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Impact of the Use of E-Learning Systems on Employee Training Efficiency in the Bottled Water Industry in Sri Lanka

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ABSTRACT

Purpose- The bottled water industry (BWI) is recognized as an emerging sector that plays a key role in Sri Lanka's economic landscape, focusing on the production and distribution of packaged drinking water, primarily in Polyethylene Terephthalate (PET) and glass bottles. It is source-specific and regulated by the Sri Lankan Health Ministry, which oversees aspects like pricing, bottle types, and bottle sizes. The COVID-19 pandemic accelerated the technological transformation process globally, leading to the rise of numerous enterprise solutions and online platforms.
Aims(s)- Growing concerns about the post-pandemic environment, along with trends in digitalization, and the need to comply with mandatory frameworks, have increased the demand for efficient e-learning systems for employee training. Despite the growing adoption of e-learning systems, there is a lack of understanding regarding the factors that influence their effectiveness in IT employee training. This research aims to investigate the relationship between e-learning systems and other relevant factors, to gain insights into their impact on IT training outcomes.
Design/methodology/approach- This article investigated the impact of e-learning efficiency on IT training within Sri Lanka's bottled water industry, employing a mono-quantitative research approach. A survey was administered to 278 employees across the industry using Google Forms, addressing three key objectives: assessing the use of e-learning systems, evaluating their perceived efficiency, and determining their impact on IT training outcomes. The research questions were examined through hypothesis testing.
Findings- The findings provided strong support for the hypotheses, revealing significantly positive relationships between the dependent variable (e-learning use and efficiency) and the independent variables: perceived usefulness, perceived ease of use, performance expectancy, effort expectancy, social influences, and facilitating conditions within the models. Statistical analyses, including reliability tests and correlation analyses, confirmed the robustness of the results.
Limitations of the study- This study mainly concentrates on employees who worked in the Bottled Water Industry (BWI) in Sri Lanka and based on that, used a limited sample size which affects the generalization of the result. When gathering data for the questionnaire, self-reported experiences of the participants were relied upon, which could be subject to social desirability.
Practical implications- Ultimately, this research enhances the understanding of e-learning efficiency and its role in improving IT training practices in Sri Lanka's bottled water industry, offering insights for further advancements in this field.
Originality/value- There are a large number of research studies pertaining to E-Learning educational contexts but little research has been done to cover perspectives of employees in the Bottled Water Industry on E-learning systems. Hence, the research of this study advances our understanding of the efficiency of e-learning in enhancing effective IT training practices in the BWI in Sri Lanka

KEY WORDS
Bottled Water Industry, E-learning, Covid-19, Sri Lanka, IT Training

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1 INTRODUCTION

The rapid growth and transformative changes in technology have significantly impacted industries worldwide, including the Sri Lankan Bottled Water Industry (BWI). Sri Lanka's industrial and economic

landscape has undergone dramatic shifts due to the post-COVID social and digital transformation (Gunawardana et al., 2018).

The BWI in Sri Lanka has accelerated the adoption and utilization of technology in all aspects of its operations. For example, to adapt to the challenges posed by the COVID-19 pandemic, and the subsequent new normal, the BWI has implemented e-learning systems to train its staff, replacing traditional seminar, and outbound training programs (Dolawattha et al., 2020).

To maintain relevance and competitiveness, bottled water companies have increasingly adopted e-learning platforms to train their IT workforce. This study investigates the extent to which the effectiveness of these e-learning systems impacts overall IT training from the perspective of employees.

The research aims to explore e-learning as a technological advancement that supports training objectives, and examines employee acceptance of e-learning systems within the bottled water industry in Sri Lanka. While numerous studies have focused on e-learning in educational contexts, there is a dearth of research examining employee views on the contextual relevance of e-learning systems in the Sri Lankan bottled water industry.

1.1 CONTRIBUTION OF BOTTLE WATER INDUSTRY

According to the Food Control Administration Unit (FCAU), a regulatory body under the Sri Lankan Health Ministry, there are currently 170 established bottled water companies in the local market (Food Control Administration Unit, 2023). The market is dominated by over 300 water brands, collectively capturing a market share valued at $623.17 million during the period 2019–2024. This represents a significant annual compounded growth rate (CAGR) of 7.26%, which is notable considering the country's macroeconomic conditions (Statista, n.d.).

The Sri Lankan Bottled Water Industry (BWI) has played a crucial role in meeting the demand for safe and convenient drinking water. Its development reflects a commitment to addressing health concerns, and adapting to evolving consumer preferences. Technological advancements have been instrumental in the industry's growth (Piyarathna et al., 2020).

1.2 IMPACT OF COVID ON BOTTLED WATER INDUSTRY

The COVID-19 pandemic has revolutionized the typical industrial setup, forcing it to embrace sudden changes and adapt to evolving circumstances in digital forms. For instance, due to lockdowns and social distancing, there has been an increased reliance on remote working conditions, prompting companies to adopt digital remote operations to ensure business continuity (Renukappa et al., 2021). This shift has not only transformed the conventional office, but also led to a revision of the entire landscape of industries, including work processes and communication methods.

Digital transformation has increasingly become central to industry operations. The pandemic accelerated the pace of adoption, with many companies rushing to incorporate digital tools to streamline systems and processes, re-engineer operational paradigms, and establish efficiency and effectiveness, while maintaining customer connections. With the help of e-learning systems, employees and customers can adapt to new skills, knowledge, and technologies. Therefore, learners are positively influenced by new concepts, intelligence, and motivation to perform specific jobs efficiently and effectively. As a result, effective e-learning, directed towards effective training on par with industry standards, is a crucial factor for survival, maintaining competitiveness, and sustaining innovation, while ensuring that data protection is aligned with operational excellence (Piyarathna et al., 2020).

