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E-learning in India and Sri Lanka: A Cross-Cultural Study

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ABSTRACT

E-learning is a planned effort towards providing interactive and experiential learning having flexibility in terms of time, place, pace, participation and accessibility. Globalization has set the stage for a social transformation of the world economy driven by technological innovation, emphasizing knowledge-based processes. While the tertiary education enrolments in wealthy nations have gone up incrementally, the same cannot be said to be right about developing economies. E-Learning can streamline enrolments to higher education, in developing nations by being a cost-effective and flexible alternative. The objective of this paper is to draw attention to the similarities in the national culture of these two countries and compare students' perception on e-learning in India and Sri Lanka along eight dimensions viz., viability, dependability, flexibility, inclusivity, power, pertinence, challenge and equitability. The results reveal that e-learning is equally popular among students from both countries, and they have a high perception score towards e-learning on each of the measured eight dimensions. Hence results are indicative of an opportunity of tapping the potential of e-learning in reaching out to a broader audience of underprivileged students and onboarding them into the knowledge economy.

Keywords: E-learning, Viability, Dependability, Flexibility, Inclusivity, Pertinence, Challenge, Power, Equitability

Ⅰ. Introduction

Developing nations like India and Sri Lanka are in the midst of a technological as well as a demographic transformation. The latest report suggests that in both countries more than 41% of the population belong to 25-54 years of age which is the working age population (Mundi, 2020). In the era of industry 4.0 that is driven by AI, machine learning, internet of things and robotic surgeries there is an urgent need to embrace technology to meet the rising demand of job requirements. According to the digital

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2020 report of Sri Lanka issued in Jan 2020, the internet penetration in Sri Lanka was 47%. The Atlas VPN research team estimated that more than half the Indian population accessed the internet regularly. Early in the beginning of 2020 India had an internet penetration rate of 50%. The penetration rate defines the extent to which internet is recognized and bought by the customers. The forecast predicts that, on average, people surfing the internet in India will increase by 9.18% per year until 2025 (John, 2020). These statistics indicate a promising internet economy. This paper tries to assess the popularity of e-learning in both these countries to draw some inferences on how e-learning could be used as a vehicle for transforming the current generation of digital natives into global citizens. E-learning refers to student-centred learning rather than faculty-centred learning and includes online interaction between learner and learner or between learner and teacher. E-Learning is thus a planned effort towards providing interactive and experiential learning having flexibility in terms of time, place and pace, participation and accessibility. The best resources are made available to the learner's doorstep through e-learning and personalized training may be provided to suit the learner needs.

1.1. The Education Profile of India and Sri Lanka

Comparing the educational profile of India and Sri Lanka, it must be noteworthy to say that Sri Lanka has the highest reported youth literacy rate in South Asia at 98.77 percent, as compared to 89.66 percent in India (D'Souza, 2017). In spite of the high literacy rate, the country still had relatively low higher education enrolments. According to a report by University World News, Sri Lanka's 15 state universities admitted only 30,000 students annually, out of the 330,000 who sit the university entrance (A-Level) examination every year. Due to a limited number of seats available in universities a large number of students miss the opportunity of obtaining higher education (Alwis, 2020). The Sri Lankan Government in the past decade had aspired to undertake several measures to improve the tertiary level student enrolments (The PIE News, 2013). According to a report issued by InBrief (2012), the Sri Lankan Government was always keen on undertaking initiatives to integrate technology into learning in educational institutions as well as to equip staff and partner with the private sector to share best practices.

The higher education sector in India has grown since independence and has increased in institutional capacity as well. Nanda (2019) reported India's student population in higher education grew by 800,000 in 2018-19 as against the previous year taking the absolute number of such students to 37.4 million, according to the human resource development ministry. Despite the considerable progress, the student enrolments in India in higher education are still well below the world average of 26%. Moreover, this expansion has been extremely uneven, resulting in the poor quality and research (Varghese, 2019).

The data for the current study was collected from the southern state of Kerala, in India. although the respondents belonged to one of the most literate Indian states, Kerala. This state has made a significant increase of 3% in its literacy rate, increasing from 93.91% in 2011 to 96.2% in 2020 (ONmanorama, 2020). Kerala, in spite of having reported a high literacy rate in the year 2020, lags behind other states when it comes to higher education enrolments (Basheer, 2020).

1.2. Culture and its Influence on Technology Acceptance

Hofstede defines culture as the collective programming of the mind that differentiates one category of people and members of the group from another where the category may imply a nation, gender, organization or even occupation (Belyh, 2019). Hofstede has provided an in-depth-insight on the various dimensions of culture accepted by a wide variety of disciplines (Corbitt et al., 2004; Hofstede, 1991; Sondergaard, 1994).

1.3. Influence of Culture on Technology Adoption

Several studies have reported the impact of culture dimensions on the learner capabilities to adopt and learn over technology-aided sources of learning. Though high-power distance is related to lower learnability in e-learning low uncertainty avoidance has been associated with faster learning through e-learning. High individualism and high masculinity are related to higher usability of e-learning (Adeoye, 2007; Steyn, 2006; Zaharris, 2001). Further there is evidence that high context cultures engage better in e-learning (Jayatilleke, 2016). The concept of high context cultures was first coined by anthropologist Edward T Hall in his book 'The Silent Language'. High context cultures are those that are usually relational and collectivist, and which mostly highlight interpersonal relationships (Hall, 1959).

