

# Digitalisation: The Effectiveness of e-Learning in Capital Market Education

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**Abstract:** *In today's digital economic landscape, financial literacy has become increasingly important in making informed financial decisions. To meet this growing need, Securities Industry Development Corporation (SIDC) has been entrusted to develop a targeted e-Learning capacity building initiative where everyone could participate without the limitations of cost, time and location. However, there has been no study to date exploring the effectiveness of the e-Learning programme in the field of the capital market education. Hence, this preliminary study aims to gain insight into the effectiveness of capital market e-Learning programme by adopting a convergent parallel mixed-method approach, collecting both quantitative and qualitative data based on Kirkpatrick's model (Level 2) to measure the level of knowledge transfer and satisfaction of learning among participants. The finding showed a positive knowledge transfer, with a mean score of 25.5% and the survey questionnaire submitted by 1,423 respondents revealed that the average course rating was 4.4 out of 5.0. Hence, this indicates the effectiveness of the programme. It is hoped that the findings can be used as a benchmark, reference or guidance for capital market training providers to develop a successful e-Learning programme.*

**Keywords:** Capital market education; Digital, e-Learning; Effectiveness; Financial literacy

**JEL Classification:** A2, D8, I2

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## 1. Introduction

The capital market, or financial market, plays a crucial role in the modern economy by bringing buyers and sellers together to trade various financial assets, such as stocks, bonds, currencies, debentures, derivatives, digital assets, equity, securities, shares, peer-to-peer (P2P) financing, private retirement schemes, and unit trusts. It is crucial as it helps to fuel economies and promote financial stability. As of March 2022, the size of Malaysia's capital market was RM3.53 trillion and it is expected to increase further, in tandem with the recovery of the domestic and global economy (NST Business, 2022). However, it remains vulnerable to several uncertainties, including geopolitical tensions, the normalisation of global monetary policy, and other market volatilities.

Hence, it takes skill, knowledge, and experience to navigate complex markets in order to become successful in investing in the capital market. In addition, with knowledge and skills in the capital market, one could enhance their employability and develop a lucrative, dynamic and exciting career such as a fund manager, derivatives representative, business development manager or credit analyst. Investing in the capital market can be beneficial in the long run for companies and individuals that are aiming to succeed financially. Gaining knowledge about the capital market is important as it helps in making the right investment decision.

According to Lusardi (2019), a person's level of financial literacy is a crucial measure of their ability to make sound financial decisions. With the change in the economic landscape towards digitalisation such as FinTech, financial literacy becomes more important as it helps people to manage finances in a smarter way (Dwiastanti, 2015), accumulate wealth (Lusardi & Mitchell, 2014) and plan. Additionally, inadequate financial knowledge is associated with inefficient spending and financial management, as well as costly borrowing and debt management (Lusardi, 2019).

However, the latest report by Ringgit Plus (2021) shows that the financial literacy of Malaysians is still a cause for concern. These findings are consistent with the research conducted by OECD/INFE (2020) which shows that financial literacy level of adults (between the age of 18 to 79) in Malaysia is still low compared to other Asian countries (Indonesia, Korea, China, and Hong Kong) that participated in the survey. The report suggested that Malaysians need to improve their financial knowledge for them to

comprehend the principles and become more active money managers, and fully understand the decisions they are making with regards to their finances.

Nowadays, digitalisation has shaken up all industries, and capital market education is no exception. With the outbreak of the Covid-19 pandemic in late 2019, the demand for a digital platform that caters to students' needs has become increasingly vital. Electronic learning or e-Learning refers to any form of pedagogy delivered using digital technology, such as visual aids, text, animations, videos, and audio (Basar et al., 2021). It has rapidly evolved into a popular alternative to traditional classroom-based learning, providing a flexible and accessible means of education that caters to diverse learning styles and schedules. With its growing adoption by many institutions and organisations worldwide, e-Learning has become an essential part of the modern education landscape, particularly in the capital market education sector. According to Technavio (2020), the global e-Learning market for the financial services sector is expected to grow at a compound annual growth rate (CAGR) of over 11% from 2020 to 2024. This growth is driven by the increasing adoption of e-Learning platforms by financial institutions, the need for cost-effective training solutions, and the growing demand for customised learning experiences.