These transformative operational changes, alongside the paradigm shift of digital transformation, pose new challenges in the BWI in Sri Lanka. Therefore, it is evident that the increased demand for IT literacy, and the training of new staff in this domain, is a crucial factor that needs to be considered as a timely requirement.

1.3 E-LEARNING TRAINING

The BWI is heavily influenced by technological advancements and is drastically transforming into a tech-savvy, dynamic industry by adopting many enterprise systems, mobile apps, and automated solutions throughout day-to-day operations to upkeep the competitive edge. This has created a positive and equivalent effect on IT employee training as well. To create an effective training platform on a par with the digital transformation process, online training systems and tools have become prevalent in the new domain of operational excellence in the BWI in Sri Lanka (Piyarathna et al., 2020). This has created new managerial challenges, which have also challenged the status quo and subsequently created pressure to adjust the strategic intent of the traditional setup of bottled water companies. These paradigm changes have motivated companies to embrace new technologies to face the challenges created by the digital divide. In the views above, IT employee training is no exception. E-learning systems and platforms have been implanted and deployed to cater to the demanding needs of the industry.

E-learning has become more popular as a modern-day training practice. However, norms and trends set by the digital age have placed comparative pressure, and challenges, on developing countries like Sri Lanka due to cultural complexities and contextual differences. Hence, the BWI, as an upcoming industry, should focus on the underlying factors that fuel the efficiency of deploying such IT system tools in order to derive the expected outcomes, in this instance, IT training performances (Piyarathna et al., 2020).

Since the BWI comes under the Fast-Moving Consumer Goods (FMCG) sector, which demands constant supervision of hygienic compliances, investments, and innovations due to the dynamic nature of the business, and its fiercely competitive market structure, the human capital of the BWI has to be treated as a strategic segment. Therefore, a more efficient and effective training platform is needed not only to survive the industry dynamics, but also to thrive in the cut-throat market competition.

This research acknowledges the importance of competently training employees in a technological environment, taking into account employee perspectives. Only if the employee embraces, and follows, the e-learning methods effectively will the result be as effective as expected. Therefore, it is extremely important for employees to understand how these IT systems can be used to improve their training efforts.

In terms of research importance, both the Technology Acceptance Model (TAM), and the Unified Theory of Acceptance and Use of Technology (UTAUT), have been identified as the underpinning theoretical frameworks. These models examine how users measure e-learning system adaptation through the lens of various mediating variables (Thowfeek et al., 2008). When research in the bottled water industry is considered, there is limited research involving the application of TAM and UTAUT. Hence, this research study aims to fill this gap by evaluating these two theories within the specific context of Sri Lanka. Moreover, this research will enhance the theoretical understanding of the adoption of e-learning methods in the bottled water industry with reference to these two theories. This will be achieved through empirical evidence vis-à-vis the applications used, and how they applied the theories. Additionally, these research findings will guide the industry in formulating employee IT training strategies, with better decision-making regarding the allocation of training resources.

1.4 PROBLEM STATEMENT

The objective of the study is to test the validity of the TAM and UTAUT theories on employee acceptance in the context of the efficiency of e-learning systems for IT employee training in the bottled water industry in Sri Lanka. By applying the theoretical understanding behind the TAM and UTAUT models, the research contributes to the understanding of technology adoption in the relevant context. It is worth finding out whether employees' perceptions of using e-learning systems, expectations of e-learning system performance, subjective assessments of easiness, the opportunity cost of investing the effort to reap the benefits, social influence, and facilitating conditions in the work environment apply in the context of employees in the bottled water industry in Sri Lanka. Empirical studies have not been conducted before regarding e-learning adoption in the BWI in Sri Lanka from the standpoint of employee perceptions. The gap has been identified, analyzed, and addressed through the research carried out and described in this article.

1.5 RESEARCH AIMS AND OBJECTIVES

This study aims to provide a deeper understanding of how e-learning systems contribute to IT employee training outcomes within Sri Lanka's bottled water industry (BWI), a sector undergoing rapid digital transformation. Although the adoption of e-learning platforms has increased significantly in the post-COVID industrial context, limited empirical evidence exists regarding how employees perceive the usefulness, ease of use, and overall effectiveness of these systems specifically within the BWI. Existing research on technology acceptance frameworks such as TAM and UTAUT has largely focused on educational environments or broader organizational settings, leaving a contextual gap in industry-specific applications. Accordingly, this research seeks to investigate the extent to which employees accept and engage with e-learning systems, and how such acceptance translates into effective IT training outcomes. By examining both behavioural intention and user perceptions, the study aims to evaluate how technology-related factors influence the efficiency of e-learning systems and their contribution to employee performance.

More specifically, the research aims to:

1. Examine the current level of utilization of e-learning systems in IT employee training within the Sri Lankan Bottled Water Industry, identifying how widely and in what ways employees rely on these digital platforms for developing job-related knowledge and skills.
2. Evaluate employees' perceptions of the efficiency and effectiveness of e-learning systems by analysing key technology acceptance determinants—including perceived usefulness, perceived ease of use, performance expectancy, effort expectancy, social influence, and facilitating conditions—derived from TAM and UTAUT.
3. Determine the extent to which e-learning system efficiency influences employees' training outcomes and performance, assessing whether higher acceptance and more favourable perceptions of e-learning systems are associated with measurable improvements in job-related competence and productivity.