Ⅱ. Importance of the Study

Researchers have debated that e-learning is capable of widening access to education (Engelbrecht, 2003); (Fry, 2001), of improving social and educational equity (Gladieux, 1999); of reducing cost (Salmon, 2005); of improving quality of learning (Anderson, 2009), of providing flexible learning (Bates, 2001; Bates, 2005; Collis and Moonen, 2001; Sun et al., 2008) and of maintaining interactive learning. The Internet serves as a value-neutral tool that has the ability allow individuals to overcome the barriers of traditional restricted spaces and gain uninterrupted access

<Table 1> Culture Comparison Between India and Sri Lanka

Dimension of Culture	Meaning	India	Sri Lanka
Power Distance	Is the extent to which unequal distribution of power is accepted by members within the country	High	High
Individualism	degree of interdependence among the members of society	Moderate	Moderate
uncertainty avoidance	extent to which members in the country feel threatened by uncertain situations	Moderate to Low	Moderate to Low
long-term orientation	linking the past experience when dealing with current problems	Moderate	Moderate
Masculinity	visual display of power and success	High	Low
Indulgence	the extent to which people try to control their desires and impulses	Low	No score available

Note: https://www.hofstede-insights.com/product/compare-countries

to learning (Anderson, 2003). Azyabi (2018) opined that Information technology partially mediated the relationship between knowledge sharing and academic performance of higher education students. Researchers have widely suggested that online technologies can help address issues of educational equity and exclusion of underprivileged, by allowing democratic and affordable educational opportunities. The national governments and non-governmental agencies who fund educational endeavours in developing countries have advocated the use of new technologies to reduce the cost of reaching and educating a large number of children and adults who are currently missing out on education (Malhan and Gulati, 2003). Given the similarities in the cultural context of the two countries this study aims at assessing and comparing the students' perception on e-learning among higher education students in India and Sri Lanka. The researchers used eight popular characteristics of e-learning to gather insights on the subject, viz., viability, dependability, flexibility, inclusivity, power, pertinence, challenge and equity.

Ⅲ. Objective of the Study

Higher education institutions are thrust upon with the urgent need to embrace e-learning due to global technological disruptions to cater to the needs of global learners. E-learning would be a useful means of integrating the educational resources in order to maintain their global standards. The internet has made available resources for research and learning, not only for teachers but also for students (Richard, 2009). E-learning may be an alternative means to maximize reach among the target audience. To meet the need of providing affordable tertiary education to the potential workforce and lead the way to a smarter economy, developing nations like India and Sri Lanka must consider this means with utmost care. This paper aims at ascertaining the difference in perception on e-learning among higher education students in India and Sri Lanka along eight critical dimensions viz., viability, dependability, flexibility, inclusivity, power, pertinence, challenge and equity.

Ⅳ. Conceptual Background

4.1. Drivers of Successful E-Learning

Previous research done under different task environments has suggested a variety of factors affecting user satisfaction with e-Learning. A survey conducted to investigate the critical factors affecting learners' satisfaction on e-learning revealed that learner computer anxiety, e-learning course flexibility, e-learning course quality, perceived usefulness, perceived ease of use, and diversity in assessments were among the critical factors affecting learners' perceived satisfaction (Sun et al., 2008). This study also reported that the instructor as well as the management and technical support features of the e-learning program were crucial to the success of the program. Educational institutions may need to make conscious efforts to improve students' perception about online education by informing the stakeholders about its advantages, disadvantages, and drivers of success (Anchalee Ngampornchai, 2016). Since E-learning is not limited by time and space it can take place at home, at work, or anywhere via computers or mobile devices connected to the Internet and the university's E-learning system (Bhuasiri et al., 2012; Kilburn et al., 2014). This is particularly convenient for students who are learning and working at the same time (Wisloski, 2011).

4.2. Factors Influencing Students' Perception on E-Learning

E-learning is found to be beneficial in enhancing student capability of processing relevant information, interpreting the same appropriately and using it for suitable decision making, thereby improving the overall quality of the teaching learning processes (Drew, 2012). Information System Success/Impact Model is one of the most useful models for measuring the impact of e-learning system on individuals (DeLone, 2003). Knowing the positive effects that e-learning has on learners, it is important to assess students' motivation to access this mode of learning (El-Seoud, 2014). The instructor in an e-learning environment may need to personalize strategies catering to individual students' needs to improve their engagement levels though it may be difficult to gain correct understanding of the student's motivation to learn owing to the absence of personal interactions (Sun et al., 2008).

4.3. Theoretical Background

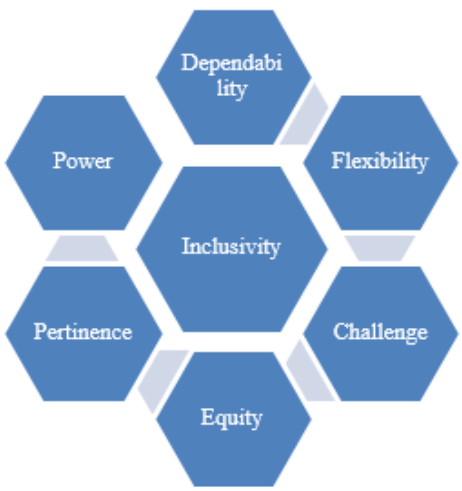
Students may be guided by different motivators in their choice of e-learning programs. To begin

<Table 2> Previous Research on Factors Affecting E-learning

Reference	Details	Results
(Gamage, 2014)	Studied factors affecting effective e-learning from the perspective of learners	Out of the ten factors considered in the study the top five were interactivity, collaboration, motivation network of opportunities and pedagogy.
(Zhang, 2006)	Studied the impact of instructional video in e-learning effectiveness	The provision of interactivity improved the effectiveness of e-learning
(Liaw, 2008)	Studied the students' perceived satisfaction, behaviour intention and e-learning effectiveness	The study found that interactivity, multimedia instruction and quality of e-learning were associated with e-learning effectiveness
(Wang, 2003)	Developed a model to explain factors affecting e-learning	The study suggested a model comprising of four factors affecting e-learning which included learner interface, learning community, content and personalization
(Mohammad Ali, 2018)	Studied e-learning effectiveness as well as factors leading to effectiveness of e-learning	The study used eight determinants to measure the e-learning effectiveness including contents of learning issues, usability of the information, faster learning, quick responsiveness, learning quality, time and cost friendly, usability outside of the class and appropriateness for working independently.
(Tseng, 2011)	Investigated the factors affecting e-learning effectiveness in the times of uncertainty.	The study found that quality of the e-learning system and learner attractiveness were the most significant measures of e-learning effectiveness. The study also reported quick response from the teacher and reduced wait times as factors leading to improved effectiveness.
(Kaurav, 2019)	The study aimed at ascertaining the factors affecting e-learning perception and its acceptance	The study found that e-learning g depended on four critical factors viz., E-learner Competency, External Influence, System Interactivity, and Social Influence.