Hence, as e-Learning is gaining traction all over the world, the SIDC has embarked on the journey to develop the Derivatives E-Learning Series (DEL). This online capacity-building initiative aims to revitalise the Malaysian derivatives market and support its sustainability. Derivatives are a part of the capital market ecosystem in Malaysia that offer a variety of products, such as futures and options. It has gained popularity in many emerging markets, and as the financial sector becomes more stable, it is expected to grow even further in the future.

Although the effectiveness of e-Learning has been reported in many studies (Panyajamorn et al., 2018; Obeidat et al., 2020; Hussain et al., 2020; Basar et al., 2021). The focus is more towards the e-Learning for school children and students of higher learning institutions. To the best of our knowledge, there has been no comprehensive study to date exploring the field of capital market education and our paper is aiming to fill this gap. It is because the e-Learning programme for capital market education has a specific focus and target audience. It is designed to cater to individuals or professionals seeking to develop skills and knowledge in financial markets, whereas general e-Learning can be applied to a range of subject areas and

target a more diverse audience.

The objective of this study is to gain insight into the effectiveness of a capital market e-Learning programme by measuring the level of knowledge transfer and participant satisfaction based on Kirkpatrick's model. The study aims to provide recommendations for improving the future development of the capital market e-Learning programme with the goal of enhancing financial literacy and promoting responsible investment behaviours among Malaysians.

This paper consists of five sections. Section two provides a comprehensive review of relevant literature on the topic, while section three outlines the methodology and analysis employed in the study. Section four presents a detailed discussion of the results, while section five highlights the limitations of the study. The final section concludes with valuable recommendations for future programmes.

## **2. Literature Review**

### ***2.1 Digital Literacy***

Nowadays, the economy of the world has undergone digital transformation. Therefore, for Malaysia to join the league and become a high-tech nation, the Government, industry players, higher learning institutions and civilians need to embrace and adopt digitalisation in every aspect and of their daily routines. Hence, it is imperative for Malaysia to increase the digital literacy of the citizens so that no one will be left behind. Digital literacy encompasses the skills necessary for individuals to proficiently navigate various digital platforms, effectively evaluate information, and communicate ideas through writing or other media (Bhatt, 2012; Fahrurrozi et al., 2019; Dewi et al., 2021).

According to data published by the International Telecommunication Union (ITU) Malaysia has been progressing throughout the years in terms of information, communication and technology (ICT) skills. More than 50% of individuals have acquired minimum basic ICT skills, while 11.11% possessed advanced skills. In fact, the percentage of Malaysians with advanced ICT skills is better than the world average (7.09%), Singapore (8.22%) and Thailand (1.02%) in the year 2020 (ITU, 2021).

## 2.2 e-Learning

The increasing number of individuals with ICT skills has greatly contributed to the growing openness and distribution of information and knowledge, which has, in turn, led to the rise of e-Learning. This method of education delivery has proven to be both effective and efficient, allowing individuals to access education and training regardless of time, location (Al Rawashdeh et al., 2021), economic status (Aparicio et al., 2016), and pace of learning (Arkorful & Abaidoo., 2015). e-Learning platforms, such as Massive Open Online Courses (MOOCs) and other online resources, offer a wealth of information and knowledge that was once only available to a select few. Negash and Wilcox (2008) classified e-Learning into six categories (Table 1). Understanding e-Learning categories is crucial for learners to choose courses that align with their learning needs. Apart from that, instructional designers and developers can leverage this knowledge to select the most suitable design approach, while evaluators can use it to evaluate the effectiveness of the programme. The DEL programme discussed in this study is an example of a self-learning type of e-Learning.

