervention and contribution to information acquired through experience (Palvia et al., 2018). Additionally, the inclination for online, digitalized, and self-directed learning has a substantial impact on the success and uptake of online learning (Boling et al., 2012). Schulz-Zander et al. (2002) also found that cooperative learning affects learning outcomes and motivation to learn.

Students' cooperation, preferences, and ability to adapt to technological changes are critical for the efficient acceptance and implementation of online learning (Kerimbayev et al., 2017). It has been suggested that student-to-student interaction can be an extremely effective technique for increasing online involvement, reducing the risk of abandonment, and increasing motivation levels (Raja and Nagasubramani, 2018). As a result of their interactions with peers, students acquire familiarity with the discipline's language, which aids them in their ability to read and write appropriately in their field(Efstratia, 2014). Cooperative Learning enables students to attain amazing academic success (Qin et al., 1995).

2.6 Cooperative Learning Theory

Collaborative learning is another term for cooperative learning (Jacobs, 2004). As stated by Johnson et al. (1994), corporative learning theoryis the instructional use of small groups. As a result, students can work cooperatively to maximize their own learning and to aid the rest of the team's learning (Johnson and Johnson, 1990). Additionally, (Slavin, 1985) stated that corporative learning and approaches promote youngsters in studying properly. According to the descriptions above, corporative learning entails the group of studies that students conduct with their peer groups, rather than having an awareness of assisting individuals in their studies to ensure their success (Slavin, 2013).

There are eight corporative learning principles: heterogeneous principles, collaborative skills, group economy, simultaneous interaction, equal participation, individual accountability, positive independence, and corporation as value (Hutchinson, 2007). Incorporation and promotion of these elements depend on purposeful actions, encouragement, and the educator's support, which need to be done over an extended period. According to Johnson et al. (1994), the five most important elements for cooperative learning are positive interdependence, individual accountability, face-to-face promotive interaction, social skills, and group processing. Cooperative learning is found to be important in achieving success in education.

2.7 Resource Availability for Online Learning

Online education is facilitated by the use of digital resources and updated technologies (Abou-Khalil et al., 2021). As a result, it requires appropriate hardware such as a computer, laptop, or smart phone and updated software and access to the Internet (Recker et al., 2007). The complexity of delivering e-learning and providing long-term assistance in terms of the technology necessary and access to resources in these areas will affect an individual's aptitude and willingness to adopt online learning (Villaça and Stadler, 2021). The primary prerequisites for online and private education include networking, effective learning, communication aid, and internet platforms (Klíma et al., 2014). Additionally, classrooms, resource persons, and video conferences necessitate considerable attention. Numerous instruments are required for online education at the bare least (Godwin-Jones, 2012).

On the other hand, students experience difficulties adhering to teacher's instructions when they are located in remote places (Hostager, 2014). Students and lecturers both feel alone, and dissatisfaction is experienced when there is a lack of student input and thoughts during lectures. Technical difficulties impact students during lectures, and because they are unable to follow up with the study, they become demotivated to attend the course (Serevina et al., 2021). While teachers receive a lower degree of facial reaction from students, they believe that students have prior knowledge of the material and are not performing at the lecturers' expected level. There is an incompatibility, and the anticipated outcome is not predicted (Mbiydzenyuy, 2020). Technology aided in the surmounting of hurdles during these trying times. However, propose that a robust information technology infrastructure is a precondition for online education. Infrastructure requirements are critical to ensuring uninterrupted service during and after a crisis (Armatas et al., 2003).

In terms of resource availability, both learners and facilitators require a variety of resources (Gunathunga and Hewagmage, 2015), including computer facilities, network functionality, language skills, software tools, and financial viability for hard goods (Ratnapala et al., 2014). Kumari and Jayasinghe (2021), State resources and facilities such as poor internet connectivity, difficulty affording internet service, frequent power outages, and in some places of Sri Lanka, no internet connection at all. At the very least, these infrastructural requirements significantly impact each learner's reachability (Hettiarachchi et al., 2021).

2.8 Conceptual Framework

The following conceptual framework (figure 1) is developed to achieve research objectives based on the literature.

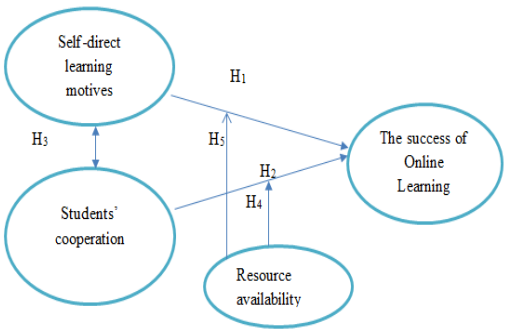

Figure 1: The conceptual framework

Source: Compiled by Author

The model examines how self-direct learning motives and students' cooperation affect the success of online learning among state sector university undergraduates in Sri Lanka and how

does the 'resource availability' weaken or strengthen these relationships

H1: There is a significant positive impact of Self-Direct Learning motives on the success of online learning among state sector university undergraduates in Sri Lanka.