This study explores the impact of e-learning efficiency on IT training in the bottled water industry in Sri Lanka, utilizing a mono-quantitative research method. The following research questions were investigated:

- How extensively are e-learning systems utilized for employee training in the bottled water industry?
- To what degree do employees perceive e-learning systems as efficient tools for skills enhancement?
- What is the relationship between the efficiency of e-learning systems, and the performance of employees in the industry?

1.6 SIGNIFICANCE OF THE STUDY

This research study offers insights to the BWI and its stakeholders in enhancing their employee training. The relevant context refers to e-learning as a modern digital strategical tool that offers many benefits, including flexibility, accessibility, and digital adoption, which helps improve efficiency in skill development, and the progressive improvement of performance in respective IT responsibilities. This contributes towards career progression and succession within the BWI context.

Companies can derive many benefits, including the enhancement of the prevailing decision-making system, by making informed decisions when allocating resources to training programmes. By understanding the impact of e-learning efficiency, and the factors that influence the acceptance of novel technologies, the report findings will enable organisations to make relevant strategic solutions to improve, and develop, the skills and knowledge base of employees, which should ultimately result in a high-performance culture. Likewise, the BWI in Sri Lanka has realized the potential of digital transformative IT technologies in transforming their operations in line with e-learning solutions with reference to employee training. Hence, employee perspectives on technology adoption for training purposes are a crucial aspect of this research. Focusing on how IT employees perceive e-learning systems in the BWI emphasizes the importance of user-centered design, and the implementation of IT e-learning systems, which can lead to the development of more user-friendly, and more effective, e-learning solutions.

2 LITERATURE REVIEW

2.1 SIGNIFICANCE OF EMPLOYEE TRAINING WITH E-LEARNING PRE/POST-COVID

The COVID-19 pandemic led to the widespread implementation of Learning Management Systems (LMS) across numerous organizations, fundamentally reshaping the learning environment for employees. The pandemic served as a catalyst for the rapid, large-scale adoption of online learning and learning-management systems across both education and industry. Bibliometric and empirical analyses report significant increases in organizational e-learning implementations, along with shifts in training strategy, and resource allocation, during and after the pandemic (Aristovnik et al., 2023; Müller, 2024). Learners found themselves participating in independent study, and navigating through virtual learning materials. In the prevalent digital environment of today, Learning Management Systems (LMSs) play a pivotal role in improving, and facilitating, the processes of teaching and learning. Acknowledged as a leading online learning platform, the Learning Management System is instrumental in delivering instructions, and electronic resources, to foster collaborative learning among employees (Turnbull et al., 2020).

Research on workplace e-learning shows that digital learning can support the transfer of learning to job tasks when instructional design, organizational support, and contextual fit are aligned (O'Neill, 2025). Recent systematic reviews further highlight that although e-learning improves accessibility, its effectiveness in producing measurable workplace performance gains depends heavily on design for transfer, practice opportunities, and organizational integration (O'Neill, 2025).

In alignment with the digital acceleration in the post-COVID era, the BWI has also adopted many e-learning platforms to facilitate employee training, and performance management (Perera & Gamage, 2021). Alomari et al. (2020) elaborated that it is being used not merely as an operational tool but has become aligned with the strategic objectives of the company. Hence, these adoptions of e-learning systems are referred to as turnkey strategic initiatives.

Even though the evidence shows that e-learning as a strategic initiative provides enormous benefits to bottled water companies in Sri Lanka, employee perceptions towards the efficiency of e-learning systems are poorly explored. TAM and UTAUT theories are renowned theories that provide the theoretical foundations, and frameworks, for understanding how employees perceive and accept new technologies, in this instance, the e-learning systems in the context of employees in the BWI in Sri Lanka (Daneshgar et al., 2008). Studies from developing countries reveal distinctive challenges—such as infrastructure limitations, digital-skills gaps, and language diversity—that influence e-learning adoption and effectiveness. Research conducted in Sri Lanka, and similar regions, emphasizes the importance of contextualized investigations, arguing that findings from Western, and higher-education contexts, cannot be directly generalized to local industries (Weerarathna, 2023). This strengthens the need for sector-specific research, such as the present study in Sri Lanka's bottled water industry.

2.1.1 TAM MODEL THEORY ON E-LEARNING

The TAM model identifies, and elaborates on, the attributes of an individual's intentions to use specific technology. This was developed by Fred Davis, and is associated with the Theory of Reasoned Action (TRA) in the field of psychology (Davis et al., 1989). Two main factors have been introduced and analysed. The theory suggests that Perceived Usefulness (PU), the key factor that refers to the user's belief system, assumes that the respective technology leads to improvements in their performance. Another key factor is Perceived Ease of Use (PEOU), which refers to the perception of the effort required to use the technology in affecting the effective utilization of the technology.

2.1.2 UTAUT MODEL THEORY ON THE EFFICIENCY OF E-LEARNING

The Unified Theory of Acceptance and Use of Technology (UTAUT) was developed to foster an understanding of the adoption of various technologies in different contexts, amalgamating four different factors, including performance expectancy, effort expectancy, social influence, and facilitating conditions, while incorporating moderators such as gender, age, experience, and exposure to better understand the relationships between acceptance, and use, of technology (Marchewka et al., 2007). Venkatesh (2016) developed the model, and later it stood out as one of the major theories used to explain technology adoption behaviours in different industrial contexts.