**Table 1:** Categories of e-Learning

<b>E-Learning Format</b>	<b>Presence</b>	<b>E-communication</b>	<b>Teaching Method</b>	<b>Explanation</b>
Physical Class	Physical	None	Face-to-face	Teacher and students are physically present in a classroom setting, and e-Learning tools are used to support teaching.
Self-learning	None	None	Recorded media	Student pursues independent learning using recorded media with no presence, either real or virtual, and no communication with the teacher.
Asynchronous	None	Yes	Pre-recorded	Teacher pre-records material for later access by students, and e-communication tools are used to facilitate communication between them.

E-Learning Format	Presence	E-communication	Teaching Method	Explanation
Synchronous	Virtual	Yes	Real-time	Teacher and students connect online in real-time, and e-communication tools are used to facilitate communication.
Blended (asynch)	Occasional physical	Yes	Both recorded and in-person	Content is occasionally presented physically, but most teaching is done through pre-recorded material with e-communication tools used for support.
Blended (synch)	Constant	Yes	Both real-time and in-person	Alternates between physical and virtual presence for teaching with e-communication tools used throughout.

While e-Learning has numerous advantages and is becoming increasingly popular, it is not without limitations. Several researchers have identified the advantages and disadvantages of e-Learning based on three components, namely flexibility, self-reliance, and personalisation, which are presented in Table 2.

**Table 2:** Related Research on the Advantages and Disadvantages of e-Learning

	Advantages	Disadvantages
Flexibility	e-Learning offers greater flexibility in attending classes, with reduced travel requirements. Learners can gain a more comprehensive understanding of the material through interactive video facilities that enable classroom activities. (Gautam & Tiwari, 2016; Martínez-Caro et al., 2015).	e-Learning method assessments are generally held online which reduces the possibility of restricting illegitimate activities such as cheating, plagiarism, etc. (Arkorful & Abaidoo, 2015).
Self-reliance	The environment for e-learning also helps students or learners rely on themselves so that instructors are no longer the solitary knowledge source rather they serve as guides and advisors (Joshua et al., 2016).	Students lack motivation and can easily lose sight of their original objective, rapidly become lost within the course, and consequently withdraw from the course (Raspovic et al., 2016).
Personalisation	Ability to focus on the requirements of individual learners. (Huang & Chiu, 2015)	e-Learning may sometimes be conducted in remote and isolated settings, which can lead to a reduced level of student interaction. (Arkorful & Abaidoo, 2015).

Source: Compiled from the literature.

### 2.3 Effectiveness of e-Learning

The term effectiveness originates from the Latin word *effectivus*, which means efficacy. According to Gharechedaghi et al. (2012), effectiveness is a part of the broader concept of efficiency. In essence, effectiveness involves assessing the degree to which measures help achieve predetermined goals. Meanwhile, from the meta-reviews conducted by Noesgaard and Ørngrøn (2015), there are 19 different ways of defining effectiveness related to e-Learning that has been identified. The most commonly used is learning outcome for higher education and transfer (application to practice) for work-related learning. A few other definitions that are widely used in the studies are: perceived learning, skills or competency, attitude, and satisfaction.

Numerous studies have explored the effectiveness of e-Learning as a platform of knowledge delivery. Hussain et al. (2020) reported that e-Learning was an effective method to fulfill the students' educational needs. It has been discovered that using an online learning system to meet the students' at-home educational demands might be beneficial, particularly in the case of a pandemic. Gharechedaghi et al. (2012) also reported the effectiveness of the e-Learning system in improving the knowledge of university students.

Previous studies have identified internal and external factors that affect the effectiveness of e-Learning. Internal factors include experience, motivation, and satisfaction, while external factors include the environment, instructors, technology, course flexibility, course design, and models (Brown & Voltz, 2005; Henry, 2008; Panyajamorn et al., 2018). Meanwhile, Suanpang and Petocz (2006) and Zirkin and Sumler (1995) focused on methods that impact learning effectiveness. They compared interactive and non-interactive modes of e-Learning with traditional classroom instruction and found that interactive e-Learning was more effective than non-interactive e-Learning.