Note: secondary data

with, the primary factor is the students' knowledge and skill in computer applications which can drive the use of technology in learning (Harandi, 2015; Lofstrom, 2007). While reviewing the literature related to e-learning, the researcher came across several attributes of e-learning affecting students' perception. Based on the extensive literature review of recent research on the subject as shown in <Table 1> this study used eight dimensions viz., viability, dependability, flexibility, inclusivity, power, pertinence, challenge and equity to assess student perception on e-learning acceptance.



<Figure 1> Factors Affecting E-Learning

Dimension 1-Viability: E-learning has been considered to be an effective alternative to face-t o-face learning as it helps save time and there are no significant differences found in the learning outcomes when compared to traditional learning environments (Kratochvil, 2014). It has gained momentum in usage among students because of its accessibility, state of the art learning, training ease as well as cost-effectiveness (Ahid Farid, 2018). E-Learning has proved to serve as an extremely viable cost-saving solution to learning when compared to face-to-face learning, provided it is designed appropriately to provide engaging and interactive learning environment (Jensen, 2007). There are authors who have expressed concerns over social democratization of knowledge when developing parallel e-learning institutions alongside traditional universities, so that a viable global civil society may be set up to enable developing countries in Asia, South America and Africa. This may be beneficial to contribute and share the benefits of knowledge explosion in an equitable measure (Raza et al., 2006). Researchers have claimed that e-learning can be a viable alternative teaching method to promote information literacy (Kratochvil, 2014).

H1a: The score for viability of e-learning among students in India and Sri Lanka is higher than the benchmark.

H1b: The score for viability of e-learning among students in India and Sri Lanka are the same

Dimension 2-Dependability: System dependability has been defined as the capability of the system to be trustworthy in a manner that it is highly available to its legitimate users while ensuring a high degree of integrity to them (Bo Chen, 2009). The users' perception on cost, their computer self – efficacy as well as availability of resources along with proper training adoption have been earmarked as vital determinants of dependable e-learning environments (Zainab et al., 2015).

H2a: The score for dependability of e-learning among students in India and Sri Lanka is higher than the benchmark.

H2b: The score for dependability of e-learning among students in India and Sri Lanka are the same

Dimension 3-Flexibility: E-learning systems are flexible because of the ability of these systems to be easily integrated into other systems as well as being adaptable to other systems (Jahn, 2013). In addition to this capability, e-learning allows users to access content at their own convenience (Kratochvil, 2014). Another aspect of system flexibility is the ability of the e-learning content to be customized as per user needs. Research shows that such e-learning systems may be personalized to suit the varying needs of disabled students by the use of ontology – based agents. Ontology driven disability aware personalized e-learning systems are said to be flexible enough to provide control and freedom to users to control their learning (Julius and Nganji, 2013)

H3a: The score for flexibility of e-learning among students in India and Sri Lanka is higher than the benchmark.

H3b: The score for flexibility of e-learning among students in India and Sri Lanka are the same

Dimension 4-Inclusivity: Research reveals the inclusive nature of e-learning technologies and suggests that it serves culturally diverse group of e-learners. Technologies aided by a variety of social media support 24/7 learning needs of all ages (Weir, 2013). E-learning may be efficiently implemented in inclusive development of higher-education depending on the systemic institutional environment comprising of the collaboration between state and university level educational context (Besarion Meskhi, 2019).

H4a: The score for inclusivity of e-learning among students in India and Sri Lanka is higher than the benchmark.

H4b: The score for inclusivity of e-learning among students in India and Sri Lanka are the same

Dimension 5-Power: E-learning systems have paved the way for flexi-time learning which is student-centred. They are equipped with features of traditional teaching apart from being mentor – enabled. Studies show that these systems have been instrumental in improving research as well as computing skills among students (Bose, 2003). E-learning platforms are capable of providing semantic rich information by integrating digital library technologies and ontology- based knowledge representation. These digital library technologies have powerful and flexible content management and access functionalities which when coupled with ontology help teachers and students to link course material with the learning objectives (He et al., 2010).

H5a: The score for power of e-learning among students in India and Sri Lanka is higher than the benchmark.

H5b: The score for power of e-learning among students in India and Sri Lanka are the same

Dimension 6-Pertinence: E-learning has clear and precise relevance in the current context where businesses want to provide learning to large number of employees in geographically dispersed regions. As the world increasingly turns into a global marketplace, e-learning serves as a unified platform of learning for both local and global learning (Alison, 2007). E-Learning architectures may be designed to suit the context which could either be to provide sole e-learning instruction or just to augment learning to supplement the classroom teaching. Students may be satisfied differently in different learning contexts hence it is important that instructors are mindful of these student concerns (Shahid Farid, 2018). Park (2020) while comparing the learning experience of learners on an information security education pro-

gram conducted online and offline found the online program showed better outcomes than the offline program.

H6a: The score for pertinence of e-learning among students in India and Sri Lanka is higher than the benchmark.