H2: There is a significant positive impact of Student Corporation on the success of online learning among state sector university undergraduates in Sri Lanka

H3: There is a significant relationship between self-directing learning motives and students' corporation in online learning

H4: The resource availability moderates the relationship between self-directed learning motives and the success of online learning

H5: The resource availability moderates the relationship between students' cooperation and success of online learning

3. METHODOLOGY

This research attempts to evaluate the impact of self-direct learning motives and students' cooperation on online learning success in Sri Lankan state universities. Accordingly, following the deductive research approaches, it uses quantitative methodology. 300 respondents were chosen based on non-probabilistic convenience sampling method, covering the population of all state university undergraduates. A self-administered structured questionnaire was used as the data collection instrument. The survey was conducted during September and October of 2021. Online surveys were administered due to difficulties during the Covid 19 pandemic, and out of which 300 undergraduates, 229 were responded, giving a response rate of 76.667 %.

Data were initially checked against missing values and outliers upon receiving the responses. Few questionnaires were omitted which had serious missing values and few others wereimputed with the median (Little and Rubin, 2002). Consistent with the suggestions of Tabachnick et al. (2007), Boxplot and frequency tables were obtained for each item in the survey to detect outliers. As Hair et al. (2013) advised , the cases with outliers were closely observed and, since they were recognized as true responses of the respondents on given 1-5 Likert scale, they were kept in the data set.

Multivariate assumptions were mainly checked through normality. Skewness and kurtosis values of data distribution are widely applied to determine the normality of a dataset. In this method, normality of data distribution is assumed if statistical values of skewness or kurtosis are within the value ± 2.56 (Hair et al., 2013, Field, 2013).Thus, it was recognized that data were normal and within the specified range.

Internal consistency was measured using Cronbach's alpha, and validity was ensured through content validity, construct, and discriminant validity (Sekaran, 2006). Exploratory factor analysis was carried out to ensure the uni-dimensionality nature of the data. Finally, Data analysis is done using descriptive and inferential statistics such as correlation and regression.

3.1 Validation of Measurement Properties and Reliability

Explolatory factor analysis was conducted to measure the validity of each construct. The following table shows the loadings of each factor and the related cumulative frequency of each construct. All the factor loadings were above 0.5 while the majority exceeded 0.7.

Table 1. Component Matrix

Variable		Construct	Factor Loading	Cumulative Frequency
Self-Direct Learning Motives	Learning motivation	LM1	0.66	54.40
		LM2	0.74	
		LM3	0.79	
		LM4	0.79	
		LM5	0.70	
	Planning and implementing	P11	0.75	59.20
		PI2	0.81	
		PI3	0.84	
		PI4	0.69	
		PI5	0.79	
		PI6	0.73	
	Self-monitoring	SM1	0.77	72.31
		SM2	0.89	
		SM3	0.88	
	Interpersonal communication	IC1	0.66	55.75
		IC2	0.65	
		IC3	0.84	
		IC4	0.81	
Students' Cooperation		CL1	0.78	64.59
		CL2	0.83	
		CL3	0.81	
		CL4	0.83	
		CL5	0.77	
Resource Availability		RA1	0.81	68.2
		RA2	0.83	
		RA3	0.84	
The success of Online Learning		OL1	0.74	57.96
		OL2	0.82	
		OL3	0.85	

	OL4	0.64
	OL5	0.72
	OL6	0.77

To check the validity of data convergent validity measurement was checked through the AVE, and all the values were above the minimum level of 0.5 etc (Hair et al., 2013). Kaiser-Meyer-Olkin Measure (KMO) value of independent variables, dependent variable, and moderate variable are higher than 0.5. In addition, all the Sig values of Bartlett's test of Sphericity are less than 0.05. All variables' Average Variance Extracted (AVE) values are higher than the recommended minimum of 0.5. All variables' composite reliability (CR) values are greater than 0.7. The results proved that the measurement scales are reliable and valid.

Cronbach's alpha is widely used to examine internal consistency (Sekaran and Bougie, 2016:224), and was used in this study to test the reliability of the items in each construct. The cut-off point of Cronbach's alpha coefficient of a scale should be above 0.7. As shown in this Table 2, Cronbach's alpha coefficients for all of the study constructs were above 0.7. This suggests that the internal consistency of every construct was within acceptable limits.