Additionally, e-readiness is a critical factor for the success of e-Learning programmes. According to Rohayani and Kurniabudi (2015), improving skills and attitudes leads to more effective learning. The study found that skills and attitudes are the most crucial factors that influence e-Learning readiness. Apart from that, accessible, useful, easy-to-understand and authentic content can improve user satisfaction and usage. The overall success of e-Learning programs can be achieved by enhancing these

factors. Learner satisfaction can be improved by tailoring the programme to individual requirements and interests (Cidral et al., 2018).

#### **2.4 Kirkpatrick's Four-Level Model of Training**

Evaluation is an essential component of the teaching-learning process (Ifeoma, 2022). According to Goldie (2006), it involves obtaining information about a course or programme of teaching to make subsequent judgments and decisions. This process requires evidence of the programme's effectiveness, suitability, or quality (Manichander, 2016).

To assess the effectiveness of any study or training programme, it is necessary to evaluate the evidence presented in support of the programme. One of the most widely used approaches to measuring the effectiveness of training is Kirkpatrick's Four-Level Model of Training. This model proposes a four-level evaluation process consisting of reaction (Level 1), learning (Level 2), behavior (Level 3), and results (Level 4).

Numerous researchers have adapted Kirkpatrick's model to determine the effectiveness of e-Learning programmes. Gharechedaghi et al., (2012) applied Kirkpatrick's model to determine the significant difference between the status quo and the desired status of e-Learning system effectiveness. Based on the questionnaire results, there are significant differences between the status quo and desired status of effectiveness in the e-Learning system at Shahid Beheshti University according to the reaction aspect and its constituent components. Meanwhile, Moroki (2020) adopted Kirkpatrick's model to evaluate the effectiveness of the online teaching and learning process and found that some components of the online learning process need to be optimised to run effectively and achieve the learning objectives.

Therefore, in this study, the Level 2 (learning) component of Kirkpatrick's model will be utilised to assess the effectiveness of the e-Learning programme. This component is chosen because it assesses the extent of participants' learning before and after the program (Mohamed et al., 2012).

### **3. Research Methodology**

The purpose of this study is to gain insight into the effectiveness of capital market e-Learning programme by examining the level of knowledge transfer



and participant satisfaction after completing the DEL programme using the level 2 (learning) of Kirkpatrick's model. It adopts a convergent parallel mixed-method approach, in which both quantitative and qualitative data are collected, analysed, compared and related in the interpretation process.

### **3.1 Population and sample of study**

The study population consisted of 2,066 participants who enrolled in the DEL programme between July 2021 and October 2022. The flow of the programme involved participants completing a pre-test assessment upon registration, going through the modules in the learning portal, completing a post-test assessment upon finishing the modules, and submitting a survey questionnaire (evaluation form) via the learning system.

To obtain a sample for the study, a convenience sampling method was used, which comprised of two parts. The first part ( $n = 1,494$ ) included participants who had completed both the pre-test and post-test assessments (completion rate of 72%). The second part ( $n = 1,423$ ) included participants who had submitted the evaluation form after completing the program (response rate of 69%). The different sample sizes reflect the number of participants who had completed each respective measure. Convenience sampling was chosen because the aim of this study was to generate initial insights into the effectiveness of a capital market e-Learning program, rather than testing a specific research hypothesis and generalizing the results to the population (Basar et al., 2021).

### **3.2 Research instrument**

The effectiveness of the DEL programme was assessed using two research instruments; pre- and post-test assessments and a survey questionnaire that was designed based on the level two Kirkpatrick's model.

#### **3.2.1 Pre and post test assessment**

The pre and post-test assessments, which comprised of seven questions that covered all topics in the programme were administered to all participants before and after completing the DEL programme through the learning portal. The purpose of the pre-test is to establish a baseline level of knowledge

while the post-test assessment is used to measure changes or improvements in terms of knowledge gained by the participant.