H6b: The score for pertinence of e-learning among students in India and Sri Lanka are the same

Dimension 7-Challenge: Investment in information and communication technologies (ICT) for building e-learning systems is directed towards improving the quality of human capital. Various challenges are involved in traditional face-to-face teaching-learning vis-à-vis the online learning mode. Blended modes of learning with the right mix of face-to-face and online learning could be useful (Häkkinen, 2005). From the user perspective, computer anxiety, physical discomfort, information overflow and prompt response are reported as some of the perceived challenges (Coetzer and Mapulanga, 2020). Kim (2018) while studying individual differences in online privacy concerns reported that women and educated people were more concerned about online privacy issues.The paper also commented on some personality traits that led individuals to be more concerned about online privacy. Another challenge with regard to e-learning platforms is their assessment. E-learning systems need to consider issues relating to organization, pedagogy as well as technology-in-use while assessing the performance. Hence a multi-dimensional assessment of e-learning systems may be done using the balanced score card method which is a strategic performance measure. In one of the studies the authors suggest a combination of balanced score card (BSC) and the fuzzy analytic hierarchical process (FAHP) approaches for such assessments (Jami Pour et al., 2017).

H7a: The score for challenge of e-learning among students in India and Sri Lanka is higher than the benchmark.

H7b: The score for challenge of e-learning among students in India and Sri Lanka are the same

Dimension 8-Equity: E-learning systems are one of the most researched topics in the past, but most of them focus on the technical aspects. When such user-centric and data-driven systems are to be designed for higher education, attributes like multiculturalism, efficiency and adaptability must be treated as important parameters for the users (Stefani, 2006). Studies have suggested the potential of e-learning in building quality human resource in higher education especially for developing nations (Sharma, 2007). E-learning has a definitive impact on a wide spectrum of people including old and young, creative content developers as well as community at large where all these entities are united by a common purpose of socio-educational development and sustainability (Maji, 2008).

H8a: The score for equity of e-learning among students in India and Sri Lanka is higher than the benchmark.

H8b: The score for equity of e-learning among students in India and Sri Lanka are the same

Ⅴ. Research Methodology

A descriptive research was adopted for this study which falls into a conclusive design. Data was collected on the basis of these eight variables. The sample size was estimated by considering the variance in

the data. A sample size of 212 was estimated by accounting for the maximum variation in the data. The researchers circulated 125 questionnaires each, designed through google forms in both the countries. A total of 222 responses were collected for the study which included 122 students enrolled in higher education institutions from Kerala, India and another 100 responses from students from similar higher education institutions in Columbo, Sri Lanka. Convenience sampling technique was used for data collection.

As discussed in the literature review section of the paper several studies on the subject were referred with a focus on understanding key attributes of e-learning driving students' perception. This process enabled the researcher to finalize eight key dimensions of e-learning used in the study. These eight dimensions were viability, dependability, flexibility, inclusivity, power, pertinence, challenge and equity. The validated scales to measure these eight dimensions were adopted from (Trakru, 2017).

5.1. Survey Questionnaire

An online survey was undertaken to collect the

<Table 3> Measurement Items

Variable	No. of Statements	Description	Sample Questionnaire Items	Reference
Viability	22	Describes readiness to accept e-learning	V1: e-learning is an engaging means of learning V2: e-learning courses are interactive V3: online material is accessible and useful	(Ahid Farid, 2018)
Dependability	12	Refers to easy-to- use and user-friendly means of learning	D1: I am confident about using e-learning D2: E-learning programs are user-friendly D3: it is convenient to use e-learning to learn	(Zainab et al., 2015)
Flexibility	10	Refers to freedom to choose when where and how to learn	F1: e-learning allows for flexible learning F2: E-learning is worthwhile	(Kratochvil, 2014)
Inclusivity	8	e-learning allows for overcoming barriers that limit presence, participation and performance	I1: e-learning provides comprehensive learning resources I2: e-learning is very workable	(Besarion Meskhi, 2019)
Power	9	Refers to the Capacity to improve overall quality of living	Po1: e-learning empowers learners Po2: e-learning improves technical competence	(He et al., 2010)
Pertinence	10	Refers to relevance of e-learning to a diverse group of learners	Pe1: e-learning can suit varied needs of learners Pe2: learning becomes effective through e-learning	(Shahid Farid, 2018)
Challenge	3	Describes the obstacles faced by learners and e-learning content developers	C1: e-learning is challenging for learners and content creators	(Coetzer and Mapulanga, 2020)
Equity	5	Describes the capability of e-learning to provide classroom equity	E1: e-learning courses are culturally fair E2: e-learning courses are easy to learn	(Maji, 2008)

Note: Secondary data

data and test the hypothesis. The questionnaire items for all variables are based on existing studies. Each statement in the instrument was rated by the respondents on a five-point Likert scale of 1 to 5 where one represented strongly disagree or the most negative opinion and 5 represented strongly agree or most positive opinion. The <Table 3> shows the variables, definitions, and questionnaire items which were considered to collect responses.

5.2. Sampling and Data Collection

Students in higher education institutions in Sri Lanka and Kerala, India formed the population of this study. The sample size was estimated by considering the variance in the data. A sample size of 212 was estimated by accounting for the maximum variation in the data. One hundred and twenty-five questionnaires each were circulated in both the countries. An equal number of 150 google forms each were circulated among Indian and Sri Lankan students. A100 correctly filled in responses were received from Sri Lanka and 122 responses were received from students in India.

Ⅵ. Data Analysis and Findings

The sample comprised of 100 respondents from Sri Lanka and 122 respondents from India as described in <Table 4>. A total of 56 male and 66 female post-graduate students responded to the survey from India and 52 female and 48 male post-graduate students from Sri Lanka were part of the survey. 25% of the respondents from India belonged to the rural population, about 58% belonged to the semi-urban areas and about 18% belonged to the urban population while in case of Sri Lanka the sample comprised of 30%, 45% and 25% hailing from rural, semi-urban and urban regions respectively as shown in <Table 5>.

Each of the hypothesis proposed in the study was tested using a One-sample t-test. (Gerald, 2018) One-sample t-test is used to compare a sample mean with a specific test value. It can also be used to compare a sample mean with a specific hypothesized population mean to test any significant differences. In this study, one-sample t-test was used to assess whether the sample means were the same as the test mean and further to analyse whether the means of samples from India and Sri Lanka had any significant differences. <Table 6> summarizes the scale used to measure each of the sub-constructs. It also depicts the number of statements used to measure each dimension, the minimum and maximum values obtained for each sub-scale, the test mean value and the actual means for India and Sri Lanka.