Table 2: Summary of Convergent Validity Results and Reliability

Variable	KMO	Bartlett's test of Sphericity	AVE	CR	Cronbach's Alpha Coefficient
Self-Directed learning	0.68	0.001	0.72	0.87	0.91
Students' cooperation	0.84	0.001	0.65	0.94	0.86
Resource availability	0.70	0.001	0.68	0.86	0.76
Success of Online Learning	57.96	0.001	0.58	0.95	0.85

4. RESULTS

The effect of Self-Direct Learning motives on Online Learning success

Linear Regression analysis is conducted to measure the impact of Self-direct learning motives on the success of Online learning. A significant regression equation was found F (1, 225) =512.715, P<0.05, with an R^2 of .695. Based on the beta value and corresponding P-value (β=.861, p<0.05), H1 is accepted, which means that there is a significant positive impact of students' self-direct learning motives on the success of online learning among state sector university undergraduates in Sri Lanka.

The effect of Students' Cooperation on Online Learning success

To meet this objective, the researcher has conducted a linear regression analysis. A significant regression equation was found F (1, 225) =408.315, P<0.05, with an R^2 of .645.Based on the beta value and corresponding P-value (β=.668, p<0.05), H2 is accepted, which means that there is a significant positive impact of Students' Cooperation on the success of online learning among state sector university undergraduates in Sri Lanka.

Relationship between Self-Directing Learning and Students' Cooperation in Online Learning.

To meet this objective, a correlation analysis was carried out (r=.873, p<0.05) which indicates a strong positive relationship between two variables.

The moderating effects of Resource Availability on the relationship between Self-Directed Learning and Online Learning success.

To test the hypothesis whether resource availability moderates the relationship between self-directed learning and success of online learning , a hierarchical multiple regression analysis was conducted. In the first step, two variables were included: self directed learning and resource availability. These variables accounted for a significant amount of variance in the success of online learning, R^2 = .540, F(2, 224) = 266.546, p < .001.

Next, the interaction term between self directed learning and resource availability was added to the regression model, and became significant R^2=.356, F (3, 223) = 234.326 , p <.001. Model 2 with the interaction between SDL and resource availability accounted for significantlyless variance than just SDL and resource availability by themselves, R^2 change = .19, p = .003, indicating that there is potentially significant moderation between SDL and Resource availability on the success of online learning. It means when the needed resources are not available it negatively effects the success of online learning.

4.5 Moderating effects of Resource Availability on the relationships between Students' Cooperation and success of Online Learning.

A hierarchical multiple regression analysis was conducted to test the hypothesis whether resource availability moderates the relationship between students' coorperation and success of online learning.In the model 1, these variables accounted for a significant amount of variance in the success of online learning, R^2 = .470, F (2, 224) = 175.586, p < .001. After introducing the interation term, and became significant R^2=.336, F (3, 223) = 134.326 , p <.001. Model 2 with the interaction term accounted for significantlyless variance than just having only these two variables. R^2 change = .14, p = .001, indicating that there is potentially significant moderation between students cooperation and Resource availability on the success of online learning,

5. DISCUSSION

The purpose of this study is to examine the effect of Self-Directed Learning Motives and Students' Cooperation on the success of online learning among state sector university undergraduates in Sri Lanka, while also taking into account the moderating effect of resource availability. Self-directed learning theory and cooperative learning theory were incorporated to identify the theoretical foundations of the stuy. The study's findings indicate that self-directed learning has a significant favorable effect on online learning success. Similarly, the literature demonstrates that self-directed learning is the most important predictor of academic progress for distance education students (Song and Hill, 2007). Students who are capable of self-directed learning will make online education more accessible and efficient (Kim et al., 2014). Candy (2004) note that it is critical to develop self-directed learning abilities in preparation for online learning. Oladoke (2006) also found a favorable relationship between online learning and self-directed learning.

This study found a positive effect of student cooperation on online learning success among Sri Lankan undergraduates enrolled in state sector universities. According to the literature, cooperative learning benefits students' interpersonal skills and contributes to their capacity to work together when striving to master learning materials or a particular skill when they have previously mastered self-directed learning (Hutchinson, 2007). Cooperative learning enables learners to develop greater social skills (McInnerney and Roberts, 2009), while cooperative learning increases students' involvement (Ivone et al., 2020). According to the literature, instructors may have extra motives for implementing cooperative learning strategies (Nam and Zellner, 2011)