### 3.2.2 Survey questionnaire

The survey questionnaire (Table 3) was made available to all participants in the learning system. It comprised of three sections; the first construct of the questionnaire consisted of five thoughtfully crafted items that explored both internal and external factors, including the participants' sense of responsibility in joining the programme, their feedback on the content, interactivity, and navigation of the platform, and their overall experience of being a part of the programme. The five-point Likert scale; one = low, two = below average, three = average, four = above average and five = high, was employed to measure the response of the participant. For the second construct, the participants were asked to indicate their likelihood of recommending the programme to others. The third construct includes an open-ended question for qualitative feedback where respondents were given the opportunity to provide their comments and recommendations for further improvement of the programme. This construct was intentionally designed to capture the participants' subjective experiences, as well as to gain insight into their specific needs and preferences. The qualitative analysis was carried out from the information obtained.

**Table 3:** Survey Questionnaire

<b>Construct 1</b>
1. I took responsibility for being involved in this e-Learning.
2. The e-Learning content was easy to follow, relevant and useful.
3. This e-Learning is interactive and engaging.
4. Navigation of the e-Learning platform is simple and easy to use.
5. Good overall e-Learning experience
<b>Construct 2</b>
6. Would you recommend this course to others?
<b>Construct 3</b>
7. Please comment and suggest how we could improve this e-Learning

### 3.5 *Data analysis*

The data collected from both the pre-test and post-test assessments, as well as the survey questionnaires, were analysed using Statistical Package for the Social Sciences (SPSS) software version 27.0. A predetermined alpha level of 0.05 was established for all statistical tests to determine significance. Qualitative data from construct 3 were analysed using Microsoft Excel to generate a pie chart.

## 4. **Results and Discussion**

This section presents the findings of the study and explains the results concerning the effectiveness of the DEL programme, followed by the satisfaction gained by the participants from this programme. It also includes a qualitative analysis of the feedback provided by respondents.

### 4.1 *Pre and post-test assessment*

In developing an e-Learning programme, it is essential to consider the effectiveness of the programme. This is important to ensure that the programme managed to achieve the level of success targeted and was also fruitful to the participants. Among the criteria for the effectiveness of a learning programme are successfully delivering students to achieve predetermined instructional goals, provide attractive learning experiences, involve students actively so as to support the achievement of instructional goals and have the means to support the teaching and learning process (Rohmawati et al., 2018, Muhtadi et al., 2021).

According to Noesgaard and Ørngreen's (2015) reviews, the most popular method for assessing the effectiveness of a programme is the quantitative pre- and post-test assessment. In this study, the pre-test and post-test were employed to determine the level of knowledge acquired by the participants after completing the DEL programme. The effectiveness of the programme was determined based on the average percentage of knowledge transfer obtained from the pre and post-test assessments performed by the participants. Knowledge transfer is defined as the process through which knowledge moves between a root and a recipient and where knowledge is given and practiced (Hassan et al., 2017). Table 4 shows the scores of the

pre and post-test assessments of the participants. The score of the post-test (mean score of 89.08%) was compared with the score of the pre-test (mean score of 63.59%) to calculate the percentage of knowledge transfer. The finding showed a positive knowledge transfer (mean scores of 25.5%). This means that almost all participants have gained knowledge from the DEL programme.

**Table 4:** Pre-Post Assessments: Percentage of Knowledge Transfer

	Mean	Standard Deviation	% of Knowledge Transfer ( $\mu$ )
Pre-test	63.59	24.78	25.5
Post-test	89.08	17.02	

To evaluate the significance of the differences between the pre-test and post-test scores, the Wilcoxon Signed Rank test was conducted since the data was not normally distributed. The results of the test showed a z-value of -28.528 with an asymptotic significance 2-tailed  $p$ -value of  $< 0.01$ , which is lower than the critical limit of 0.05. These results indicate a significant improvement in the post-test scores, demonstrating that the DEL e-Learning programme had a positive impact on the students' understanding of capital market derivatives.

#### 4.2 *Survey questionnaire*

Descriptive statistics were applied to summarise and analyse the data to further support the effectiveness of the DEL programme. The results are presented in a tabular form (Table 5) for further interpretation. The survey questionnaire submitted by 1,423 respondents revealed that the average course rating was 4.4 out of 5.0. This high rating suggests that, overall, the programme was well received. To gain further insight, the results of each survey item were analysed in detail to better understand the factors that contributed to the high rating.