Dimension 1-Viability: It was constituted of factors like feasibility of e-learning, its engagement level, interactivity as well as its accessibility. It was measured using twenty-two Likert type statements each on a five-point scale and the test mean value was found

<Table 4> Gender of Respondents

Country	Male	Female	Total
India	56	66	122
Sri Lanka	48	52	100
Total	104	118	222

Note: Primary Data

<Table 5> Location of Residence of the Respondents

Country	Rural	Semi-Urban	Urban	Total
India	30	70	22	122
Sri Lanka	30	45	25	100
Total	60	115	47	222

Note: Primary Data

<Table 6> Description of each sub-construct used to assess student perception on E-Learning

Dimension	No. of Statements	Minimum	Maximum	Test Mean	Sample mean India	Sample mean Sri Lanka	Decision
Viability	22	22	110	66	76.99	78.50	H1a: Accepted
Dependability	12	12	60	33	38.21	38.75	H2a: Accepted
Flexibility	10	10	50	30	48.97	49.50	H3a: Accepted
Inclusivity	8	8	40	24	28.48	29.89	H4a: Accepted
Power	9	9	45	27	30.53	31.72	H5a: Accepted
Pertinence	10	10	50	30	35.13	35.27	H6a: Accepted
Challenge	3	3	15	9	9.31	9.37	H7a: Accepted
Equity	5	5	25	15	17.36	17.35	H8a: Accepted

Note: primary data

to be 66, calculated for a scale with a minimum score of 22 and a maximum score of 110. While the actual mean for viability among students from India was found to be 76.99 and that for students from Sri Lanka was found to be 78.58. The score for viability for students from both the countries were found to be much higher than the test mean value and this difference was statistically significant.

Dimension 2-Dependability: This dimension was constituted of factors like e-learning efficacy, user-friendliness and convenience. A total of twelve Likert statements were used to measure this variable and the test mean score was found to be 33, calculated for a scale with a minimum score of 12 and a maximum score of 60. While the actual mean for dependability among students from India was found to be 38.21 and that for students from Sri Lanka was found to be 38.75. Both the means were found to be significantly different and higher than the test mean.

Dimension 3-Flexibility: This dimension was constituted of factors like flexibility and worthwhileness. A total of ten Likert type statements were used to measure this dimension. The test mean score was found to be 30, calculated for a scale with a minimum score of 10 and a maximum score of 50. While the actual mean for flexibility among students from India was found to be 48.97, the same for students from Sri Lanka was found to be 49.50. Both the means were found to be higher and varied significantly from the test mean. The students from Sri Lanka had a score much higher than that of students from India.

Dimension 4-Inclusivity: This dimension was constituted of factors like comprehensiveness and workability. This variable was measured using eight Likert type statements. The test mean was found to be 24, calculated for a scale with a minimum

score of 8 and a maximum score of 40. While the actual mean for inclusivity among students from India was found to be 28.48 and that for students from Sri Lanka was found to be 29.89. Both these scores were found to be higher and varying significantly from the test mean score.

Dimension 5-Power: This dimension was constituted of factors liked empowering and technical competence. It was measured using nine Liker type statements. The test mean for power dimension was found to be 27, calculated for a scale with a minimum score of 9 and a maximum score of 45. While the actual mean for power among students from India was found to be 30.53 and that for students from Sri Lanka was found to be 31.72. Both the means were found to vary significantly from the test mean. The mean score of the Sri Lankan respondents was much higher than that of the Indian respondents.

Dimension 6-Pertinence: This dimension was constituted of two factors viz., suitability and effectiveness. It was measured using ten statements. The test mean for pertinence was found to be 30, calculated for a scale with a minimum score of 10 and a maximum score of 50. While the actual mean for pertinence among students from India was found to be 35.13 and that for students from Sri Lanka was found to be 35.27. Both the means were found to vary significantly from the test mean and were much higher than the same.

Dimension 7-Challenge: This dimension was constituted of a single factor 'challenging' and was measured using three Likert type statements. The test mean for challenge was found to be 9, calculated for a scale with a minimum score of 3 and a maximum score of 15. While the actual mean for pertinence among students from India was found to be 9.31 and that for students from Sri Lanka was found to be 9.37 both were found to vary significantly from the test mean and were higher than it.

Dimension 8-Equity: This dimension was constituted of factors like culturally fair and easy to learn. It was measured using five Likert type statements and the test mean was 15, calculated for a scale with a minimum score of 5 and a maximum score of 25. The actual mean for equitable among students from India was found to be 17.36 and that for students from Sri Lanka was found to be 17.35. Both the mean scores were found to significantly vary from the test mean and were found to be higher than the test mean.

The <Table 7> depicts a comparison of perception scores for students from India and Sri Lanka for

<Table 7> Assessment of Student Perception on E-Learning

Variable	Test Value	Average Score India	Level	Average Score Sri Lanka	Level
Viability	66	76.99	High	78.5833	Very High
Dependability	33	38.21	High	38.75	High
Flexibility	30	48.97	Very High	49.50	Very High
Inclusivity	24	28.48	High	29.895	High
Power	27	30.53	High	31.729	High
Pertinence	30	35.13	High	35.2708	High
Challenge	9	9.319	High	9.375	High
Equity	15	17.3607	High	17.35	High