Out of the four main core factors, performance expectancy (PE) represents the belief that using a particular technology leads to improved job performance. The degree to which an employee believes that using the technology will be free of effort is represented by the effort expectancy (EE) factor, which modifies the behavioural intention of the efficient utilization of the said technology. Social influence (SI), and the pressure created by the social environment, including peers, managers, owners, and the organization as a whole, also creates an impact on the efficient usage of the technology, and is considered a key factor. Facilitating conditions (FC) that promote the usage of the technology, for instance, organizational and technological infrastructure, act as catalysts for the acceptance and utilization of any novel technology introduced to the prevailing organizational climate. These elements collectively make an impact on the behavioural intentions of employees to use the relevant technology in organizational contexts (Venkatesh, 2016).

To understand, and comprehend, the effective adoption and efficient use of e-learning systems in IT employee training, the study further expands upon the understanding of the TAM and UTAUT models to construct subjective variables that lead to examining the relationship between e-learning efficiency, and employee training, to evaluate the stipulated objectives of this research study.

2.1.3 SIGNIFICANCE OF USING TAM AND UTAUT MODELS

Both TAM and UTAUT models are commonly referred to as predictive and explanatory theories of technology adoption, and employee behaviours. These models help leverage the organization's insights into the practical utilization of new technology adoption, and its adaptability to employees, by embedding behavioural modifications through consideration of employee attitudes. This facilitates the crafting of meaningful strategies when implementing, and deploying, new IT systems in the mainstream operational functions of industries (Venkatesh, 2016). TAM is a simple model that addresses user adoption, and the efficiency of usage or outcomes, via the two primary factors: Perceived Usefulness, and Perceived Ease of Use. The UTAUT model explains the multifaceted nature of technology adoption in different industries by integrating multiple existing models, and incorporating different constructs. This underlines its wide applicability and generalizability, establishing it as a reliable choice for practical purposes (Buabeng-Andoh, 2021).

Furthermore, the broad, and practical, applicability of both theories to technological acceptance and use provides a theoretical basis for investigating the research questions, and the objectives, of this research study. In that sense, amalgamating both theories to construct variables to test the research questions is necessary, and appropriate. Through this study, the researchers explain how the Sri Lankan bottled water industry intends to use both the integrated TAM, and UTAUT, models for employees' understanding of the effectiveness of using e-learning for their training purposes.

Perceived Usefulness (PU): It describes how employees effectively realize the usefulness of e-learning systems in relation to the skills demanded, and the knowledge acquired from the IT training sector, by using the richness of the content, practice, and quality of the learning materials in relation to job tasks (Al-Azawei et al., 2017).

Perceived Ease of Use (PEOU): PEOU looks at factors such as user-friendly UI designs, easy access, interfaces that are easy to navigate, clear instructions, and technical support (Lee et al., 2013).

Performance Expectancy (PE): PE is a concept within the UTAUT model, which examines the influence of individuals' intention to use the technology. It refers to the degree to which an employee believes that

the benefits gained from e-learning, towards their job performance, make a significant impact (Abbad, 2021).

Effort Expectancy (EE): Effort expectancy is the degree of ease associated with a particular system or technology, and this is one of the key constructs determined in the UTAUT model. It refers to the ease associated with the use of e-learning.

Social Influence (SI): Recognized colleagues, peer recommendations, and opinions through social referrals contribute to social influence. Social incentives such as positive feedback, managerial approval, and peer support have positive effects on social influence (Lin et al., 2013; Rauniar et al., 2014).

Facilitating Conditions (FC): Accessibility, and availability, of relevant resources and support that positively influence employee perceptions of performance are part of facilitating conditions. When dealing with e-learning platforms, employees need adequate access to facilities, technologies, and support that are consistent with training needs. This has an impact on the effectiveness of e-learning (Lin et al., 2013).

Independent Variables (IV): PU, PEOU, PE, EE, SI, and FC These factors represent the independent variables influencing e-learning effectiveness for employee training.

Dependent Variable (DV): E-learning efficiency functions as the dependent variable, and is impacted by the influences of the independent variables.

3 Research Methodology

The following framework provides a structured, and systematic, approach to conducting research, collecting data, and testing hypotheses.

A structured questionnaire was designed to collect data from employees within the bottled water industry in Sri Lanka. The questionnaire was distributed electronically through a Google Form to participants, and their responses were collected for subsequent data analysis using SPSS statistical software. This study used the convenience sampling method to maintain a practical approach to reaching out to participants, and collecting data, within the given period of time. This study would be an exploratory one, as the non-probabilistic results of this study cannot be generalized to the broader population.