**Table 5:** Descriptive Statistics – All items

Items	Minimum	Maximum	Median	Mean	Standard Deviation
I took responsibility for being involved in this e-Learning	2.0	5.0	5.0	4.5	0.71
The e-Learning content was easy to follow, relevant and useful	2.0	5.0	5.0	4.4	0.73
The e-Learning is interactive and engaging	1.0	5.0	4.0	4.3	0.77
Navigation of the e-Learning platform is simple and easy to use	1.0	5.0	4.0	4.3	0.78
Good overall e-Learning experience	2.0	5.0	4.0	4.3	0.73
<b>Average course rating</b>				<b>4.4</b>	

In Table 6, 856 (60.2%) respondents rated their involvement in the e-Learning programme as high, and only two (0.1%) rated it as below average for the statement on taking responsibility for their learning. This indicates that almost all participants took full responsibility and an active approach to learning, without any influence or pressure to participate in the programme. In contrast to paid programmes, where participants may feel obligated to participate due to the cost, the high level of participant engagement suggests that the programme was effective in promoting self-directed learning. Self-directed learning is an essential skill for successful learners, requiring students to be highly self-regulated, responsible for organising their learning, and reflective (Zariski & Styles, 2000).

**Table 6:** Responses Based on Scale and Frequency

Scale	Frequency	Percent	Valid Percent	Cumulative Percent
<i>I took responsibility for being involved in this e-Learning</i>				
Below average	2	0.1	0.1	0.1
Average	178	12.5	12.5	12.6
Above average	387	27.2	27.2	39.8
High	856	60.2	60.2	100.0
<b>Total</b>	<b>1423</b>	<b>100.0</b>	<b>100.0</b>	
<i>The e-Learning content was easy to follow, relevant and useful</i>				
Below average	8	0.6	0.6	0.6
Average	194	13.6	13.6	14.2
Above average	509	35.8	35.8	50.0
High	712	50.0	50.0	100.0
<b>Total</b>	<b>1423</b>	<b>100.0</b>	<b>100.0</b>	

Scale	Frequency	Percent	Valid Percent	Cumulative Percent
<i>The e-Learning is interactive and engaging</i>				
Low	1	0.1	0.1	0.1
Below average	3	0.2	0.2	0.3
Average	263	18.5	18.5	18.8
Above average	491	34.5	34.5	53.3
High	665	46.7	46.7	100.0
<b>Total</b>	<b>1423</b>	<b>100.0</b>	<b>100.0</b>	
<i>Navigation of the e-Learning platform is simple and easy to use</i>				
Low	2	0.1	0.1	0.1
Below average	10	0.7	0.7	0.8
Average	253	17.8	17.8	18.6
Above average	486	34.2	34.2	52.8
High	672	47.2	47.2	100.0
<b>Total</b>	<b>1423</b>	<b>100.0</b>	<b>100.0</b>	
<i>Good overall e-Learning experience</i>				
Below average	2	0.1	0.1	0.1
Average	213	15.0	15.0	15.1
Above average	507	35.6	35.6	50.7
High	701	49.3	49.3	100.0
<b>Total</b>	<b>1423</b>	<b>100.0</b>	<b>100.0</b>	
<i>Would you recommend this course to others?</i>				
No answer	192	13.5	13.5	13.5
Not likely	26	1.8	1.8	15.3
Somewhat likely	282	19.8	19.8	35.1
Very likely	923	64.9	64.9	100.0
<b>Total</b>	<b>1423</b>	<b>100.0</b>	<b>100.0</b>	

According to Craig et al., (2008), self-directed learners have a better understanding of the content and a positive attitude towards themselves as learners. The positive attitudes of participants towards the e-Learning programme in this study suggest that the programme was successful in promoting self-directed learning, which may have contributed to the high scores on the post-test assessment. Furthermore, previous research has shown that self-directed learning is positively associated with learning motivation and achievement (Aziz et al., 2022; Dewanthikumala, 2021; Hidayati et al., 2020), which may also have contributed to the positive outcomes observed in this study.