Note: primary data

<Table 8> Comparative evaluation of Student Perception on E-Learning

Variable	Nationality	*N*	Mean	*t* value	Significance	Inference
Viability	Indian	122	76.9918	-.611	.542	H1b: Rejected
	Sri Lanka	48	78.5833			
Dependability	Indian	122	38.2131	-.402	.688	H2b: Rejected
	Sri Lanka	48	38.7500			
Flexibility	Indian	122	48.9672	-.956	.341	H3b: Rejected
	Sri Lanka	48	50.6042			
Inclusivity	Indian	122	28.4836	-1.43	.152	H4b: Rejected
	Sri Lanka	48	29.8958			
Power	Indian	122	30.5328	-1.09	.275	H5b: Rejected
	Sri Lanka	48	31.7292			
Pertinence	Indian	122	35.1311	-.129	.898	H6b: Rejected
	Sri Lanka	48	35.2708			
Challenge	Indian	122	9.3197	-.149	.882	H7b: Rejected
	Sri Lanka	48	9.3750			
Equity	Indian	122	17.3607	.010	.992	H8b: Rejected
	Sri Lanka	48	17.3542			

Note: primary data

all the eight dimensions

The results reveal that the students from both the countries perceived e-learning to be highly beneficial along each of the eight dimensions considered in the study. The Sri Lankan respondents had a greater positive response to e-learning for its viability, challenge, inclusivity, flexibility, pertinence and power. The Indian respondents too had a similar opinion with a slightly more positive score on equity dimension of e-learning. It can be inferred from the <Table 6> that the perception scores of students from Sri Lanka were higher than the scores of students from India.

An Independent sample T-test was used to test if students' perceptions on the eight dimensions of e-learning in the two countries varied significantly. Independent samples t-test is used to compare two groups whose means are not dependent on one another (Gerald, 2018). <Table 8> shows the results of this test, and it was found that none of these differences were significant.

Ⅶ. Discussion

The results of the study clearly show that there are no significant differences in the e-learning perception among students from both the countries considered for the research. It is noteworthy here to mention that the two countries are similar to a great extent on different cultural dimensions as well. The analysis of the survey data showed that students from Sri Lanka had a greater mean score for all seven out of eight dimensions of e-learning, while equity was the only dimension where Indian students had a slightly higher mean though these differences were

not statistically significant. As the students from both India and Sri Lanka have been found to be equally enthusiastic about e-learning it may be used as evidence for underlying growth potential of e-learning market in both India as well as Sri Lanka. Given the similarities in the cultural context of the two countries as discussed in the introductory paragraphs of the manuscript and the result of the survey imply that the e-learning eco-system in the two countries could reap great deal of success if government/private educational partners as well as educational institutions could use these results to strengthen this mode of learning.

7.1. Originality/Value

This paper provides valuable insights into the students' perception of e-learning, especially in higher education in these two countries. It focuses on eight dimensions of e-learning that could particularly improve the effectiveness of a technology-enabled model of learning. While previous research may have emphasized on the various barriers to technology adoption this paper highlights the culture linked traits of students in India and Sri Lanka that lead to their high perception on each of the eight dimensions of e-learning considered in the study. The study found that India and Sri Lanka (both high context cultures) had no significant difference in the student perception of e-learning and these scores were significantly high. This positive perception is indicative of a massive opportunity for educational managers and policymakers. The paper concludes that e-learning would definitely pave the way forward towards improving tertiary level student enrolments in the developing nations and help achieve sustainable socio-educational development.

7.2. Limitation and Future Research

The current research rates student perception on e-learning along eight dimensions but does not statistically validate the culture perception of the respondents and gives little room for a discussion on the various impediments in the use of technology in education from the student perspective. A similar study to understand the teachers' perception on e-learning may help to further explain and generalize the cultural context and its link with technology adoption. Issues like computer literacy and English language proficiency of the people and the level of access to computers and the Internet along with the supporting infrastructure are barriers which need to be alleviated to bridge the digital divide. An in-depth assessment of these issues could be subject for future research. Moreover, this study reports its findings based on responses from a limited number of students in these two countries; therefore, the generalizability of the findings may not be feasible. Further research on these dimensions with larger samples picked from more diverse population would enable education managers and policymakers to take appropriate action.

Ⅷ. Conclusion

The traditional instructor-led classroom teaching based on book learning was a system to gain vast knowledge for generations. However, the changeover to the e-learning system allows for a change in the educational paradigm and activities, thus creating a new philosophy regarding learning. E-learning is incorporated in the curricula of professional institutions in both India as well as Sri Lanka and its usage in the traditional institutions is coming

up. Studies have pointed out the importance of technological know-how, self-efficacy, individual attitude and motivation as important factors in students that lead to e-learners' readiness. This study has discussed at length the learners' perception on eight positive dimensions of e-learning and how the similarities of the two high context cultures in both India and Sri Lanka may lead to the greater usability and learnability over technology enabled e-learning platforms. These findings could serve as beneficial inputs to educational managers and policy-makers to strengthen the e-learning user-base in the region. It is noteworthy, that effective e-learning can improve performance on core subjects and foster the development of varied skills. The results of this research reveal that the higher education student's perception on e-learning among the respondents from both these countries are highly positive and they consider it be a positive change in the changing educational paradigms where learning can take place over both traditional & technology-enabled means using a hybrid approach.

According to industry forecasts the e-learning market worldwide would surpass 243 billion dollars by 2022 (Duffin, 2020). This research suggests that the high context cultural background to which the two countries belong guides the readiness of students to adopt e-learning. The paper reveals that both India and Sri Lanka have similar results. Given the rapid development of internet penetration and people willingness to buy technology, e-learning could lead the way forward towards inclusive education. Both India and Sri Lanka are grappling to improve their tertiary level student enrolments and e-learning could serve as a tool for mitigating this problem. An in-depth study of the current global technologies, content delivery methods and services which would help in setting up of virtual learning platforms with greater ease & better penetration and the role of cultural context in technology acceptance may be taken up in the future. Issues including the model of teaching, content preparation as well as built-in features for delivery will need to be customized to suit varied user needs.

<References>

[1] Adeoye, B. W. (2007). The relationship between national culture and the usability of an e-learning system. *International Journal on E-Learning, 6*(1), 119-146.

[2] Alwis, D. D. (2013, June 29). New technical universities to fill the skills gap. *University world News*, https://www.universityworldnews.com/post.php?story=20130626 1548454.