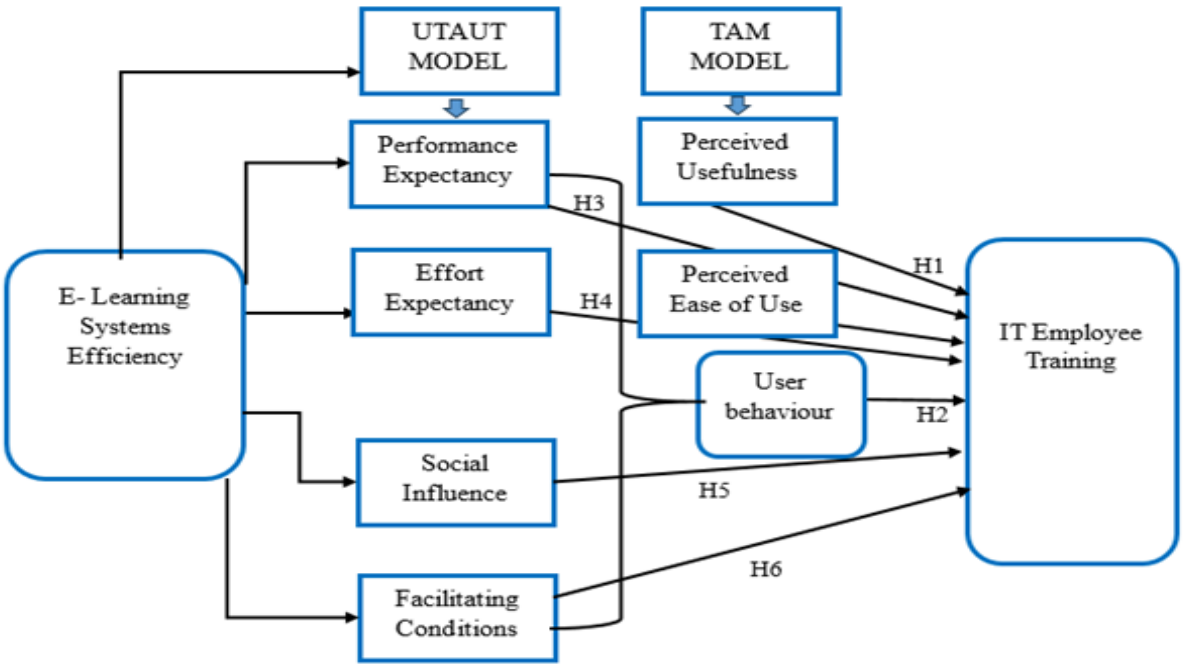

Fig 1. Conceptual Framework of E-learning

Source: Authors' own elaboration

The research intends to understand the impact of e-learning efficiency on IT employees in the bottled water industry in Sri Lanka. In accordance with the Food Control Administration Unit of the Health Ministry in Sri Lanka (2023), and Central Bank Statistics (2022), there are 170 companies in the industry

employing over 1,000 IT employees as of 20th September 2023. Using a calculator to compute the sample size for a population of 1,000 IT employees in the bottled water industry in Sri Lanka, the sample size came up as 278 IT employees for results to be generalized across the population. For this study, 280 employees agreed to participate in the study. Data was collected over a period of 3 months.

3.1 HYPOTHESES

Rationale: When employees believe that e-learning systems improve their job performance, they are more likely to adopt and use them.

Null Hypothesis ($H1_0$): There is no significant relationship between Perceived Usefulness on employees' intention to use e-learning systems.

Alternative Hypothesis ($H1_A$): There is a positive significant relationship between Perceived Usefulness on employees' intention to use e-learning systems.

Rationale: If e-learning platforms are simple and user-friendly, employees are more willing to engage with them.

Null Hypothesis ($H2_0$): There is no significant relationship between Perceived Ease of Use on employees' intention to use e-learning systems.

Alternative Hypothesis ($H2_A$): There is a positive significant relationship between Perceived Ease of Use on employees' intention to use e-learning systems.

Rationale: Employees are motivated to adopt e-learning when they expect it will enhance their work performance.

Null Hypothesis ($H3_0$): There is no significant relationship between Performance Expectancy on employees' intention to use e-learning systems.

Alternative Hypothesis ($H3_A$): There is a positive significant relationship between Performance Expectancy on employees' intention to use e-learning systems.

Rationale: The less effort required to use a system, the greater the likelihood of employee acceptance.

Null Hypothesis ($H4_0$): There is no significant relationship between Effort Expectancy on employees' intention to use e-learning systems.

Alternative Hypothesis ($H4_A$): There is a positive significant relationship between Effort Expectancy on employees' intention to use e-learning systems.

Rationale: Peer encouragement and managerial support increase employees' willingness to adopt new technologies.

Null Hypothesis ($H5_0$): Social Influence has no significant impact on employees' intention to use e-learning systems.

Alternative Hypothesis ($H5_A$): Social Influence has a positive significant influence on employees' intention to use e-learning systems.

Rationale: Access to resources, infrastructure, and support enables employees to effectively adopt e-learning systems.

Null Hypothesis ($H6_0$): Facilitating Conditions do not have a significant effect on employees' intention to use e-learning systems.

Alternative Hypothesis ($H6_A$): Facilitating Conditions have a positive significant influence on employees' intention to use e-learning systems.

4 FINDINGS

4.1 CORRELATIONS ON E-LEARNING USE WITH PU, PEOU, PE, EE, SI AND FC

The researchers were seeking to identify the relationships between the use of e-learning systems in the bottled water industry in Sri Lanka, and factors such as PU, PEOU, PE, EE, SI, and FC. As the data analysed were non-ordinal, Pearson's correlations were used.

Table 1. Correlations between Hypothesis

		PU	PEOU	PE	EE	SI	FC
E-Learning	Pearson's Correlation	.954**	.865**	.885**	.846**	.839**	.814**
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000
	N	278	278	278	278	278	278

*** Correlation is significant at the 0.01 level (2-tailed).*

Source: Authors' own elaboration

Table 1 explains the Pearson's correlation coefficients between the dependent variable "E-Learning," and the independent variables PU, PEOU, PE, EE, SI, and FC, with each correlation having 0.000 in significance levels (Sig. 2-tailed).