Table 6 reports that, out of the total 1423 respondents, 712 (50%) rated the e-Learning content as high, while only eight participants (0.6%) rated it below average in terms of being easy to follow, relevant, and useful. The findings suggest that the vast majority of respondents found the content of the DEL programme to be user-friendly and valuable. This aligns with the significant findings of knowledge transfer discussed earlier. As Dwi et al. (2020) noted, the design of the learning programme is a critical factor in determining the effectiveness of the learning process.

The results presented in Table 6 indicate that only one respondent (0.1%) rated the item as low, while 665 (46.7%) respondents agreed with the statement. This finding is consistent with previous research conducted by Panyajamorn et al. (2018), which demonstrated that interactive modes of e-Learning are more effective than non-interactive modes. Moreover, studies have shown that active student involvement in the learning process enhances the effectiveness of e-Learning (Aziz et al., 2022). Additionally, Hazwani et al. (2017) have highlighted the influence of student attitudes on the effectiveness of e-Learning. The DEL programme includes a trading simulation that provides an interactive and immersive learning experience for participants, enabling them to gain a better understanding of trading concepts and practices. By incorporating interactive elements into the learning process, the programme may be better able to engage participants and enhance the effectiveness of the learning experience.

Table 6 also indicates that the navigation of the e-Learning platform is simple and easy to use. Out of 1423 respondents, 672 (47.2%) rated it as high, while 2 (0.1%) rated it as low, and 10 (0.7%) rated it as below average. These results suggest that the learning platform used is still acceptable to the participants. The idea of navigation is to allow participants to search with ease, and an easily navigable website enables them to quickly and efficiently digest information, thereby increasing the positive user experience.

The study reported by Kerka (1999) highlights the importance of technical skills and the ability to navigate in determining the success of learning, as they influence an individual's perceptions concerning ease of use. This is understandable, as the learning process is mediated by technology, and a good learning platform that is user-friendly is essential. These findings are in line with those reported by Shahzad et al., (2014), who stated that an e-Learning website must have a good and well-managed user-interface, with user-friendly web navigation that enables users to easily understand the website and its content.

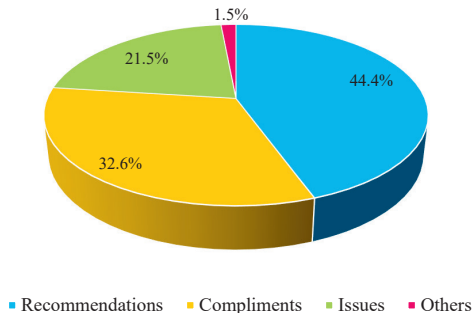
The results presented in Table 6 indicate a positive overall e-Learning experience for participants in the DEL programme. Only 2 (0.1%) respondents rated their experience as below average, while 701 (49.3%) respondents highly agreed with the statement. A good experience is among the critical factors that influence participants to recommend the programme to others.

Research has shown that positive user experience is closely linked to user satisfaction and loyalty (Zeithaml et al., 1996). Participants who have a good experience with e-Learning programmes are more likely to remain engaged and complete the programme successfully, as well as recommend it to others. The following question is closely related to the construct 3 of the survey, ‘Would you recommend this e-Learning to others?’ that was set to determine the likelihood of the programme. Approximately 923 (64.9%) respondents are very likely to recommend this programme to others. This is followed by somewhat likely with 282 respondents (19.8%), respondents. Overall, it can be said that many respondents are likely to recommend this programme to others. This highlights the importance of designing e-Learning programmes that provide a positive and engaging user experience.

### 4.3 *Qualitative analysis*

Figure 1 presents the results of a qualitative analysis conducted on the 135 verbatim comments provided by respondents in their evaluation forms, providing additional insights into the factors that contribute to the effectiveness of e-Learning in capital market education. The findings were categorised into recommendations, compliments, issues, and others.’