In online learning, the study discovered a positive association between self-directed learning and student cooperation. Similarly, Mentz and Van Zyl (2018) found that allowing students to develop their self-directed learning through mistakes, reflections, collaboration, and independence benefits both students and teachers. Teachers should serve as the primary source of collaboration for students as they begin their self-directed learning processes (Mentz and Van Zyl, 2016). Individuals who have developed self-directed learning skills will demonstrate greater perseverance in their learning and enhanced motivation and engagement in online learning (Bosch, 2017). One of the primary characteristics of self-directed learning is that it enables learners to take ownership of their own education. Cooperate learning can be viewed as a teaching method - an active learning process (Kim et al., 2008) that assists students in taking ownership of their own education (Bagheri et al., 2013). According to (Johnson & Johnson, 2013), the purpose of cooperation is tomake everyone a strong person in his or her own right.' With reasonable certainty, everyone in the team should be involved in developing team goals and identifying instructional materials. Positive interdependence involves everyone. Within the team, members should contribute to the development of team goals and the selection of instructional materials. Students participating in cooperative learning should be able to set appropriate learning objectives and recognize learning materials that are recognizable to them as self-directed learners. Promoting in-person discussions and personalized questions can assist students in identifying their learning requirements and selecting the most effective learning plan for social skills success (Lubbe, 2015). Students can develop their ability to evaluate self-directed learning outcomes through team planning. All of these abilities are also

necessary for a self-directed learner to succeed, as outlined by (Wang et al., 2021).

The availability of resources has a strong moderating effect on the link between self-directed learning motivations and online learning achievement. Similarly, the data indicates that in education, enabling Condition acts as a moderating variable between self-efficacy (SE) and perceived usefulness (PU) (Humida et al., 2021). Providing laptops and continuous, inexpensive, high-speed internet connectivity is critical for equal postsecondary education access, particularly for students from low-income families or distant places(Geith and Vignare, 2008). According to Hayashi et al. (2020), one of the primary impediments to online learning among Malaysian university students is a bad internet connection and limited broadband data (Baticulon et al., 2021). Infrastructure is critical to maintaining uninterrupted service both during and after the crisis (Kim et al., 2020).

6. THEORETICAL IMPLICATIONS

This study contributes to theory by supplementing the existing literature on online learning, self-directed learning, and cooperative learning. Additionally, it demonstrates the beneficial effects of self-directed learning and student collaboration on the success of online education. It was able to develop and evaluate a comprehensive framework for e-learning, particularly in light of the COVID-19 pandemic. This is a new topic of inquiry in light of the changing new normal of a COVID-19 pandemic in Sri Lanka. The study re-establishes the importance of the self-directed learning idea. The revealed moderating effect of resource availability on the relationship between self-directed learning motives, student cooperation, and online learning performance, provides an exceptional case for additional research and theory development.

7. PRACTICAL IMPLICATIONS

Additionally, the current finding has major practical consequences. Notably, the current study is critical for higher education institutions to initiate or revise their online learning programs during the COVID-19 epidemic, thereby precipitating a paradigm shift in learning and education. The findings indicated a high, statistically significant correlation between self-directed learning and student cooperation. It will assist academics in developing strategies and problem-solving techniques for conducting online learning. The suggested study utilized self-directed learning as a lecture technique, which can be implemented into lecturer training programs and curricula to increase learning activities. Students must be able to plan their studies and educational programs prior to the start of their academic term and higher education, as they must be able to organize their studies and educational programs. Additionally, teachers can encourage students to design a plan for incorporating self-directed learning into their regular class. Currently, many educational institutions have integrated the learning curriculum as a result of technological advancements. Learning management systems must be enhanced to facilitate online relationships.

Positive relationships and interactions amongst pupils should be fostered. In terms of training, teachers must be encouraged to structure lessons in such a way that relationships are fostered. Changing your online teaching experience through seminars is an excellent approach to accomplish this. The study's findings can be used to

develop a more effective internet strategy for the epidemic phase and in the future. Online learning and mixed learning are areas that learning solution providers should investigate deeper. Additionally, this study assists governments, legislators, and education service providers in comprehending the antecedents of e-learning and their relationship to learning in order to create pertinent policies. Stakeholders should be aware of the infrastructural impediments affecting students' online education. The considerable interaction effect of resource availability on self-directed learning motivations and student collaboration necessitates immediate effort to ensure that e-learners have a suitable foundation for successful online learning.

8. LIMITATIONS AND FUTURE RESEARCH DIRECTIONS

There are a few drawbacks to this study. It has been limited to state universities, ignoring other educational institutions such as private higher education institutions and elementary and secondary schools. Additionally, the study was limited to eliciting comments from students without regard for the educator's perspective on online education. Additionally, the study could only get responses from a sample of 266 individuals, and data were collected during a limited time span, limiting the study to a single cross sectional study. Additionally, due to travel limitations and other problems associated with the covid 19 epidemic, data gathering methods were confined to online questionnaires.

Thus, future researchers can validate the model with postgraduates or high school students in a variety of geographic locations. Additional research can be conducted from the facilitators' (teachers') perspective. A longitudinal data collecting method is more appropriate for explaining the impacts of online learning on a large sample.

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10. CONFLICT OF INTEREST

The authors declare no conflicts of interest

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