The Pearson's correlation coefficients explain the direction of the linear relationship, which varies from close to 1 (strong positive correlation), close to -1 (negative correlation), and close to 0 (weak or no correlation). Our data analysis shows a range from 0.814 to 0.954, and (**) indicates statistical significance at the 0.01 level, implying high confidence in the observed relationships. A value of 0.954 suggests an extremely strong positive relationship. Values of 0.865, and 0.885, indicate very strong positive relationships.

Significance levels (Sig. 2-tailed) indicate the observed probability that the correlation occurred by chance, and when the p-value is 0.000, it indicates that the observed correlation is statistically significant at the 0.05 significance level (or a smaller significance level). The data analysis findings show that there is strong evidence to reject the null hypothesis, and conclude that there is a significant correlation between the variables. The sample size (N) indicates the sample size as 278.

Table 2. Hypotheses Testing Results

Hypothesis	Statement	Result
H1	Perceived usefulness positively influences employees' intention to use e-learning systems	Supported
H2	Perceived ease of use positively influences employees' intention to use e-learning systems	Supported
H3	Performance expectancy positively influences employees' intention to use e-learning systems	Supported
H4	Effort expectancy positively influences employees' intention to use e-learning systems	Supported
H5	Social influence positively influences employees' intention to use e-learning systems	Supported
H6	Facilitating conditions positively influence employees' intention to use e-learning systems	Supported

Source: Authors' own elaboration

4.2 DISCUSSION OF FINDINGS

The data analysis in this study aims to determine the acceptability of the stipulated three models created through the conceptual framework associated with previous TAM and UTAUT models, assessing the relationship between e-learning as a dependent variable, and PU, PEOU, EE, PE, SI, and FC as independent variables. Based upon the analysis findings, it is evident that the objectives have been effectively measured through the formulated hypotheses.

Based on the survey data, most IT employees in the BWI are within the 41–50 years age range, and a predominant number of them are males. The questionnaire revealed that a significant proportion of these employees possess higher education levels, including MSc, PG, and other degrees. Furthermore, a large portion of them hold executive positions. The preferred learning method for most IT employees, including those in the 31–50 years age range, is e-learning. Considering the demographic analysis, it is evident that a positive influence is present regarding the use of e-learning systems for employee training in the BWI industry in Sri Lanka.

This trend can be explained, and is attributed to, the global influence of the COVID-19 pandemic, which has significantly impacted the industry in Sri Lanka as well. In the post-COVID period, there has been a digital acceleration in the industry landscape in Sri Lanka. As illustrated by the analysis of this study, an increasing number of organizations have already implemented e-learning successfully in the areas of employee training, and performance management. The data reinforced the views of Alomari et al. (2020) on the necessity, urgency, and importance of investing in e-learning systems to train IT employees, since strategic importance is placed upon just-in-time training of employees. By analyzing the

gathered data, it has been found that there is a positive drive from IT employees in the bottled water industry to use e-learning systems for their training needs.

According to the data analysis, most employees in the bottled water industry strongly agreed that there is a positive relationship between the perceived usefulness (PU) of the e-learning system, and the actual use of the IT training system. Employees realize the usefulness, benefits, and relatedness of e-learning systems as efficient training instruments in progressively acquiring job-related skills and knowledge (Al-Azawei et al., 2017). This perceived usefulness of the e-learning system is shaped by many influential factors, such as the quality of the learning materials, the ease of delivery, and relevance to the needs of the job task, or the skill gap, which serves to address the training objectives, as well as individual expectations towards their own growth in their career trajectory.

The researchers found that there is a positive impact of perceived ease of use (PEOU) on the use of the e-learning platform. Research done by Lee et al. (2013) has additionally noted that perceived ease of use of e-learning depends on factors such as easy-to-navigate features, user-friendly UI designs, easy access and interfaces, clear instructions, and availability of technical support.

The first research objective is aimed at assessing the utilization of e-learning systems in employee training in the BWI industry in Sri Lanka by focusing on the PU and PEOU as independent variables in the stipulated hypotheses. The study provides compelling evidence to support both alternative hypotheses proposed. Hypothesis (H1A) states a positive relationship between the PU and employees' intention to use e-learning systems, and the second hypothesis (H2A) asserts a significant relationship between PEOU and employees' intention to use e-learning systems—both hypotheses are strongly supported. Table 1 refers to correlation values of 0.954 (PU) and 0.865 (PEOU), both statistically significant at 0.000.

Moving to the second research objective, testing of hypotheses 3 and 4 demonstrated a significant positive relationship between PE and EE, and the use of e-learning systems by employees. Both hypotheses intended to investigate the relationship and impact of e-learning systems as an effective tool for their training performances via the variables of performance expectancy, and effort expectancy.The performance expectation of an e-learning system for IT training describes the effectiveness and capabilities of the system in supporting employee training and learning (Abbad et al., 2021). The researchers found that e-learning improves employees' knowledge, skills, and learning outcomes through well-designed e-learning system features and capabilities.

Effort expectancy means user expectations of the level of effort required to understand, navigate, and utilize the functionality of e-learning systems (Abbad et al., 2021). Testing of hypothesis 4 revealed that employee users had a good understanding of the use of e-learning systems, and are motivated to use the e-learning system to meet their training needs in a prompt and timely manner.

Table 1 values of PE and EE respectively indicate correlation values of 0.885 and 0.846, which means a strong positive linear relationship at significance levels of 0.000. The results suggest the importance of e-learning to employee performance, and that maximal efforts invested in embracing a culture of pervasive e-learning can lead to optimizing IT training practices, and improving overall training performance throughout the bottled water industry in Sri Lanka.