**Figure 1:** Comments from Respondents of the DEL Programme





The recommendations made by respondents highlight the key aspects that e-Learning programmes should focus on to ensure that they deliver effective and engaging content to learners. Meanwhile, the compliments indicate the satisfaction of respondents with the programme. The issues raised by respondents, on the other hand, point to the challenges that learners may face when using the programmes while other comments include miscellaneous feedback that did not fit into any of the predefined categories.

The largest section of the feedback, representing 44.4% of responses, pertains to recommendations for improving the programme. The suggestions made by participants for improving online classes, such as incorporating interactive games and real-life examples, align with the findings of Johnson et al. (2008) that interactivity is crucial for the effectiveness of online classes. By increasing the number of knowledge-testing questions, improving the user interface and learning system, making learning materials downloadable, and introducing more interactive elements, such as fun activities and music backgrounds for videos, online courses can better engage learners and enhance their overall satisfaction with the learning experience.

The second largest section, comprising 32.6% of responses, contained compliments regarding the programme. The feedback centered on the satisfaction of participants with the content, including engaging videos, informative content, a solid foundation of knowledge in derivatives, an interesting trading simulation, the ability to improve analytical skills, and overall usefulness and ease of use of the learning system. These positive comments align with high scores on item two (e-Learning content was easy to follow, relevant, and useful), three (e-Learning is interactive and engaging), and five (good overall e-Learning experience) of the survey questionnaires, as well as an excellent score on the post-test assessment (89.08%).

Issues accounted for 21.5% of the pie chart. Despite the fact that the respondents involved in this study were overall satisfied with e-Learning, they reported a plethora of difficulties they faced during the e-Learning process, of which most were related to technical problems. This was in line with the findings of Muthuprasad et al., (2021) where he reported that the biggest challenge reported by participants of e-Learning was technological constraints. Some of the issues highlighted by the respondents were technical issues related to the system, such as the complicated registration process

and website, and the system not automatically saving progress. They also mentioned an error in the knowledge check bonus question and post-test assessment. Additionally, respondents stated that the animation took too much time, and the content was repetitive. As most comments on the issues are related to technicalities, it is understandable why the score for item four (Navigation of the e-Learning platform is simple and easy to use) is 4.3. Thus, highlighting the need to address these issues efficiently.

## **5. Limitations**

Two aspects of limitations exist in this study. The use of the convenience sampling technique and lack of demographic information introduce several limitations that need to be acknowledged. Firstly, convenience sampling may limit the generalisability of the findings as it may not represent the broader population. Secondly, it may introduce sampling bias, as only participants who completed both pre and post-test assessments and submitted evaluation forms were counted in the study from the total population. Thirdly, without demographic information, potential confounding variables that may influence the outcomes may be difficult to identify, limiting the ability to control for factors such as age, gender, and educational background. Additionally, the use of survey questionnaires may result in response bias, where participants may respond in a way that is socially desirable, rather than providing honest responses, thus affecting the accuracy of the data collected. To overcome these limitations, future researchers should consider using other methods such as random sampling, collecting demographic information, and using multiple outcome measures. By addressing these limitations, future research can yield more robust results and contribute to a better understanding of the effectiveness of online learning.

## **6. Conclusion and Recommendations**

Based on the findings, it can be inferred that e-Learning has a positive impact on the effectiveness of capital market education. This is because it provides a new avenue for flexible, cost-effective, efficient, and engaging learning. The study also reveals that technology-related factors, including system navigation, content-related factors, such as ease of use, relevance, usefulness, interactivity, and engagement, as well as personal-related factors,

such as responsibility and learning experience, have a significant impact on the effectiveness and satisfaction of the e-learning programme. This study also highlighted that effectiveness is one of the most important aspects that should not be neglected while developing an e-Learning programme.

Based on the earlier analysis and discussion, the following recommendations are proposed:

- To develop a program design that actively involves students in a clear and systematic manner throughout the learning process.
- To consider the key factors that impact the effectiveness of the e-learning program.
- To ensure that the system developed to run the program is user-friendly.

It is hoped that the findings of this study can serve as a benchmark, reference, or guidance for capital market training providers in the development of an e-learning program.

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