[3] Alwis, D. D. (2020, February 20). Minister agrees push to attract foreign branch campuses. *University World News*, https://www.universityworldnews.com/post.php?story=20200206134629885.

[4] Anderson, G. D. (2003). *E-learning in the 21st century: A framework for research and practice*. London: Routledge/Falmer. doi:10.4324/9780203166093.

[5] Anderson, T. (2009). Towards a theory of online learning. In T. Anderson (Ed.), *The theory and practice of online learning* (2nd ed., pp. 45-74). Athabasca: Athabasca University Press.

[6] Azyabi, N. G. (2018). The role of IT usage in mediating the relationship between knowledge sharing and academics performance. *Asia Pacific Journal of Information Systems, 28*(3), 167-182.

[7] Basheer, M. (2020, June 23). Kerala way behind Tamil Nadu in higher education enrolmen. *Mathrubhumi*, https://english.mathrubhumi.com/education/news/news-updates/kerala-way-behind-tamil-nadu-in-higher-education-enrolment-1.4852852.

[8] Bates, A. W. (2001). *National strategies for e-learning in post-secondary education and training international*

institute for educational planning. UNESCO, Paris.

[9] Bates, A. W., and Bates, T. (2005). *Technology, e-learning and distance education* (2nd ed.). Routledge Falmer Studies in Distance Education, London, New York.

[10] Belyh, A. (2019, September 20). Understanding cultu res & people with hofstede dimensions. *Cleverism*, https://www.cleverism.com/understanding-culture s-people-hofstede-dimensions/.

[11] Besarion Meskhi, S. P. (2019). E-learning in higher inclusive education: Needs, opportunities and limitations. *International Journal of Educational Man agement, 33*(3). doi:10.1108/IJEM-09-2018-0282.

[12] Bhattacharya, I., and Sharma, K. (2007). India in the knowledge economy-an electronic paradigm. *International Journal of Educational Management, 21*(6), 543-568. doi:10.1108/09513540710780055.

[13] Bhuasiri, W., Xaymoungkhoun, O., Zo, H., Rho, J. J., and Ciganek, A. P. (2012). Critical success factors for e-learning in developing countries: A comparative analysis between ICT experts and faculty. *Computers & Education, 58*(2), 843-855.

[14] Coetzer, L., and Mapulanga, P. (2020). Delivering equitable distance library services to off-campus users at the University of the Free State in South Africa. *Global Knowledge, Memory and Communicati on, 70*(1/2), 94-113. https://doi.org/10.1108/GKMC-11-2019-0145.

[15] Collis, B., and Moonen, J. (2001). *Flexible learning in a digital world: Experience and expectations*. Kogan Page, London.

[16] Corbitt, B. J., Peszynski, K. J., Inthanond, S., Hill, B., and Thanasankit, T. (2004). Cultural differences information and code systems. *Journal of Global Information Management, 15*, 65-85.

[17] D'Souza, J., and Moore, T. D. (2017, August 16). Education in Sri Lanka. *WENR World Education News+ Reviews*, https://wenr.wes.org/2017/08/educ ation-in-sri-lanka.

[18] Duffin, E. (2020, Feb 6). E-learning and digital education -Statistics & facts. *Statista-Education & Science*, https: //www.statista.com/topics/3115/e-learning-and-di gital-education/.

[19] Education, A. L. (2020, May 6). Online education & e-learning growing in Sri Lanka. *Lanka Education*, https://www.lankaeducation.com/online-educatio n-e-learning-in-sri-lanka-growing/.

[20] Engelbrecht, K. (2003). *The impact of color on learning*. Neo Con.

[21] Fry, K. (2001). E-learning markets and providers: Some issues and prospects. *Education + Training, 43*(4/5), 233-239. doi:10.1108/EUM0000000005484.

[22] Gamage, D. F. (2014). Factors affecting to effective e-learning: Learners perspective. *Scientific Research Journal(SCIRJ), 2*(5), 42-48.

[23] Gladieux, L. E., and Swail, W. S. (1999). *The virtual university & educational opportunity. Issues of equity and access for the next generation*. Policy Perspectives, ERIC Number: ED428637. http://www.collegeboar d.org.

[24] Hall, E. T. (1959). *The silent language*. Garden City, New York: Double Day & Company Inc.

[25] Hartshorne, R., and Ajjan, H. (2009). Examining student decision to adopt web 2.0 technologies: Theory and empirical tests. *Journal of Computing in Higher Education, 21*(3), 183-198.

[26] He, D., Peng, Y., Mao, M. and Wu, D. (2010), Supporting information access in e-learning by integ rating digital libraries and ontology. *Online Informati on Review, 34*(5), 704-728. doi:10.1108/14684521011 084582.

[27] Ho, L. A., and Kuo, T. H. (2009). How can one amplify the effect of e-learning? An examination of high-tech employees' computer attitude and flow experience. *Computers in Human Behavior Journal, 26*(1), 23-31. doi:10.1016/j.chb.2009.07.007.

[28] Hofstede, G. (1991). *Cultures and organizations: Software of the mind*. London: McGraw-Hill.

[29] In Brief. (2012, January). *Journal of E-Governance, 35*(1), 2-5. doi:10.3233/gov-2012-0281.

[30] Insights, H. (2020). Compare countries. *Hofetsed's Insights*, https://www.hofstede-insights.com/produ ct/compare-countries/.

[31] Jami Pour, M., Hosseinzadeh, M., Bagherzadeh

Azar, M. and Taheri, F. (2017). Developing a new framework for evaluating e-learning systems: integrating BSC and FAHP. *Kybernetes, 46*(8), 1303-1324. doi:10.1108/K-02-2017-0060.

[32] Jayatilleke, B. (2016). Cultural perceptions of online learning: Transnational faculty perspectives. *Asian Association of Open Universities Journal, 11*(1), 50-63. doi:10.1108/AAOUJ-07-2016-0019.