The third research objective is to measure the impact on e-learning use for employee training by the variables of social influences (SI) and facilitating conditions (FC), which represent the presence of a supportive social environment, and conducive conditions for optimal performance in employee training.

The results of this study showed that there was a positive relationship between e-learning use efficiency and social influencing factors. As explained by Lin et al. (2013), employees are influenced by positive feedback, and recommendations from subordinates and peers through positive management endorsements, and peer support. Hence, it is not surprising that the findings of this study emphasize the positive impact based on social influence on the efficient use of e-learning systems for employee training.

As Lin et al. (2013) explained, the availability and accessibility of resources, and infrastructure have an impact on employees' views of the productive use of e-learning systems. The findings of this study prove that being provided with necessary support, and access to good facilities and infrastructure leads to better training performance when using such systems. The formulated hypothesis of H6, which states that facilitating conditions significantly influence IT employees' intention to use e-learning systems, has been proven to be true. The correlation analysis shown in Table 1 indicates a positive, strong relationship

between e-learning use and the variables of SI and FC, individually correlating at 0.839 and 0.814 respectively, and also being statistically significant at 0.000.

Overall, the research findings have highlighted the factors impacting the efficient use of e-learning by employees for their training and development in the BWI industry in Sri Lanka, and emphasized the significance of PU, PEOU, PE, EE, SI, and FC in enhancing the effectiveness of e-learning training efficiency. From the analysed results, it becomes evident that the mentioned factors carry a significantly positive association with the use, and effectiveness, of e-learning in employees' training performances.

5 Implications and Recommendations

Based upon the findings and discussions above, the researchers can suggest the following recommendations for future improvements in enhancing the use of e-learning for employee training needs in the bottled water industry.

Customized Content: There is a need for industry-specific e-learning modules to be introduced for the bottled water industry. Some of the modules need to cover content such as how to measure water quality standards, manufacturing processes, and regulatory compliance related to the BWI. These e-learning modules need to include real-life case studies and examples related to the bottled water industry in Sri Lanka to make the learning course content more engaging, relevant, and meaningful.

Multilingual Support: In a country like Sri Lanka, there are different ethnicities living who prefer to have the e-learning platform support multiple languages such as English, Sinhala, and Tamil. This will improve accessibility for a broader range of audiences who are keen to participate in the e-learning platform without encountering language issues.

Interactive Learning Tools: As it is important to engage e-learners in active ways, there should be interactive tools to deliver content to learners through puzzles, quizzes, online simulators, experiential virtual labs, etc.

Mobile-Friendly Designs: With the advancement of digitization and the increasing workloads of employees, for ease of access, employees will need to use mobile-platform e-learning tools via their smartphones to learn training content. When accessing digital training materials, there should be flexibility in being able to access these materials through mobile-friendly apps to accommodate, and meet, different learning preferences and styles.

Interaction with Industry Experts: Introducing guest lecturers or webinars from relevant industry experts and professionals in the bottled water industry will enable learners to gain valuable insights, real-time experiences, and build networking opportunities in the real world.

Regular Updates: There should be up-to-date e-learning content with the latest industry trends, regulations, and technologies that are relevant to the bottled water industry.

Enhance Collaborative Learning Opportunities: This can foster professional learning communities amongst employees who are furthering their knowledge in the bottled water industry through the use of strategies such as group projects, discussion forums, and collaborative activities. Furthermore, such strategies enhance knowledge sharing, and supportive, scaffolded learning amongst employees.

A review of the research findings of this study has led to the above suggested implications and recommendations for future improvements in the utilization of E-learning systems in the bottled water industry. For instance, a deeper understanding of the impact of social influence, and facilitating conditions, can be realized by integrating more interactive and collaborative learning features into future E-learning systems. Another example of further enhancing the factors of PU, PEOU, PE, EE, SI, and FC, and E-learning use and efficiency, is to develop tailor-made, customised, and personalised training content for employees with a range of learning capabilities and preferences, while continuously developing evaluation and feedback mechanisms in the E-learning system to check, and monitor, learning progress. The affordances of artificial intelligence tools, and blended learning approaches, can be embedded to make E-learning more effective and automated, which ultimately leads to establishing a high-performance, lifelong learning culture in the bottled water industry in Sri Lanka.

6 CONCLUSIONS

In conclusion, the researchers of this study examined the stated objectives defined by formulating hypotheses. It was found that there is a positive impact on the use of E-learning systems for employee training in the BWI industry in Sri Lanka, vis-à-vis the application of factors such as perceived usefulness, perceived ease of use, performance expectancy, effort expectancy, social influence, and facilitating conditions under the TAM and UTAUT models. These outcomes highlight the importance of embedding E-learning solutions in the training ethos of an organization in the BWI industry to improve workplace efficiency. E-learning systems, when well-designed with relevant learning support mechanisms, and social scaffolding features to enable collaboration, discussions, real-world case analysis, and application, are effective learning tools for enhancing employees' skills and knowledge competencies within the BWI industry. Having personalized feedback channels, online discussions, and live webinars to connect industry experts enhances the quality of learning, and leads to better attainment of learning outcomes. With the help of integrated, socially mediated learning tools with features such as social media interactions, chat rooms, and virtual classrooms, E-learning can be positioned as a powerful organizational enabler to empower knowledge acquisition and support the career trajectories of employees in the BWI industry in Sri Lanka.

REFERENCES

Abbad, M. M. (2021). Using the UTAUT Model to Understand Students' Usage of e-Learning Systems in Developing Countries. *Education and Information Technologies*, *26(6)*, 7205–7224. https://doi.org/s10639-021-10573-5

Al-Azawei, A., Parslow, P., & Lundqvist, K. (2017). Investigating the effect of learning styles in a blended e-learning system: An extension of the technology acceptance model (TAM). *Australasian Journal of Educational Technology*, *33(2)*. https://doi.org/10.14742/ajet.2741

Alomari, M. M., El-Kanj, H., Alshdaifat, N. I., & Topal, A. (2020). A framework for the impact of human factors on the effectiveness of learning management systems. *IEEE Access*, *8*, 23542–23558. https://doi.org/10.1109/ACCESS.2020.2970278

Aristovnik, A., Karampelas, K., Umek, L., & Ravšelj, D. (2023). Impact of the COVID-19 pandemic on online learning in higher education: A bibliometric analysis. *Frontiers in Education, 8*, Article 1225834.

Buabeng-Andoh, C. (2021). Exploring University students' intention to use mobile learning: A research model approach. *Education and information technologies*, *26*(1), 241-256.

Daneshgar, F., Van Toorn, C., & Chan, S. C. E. (2008). E-Learning in Workplaces. *ITI 6th International Conference on Information & Communications Technology, Cairo, Egypt, 2008*, 65–70. https://doi.org/10.1109/ITICT.2008.4806643

Davis, F.D. (1989). Perceived Usefulness, Perceived Ease of Use, and User Acceptance of Information Technology. *MIS Q.*, 13, 319-340.

Dolawattha, D., Premadasa, S., & Jayaweera, P. (2020). The Influence on Mobile Learning: Mobile Learning Contents, Higher Education Institutes, and Communication Technology. *IEEE Access*. https://doi.org/10.1109/icac51239.2020.9357139

Food Control Administration Unit *In* Ministry of Health (2023, March 1). List of bottled water manufactures and their brand names with valid registration, https://www.eohfs.health.gov.lk/food/images/pdf/Registerd-Bottled-water-Manufacturers-Up-dating-up-to--2020.08.01-converted.pdf

Gunawardana, K. (2018). E-commerce in small and medium enterprises in Sri Lanka. *International Journal of Sociotechnology and Knowledge Development*, *10*(2), 54–68. https://doi.org/10.4018/IJSKD.2018040104

Lee, Y. H., Hsieh, Y. C., & Chen, Y. H. (2013). An investigation of employees' use of e-learning systems: Applying the technology acceptance model. *Behaviour & Information Technology*, *32*(2), 173–189. https://doi.org/10.1080/0144929X.2011.577190

Lin, P. C., Lu, H. K., & Liu, S. H. (2013). Towards an Education Behavioral Intention Model For E-Learning Systems: An Extension Of UTAUT. *Journal of Theoretical & Applied Information Technology*, *47*(3).

Marchewka, J. T., Liu, C., & Kostiwa, K. (2007). An Application of the UTAUT Model. *Communications of the IIMA*, 94(7), 93–104.

Müller, C. (2024). The COVID-19 pandemic and firms' E-learning use: Implications for inequality in training opportunities. *Journal for Labour Market Research, 58*, Article 23.

O'Neill, A. (2025). Transfer of workplace e-learning: A systematic literature review. *Social Sciences & Humanities Open, 12*, 101407.

Perera, E., & Gamage, K. A. A. (2021). Learning Remotely during a Pandemic: Are Students in a Developing Country Fully Equipped with Tools for Swift Changes? *Sustainability*, *13*(15), 8635. https://doi.org/10.3390/su13158635

Piyarathna , H. M. R. W., Perera, M. S. C., Karunanayaka , M. P., Ekanayaka , S. S., Udara, S. P. R., & Arachchige . (2020). Sri Lankan Bottled Water Industry Overview. *Journal of Research Technology and Engineering, 1*(1), https://7.Sri-Lankan-Bottled-Water-Industry-Overview-.pdf (jrte.org). https://www.jrte.org/wp-content/uploads/2020/01/7.Sri-Lankan-Bottled-Water-Industry-Overview-.pdf

Rauniar, R., Rawski, G., Jei, Y., & Johnson, B. (2014). Technology acceptance model (TAM) and social media usage: An empirical study on Facebook. *Journal of Enterprise Information Management*, *27*(1), 1741-0398. https://doi.org/10.1108/JEIM-04-2012-0011

Renukappa, S., Kamunda, A., & Suresh, S. (2021). Impact of COVID-19 on water sector projects and practices. *Utilities policy*, 70, 101194. https://doi.org/10.1016/j.jup.2021.101194

Statista. (n.d.). Bottled Water - Sri Lanka | Statista Market Forecast. Retrieved October 17, 2023, from https://www.statista.com/outlook/cmo/non-alcoholic-drinks/bottled-water/sri-lanka

Thowfeek, M. H., & Hussin, H. (2008). Instructors' Perspective on E-Learning Adoption in Sri Lanka: A Preliminary Investigation. *Communications of the IBIMA*, *6*(3), 124–129.

Turnbull, D., Chugh, R., & Luck, J. (2020) Learning management systems: An overview. Researchgate.net, https:// 10.1007/978-3-319-60013-0_248-1

Venkatesh, V. (2016). Unified Theory of Acceptance and Use of Technology: A Synthesis and the Road Ahead. *Journal of the Association for Information Systems*., 17(5), 328-376. https://doi.org/10.17705/1jais.00428

Weerarathna, R. S. (2023). Employee acceptance of workplace e-learning: Symmetrical and asymmetrical perspectives. *Human Resource Management International Digest, 32*(4), 4–6.

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