[33] Jensen, S. (2007). Are European businesses getting the live e-learning message? *Industrial and Commercial Training, 38*(1), 46-48.

[34] John, C. (2020, September 23). India estimated to reach 1 billion internet users by 2025. *Atlaasvpn*, https://atlasvpn.com/blog/india-estimated-to-reach-1-billion-internet-users-by-2025.

[35] Julius, T., and Nganji, M. B. (2013). Ontology driven disability aware e-learning personalisation with ONTODAPS. *Campus-Wide Information Systems, 30*(1). doi:10.1108/10650741311288797.

[36] Kaurav, R. P. S., Rajput, S., and Baber, R. (2019). Factors affecting the acceptance of e-learning by students: A study of e-learning programs in Gwalior, India. *South Asian Journal of Management, 26*(1), 76-95.

[37] Kim, Y., Choi, B., and Jung, Y. (2018). Individual differences in online privacy concern. *Asia Pacific Journal of Information Systems, 28*(4), 274-289.

[38] Kratochvil, J. (2014), Efficiency of e-learning in an information literacy course for medical students at the Masaryk University. *Emerald Insights, 32*(3), 322-340. doi:10.1108/EL-07-2012-0087.

[39] Liaw, S. S. (2008). Investigating students' perceived satisfaction, behavioral intention, and effectiveness of e-learning: A case study of the Blackboard system. *Computers & Education, 51*(2), 864-873.

[40] Maji, A. G. (2008). E-learning: The latest spectrum in open and distance learning. *Social Responsibility Journal, 4*(3). doi:10.1108/17471110810892820.

[41] Malhan, I. V., and Gulati, A. (2003). Knowledge management problems of developing countries, with special reference to India. *Information Development, 19*(3), 209-213.

[42] Mohammad Ali, S. M. (2018). Effectiveness of e-learning for university students: Evidence from Bangladesh. *Asian Journal of Empirical Research, 8*(10), 352-360.

[43] Mundi, I. (2020, July). *India Vs Sri Lanka*. https://www.indexmundi.com/factbook/compare/india.sri-lanka/demographics.

[44] Nanda, P. K. (2019, September 21). India's higher education student population grows by 8 lakh: HRD ministry. *Live Mint*, https://www.livemint.com/education/news/india-s-higher-education-student-population-grows-by-8-lakh-hrd-ministry-156908160 0712.html.

[45] Ngampornchai, A., and Adams, J. (2016). Students' acceptance and readiness for E-learning in Northeastern Thailand. *International Journal of Education Technology in Higher Education, 13*, 34.

[46] ONmanorama (2020, September 8). *Literacy rate chart: Kerala tops at 96.2%, Andhra Pradesh performs the worst*. https://www.onmanorama.com/news/india/2020/09/08/literacy-rate-chart-kerala-tops-andhra-pradesh-perform-worst.html.

[47] Park, M. J., and Chai, S. M. (2020). Comparing the effects of two methods of education online versus offline and gender on information security behaviors. *Asia Pacific Journal of Information Systems, 30*(2), 308-327.

[48] Raza, A., Rashid Kausar, A. and Paul, D. (2007), The social democratization of knowledge: some critical reflections on e?learning. *Multicultural Education & Technology Journal, 1*(1), 64-74. doi: 10.1108/17504970710745210.

[49] Salmon, G. (2005). Flying not flapping: A strategic framework for e-learning and pedagogical innovation in higher education institutions. *ALT-J, Research in Learning Technology, 13*(3), 201-218.

[50] Shahid Farid, R. A. (2018). A sustainable quality assessment model for the information delivery in E-learning systems. *Campus-Wide Information Systems, 23*(2). doi:10.1108/10650740610654465.

[51] Sondergaard, M. (1994). Research note: Hofstede's consequences: A study of reviews, citations and

replications. *Organization Studies, 15*, 447-456.

[52] Stefani, A., Vassiliadis, B., and Xenos, M. (2006). On the quality assessment of advanced e-learning services. *Interactive Technology and Smart Education, 3*(3), 237-250.

[53] Steyn, D. C. (2006). Interpreting cross-cultural blended teaching and learning along Hofstede's cultural dimensions. *Proceedings of e/merge*, Pretoria, South Africa: Google Scholar.

[54] Sun, P. C., Tsai, R. J., Finger, G., Chen, Y. Y., and Yeh, D. (2008). What drives a successful e-Learning? An empirical investigation of the critical factors influencing learner satisfaction. *Computers & Education, 50*(4), 1183-1202.

[55] Swierczek, F. W., and Bechter, C. (2009, December 28). Cultural features of e-learning. In *Learning and instruction in the digital age* (pp. 291-308). Springer.

[56] Swierczek, F. W., and Bechter, C. (2010). *Cultural features of e-learning a Euro-Asian case study*. Springer.

[57] The PIE News (2013, July 25). *Sri Lanka reiterates goal to become edu hub.* https://thepienews.com/news/sri-lanka-reiterates-goal-to-become-edu-hub/.

[58] Tseng, L. M. (2011). Evaluating the effectiveness of e-learning system in uncertainty. *Industrial Management & Data Systems, 111*(6), 869-889.

[59] Wang, S. Y. (2003). Assessment of learner satisfaction with asynchronous electronic learning systems. *Information & Management, 41*(1), 75-86.

[60] Zaharris, P. V. (2001, January 11). Designing on-line learning courses: Implications for usability. *Japit*, http://www.japit.org.

[61] Zainab, B., Bhatti, M. A., Pangil, F. B. and Battour, M. M. (2015), E-training adoption in the Nigerian civil service. *European Journal of Training and Development, 39*(6), 538-564. doi:10.1108/EJTD-11-2014-0077.

[62] Zhang, D. Z. (2006). Instructional video in e-learning: Assessing the impact of interactive video on learning effectiveness. *Information & Management, 43*(1), 15-27.

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