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Consumer's Intention to Embrace Electric Vehicles: A Study of Indian EV Market-

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Book Review: Effective Training Systems, Strategies, and Practices-
Dr. Priyanka Arora



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New Delhi Institute of Management

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New Delhi Institute of Management in its journey of attaining several milestones in the areas of research and education, takes pride in sharing with the community its editorial masterpiece, 'Anusandhan-NDIM's Journal of Business and Management Research'.

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From the Chairperson's Desk



At NDIM, we encourage quality and professionalism, I am fastidious to present Vol.VI, Issue 1 of Anusandhan: NDIM's Journal of Business and Management Research.

First paper is on Consumer's Intention to Embrace Electric Vehicles: A Study of Indian EV Market by Dr. Dhanjay Yadav, Indira Gandhi Delhi Technical University for Women, Ms. Diksha Tandon, Indira Gandhi Delhi

Technical University for Women, Dr. Arvind Jayant, Indira Gandhi Delhi Technical University for Women and Ms. Preeti Kaushik, Indira Gandhi Delhi Technical University for Women.

Second paper is on Blockchain Role in Enhancing Financial Risk Management- A Correlation Analysis in Banking Companies by Dr Ashish Saxena, Dr Deepak Bansal, and Dr. Swati Bansal, from Sharda University, Gr.Noida.

Third paper is on The Influence of Student Participation On Nonformal Educational Activities On Their School Performance by Editha-Margareta Coşarbă, from Aurel Vlaicu University of Arad, Romania

Fourth paper is on Strategic Integration of Multimedia in Outdoor Education: Nurturing Pupils for future Leadership Roles by TORKOS Henrietta, from Aurel Vlaicu University of Arad, Romania.

Fifth paper is on approaching the subject of substance use in a peer-to-peer education project by Alina Costin from Aurel Vlaicu University of Arad, Romania

Sixth paper is on Risk and Return Trade off: A Study of Indian Pharmaceutical Sector's Stocks by Shikha Dua and Dr. Shankuntala Meena from Maharaja Surajmal Brij University, Bharatpur.

At last book on Effective Training Systems, Strategies, and Practices is reviewed by Dr. Priyanka Arora from Gitarattan International Business School,

I wholeheartedly congratulate editorial team for the progressive Anusandhan journey and publication of issue September 2023-February 2024.

Bindu

Dr. Bindu Kumar
Chairperson, NDIM

From Editorial Desk



NDIM is elated to present the current issue of Vol.VI, Issue 1 of Anusandhan: NDIM's Journal of Business and Management Research.

This publication marks a significant milestone towards fostering a culture of innovation, inquiry and collaboration. Our college has always been committed to advancing knowledge and pushing the boundaries of research in various disciplines. Through this journal, we aim to provide a platform for researchers, scholars, and students to showcase their cutting-edge work, share their insights, and engage in meaningful dialogue.

In today's rapidly evolving world, it is imperative that we stay at the forefront of research and development. By encouraging interdisciplinary collaboration and promoting academic excellence, we can address the complex challenges facing society and make meaningful contributions to the global knowledge landscape. I invite all members of our academic community to actively participate in this endeavor by submitting their research papers, articles, and reviews. Let us seize this opportunity to inspire innovation, ignite curiosity, and shape the future of research at our college. Together, let us embark on this journey of discovery and make our Research Cell Journal a beacon of excellence in the world of academia.

NDIM is thankful to all the reviewers for providing unbiased comments to make papers more meaningful and improve quality. Authors did all corrections suggested again and again and make their paper more readable.

To avoid errors, we have proofread our journal 3 times. Efforts of proof reading partners, Ms. Isha Kataria. Mr. Deepak and Dr. Shubham Agarwal are praiseworthy.

I hope all academicians and researchers found this issue useful; we are open for suggestions and recommendation for continuous improvement. We are happy to get mails at editor@ndimdelhi.in

A handwritten signature in blue ink that reads "Madhu".

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Consumer's Intention to Embrace Electric Vehicles: A Study of Indian EV Market

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Abstract

The study focuses on understanding the influence on consumers' intention to embrace electric vehicles in India. This study uses Regression analysis to analyze the effect of Six Factors viz. perceived utility, perceived usability, environmental concern, compatibility, moral norms, and individual inventiveness on the consumers' intention to embrace electric vehicles. The study is analytically examined based on the data obtained from 152 relevant respondents in India. The analysis revealed that ecological crisis (EC) is essential in influencing the consumer adoption intention of electric vehicles. The data showed that environmental concern is positively associated with it. The study also showed that moral standards are positively associated with consumers' intentions to purchase electric vehicles, indicating that ethical standards positively and significantly impact consumer adoption. Though perceived usefulness is a positive indicator of consumer adoption, it does not significantly influence their intention. Additionally, it was discovered that consumers' perceived usability, compatibility, and individual innovativeness are not positively connected with their intent to purchase electric vehicles and are not statistically significant. Planners and Legislators may find the study's findings helpful in increasing the rate at which electric vehicles are adopted in the real world.

Keywords: *Electric Vehicles, Consumer's Intention, Perceived Usefulness*

Introduction

The electric vehicle industry is a rapidly growing industry. According to the International Energy Agency, electric vehicle sales have expanded exponentially in recent years, along with their range, model availability, and performance.

Vehicle pollution is a significant source of air pollution in India, notably in major cities like Delhi. There are more than 3.4 million vehicles, according to the Department of Transport, Government of National Capital Territory of Delhi, with a 7% annual growth rate. By 2030, India's

transport industry will be responsible for 50% of all greenhouse gas emissions. Scientists, researchers, and many government bodies have proposed EVs as a reliable alternative to petrol and diesel-run vehicles to protect the environment and reduce reckless fossil fuel consumption. India, the third-largest energy consumer in the world, is currently rated eighth on the Climate Change Performance Index (CCPI) 2023 after moving up two spots. India needs sustainable solutions like electric vehicles to maintain this streak of progress.

Compared to conventional engines with equivalent performance, hybrid vehicles use less petrol and produce less pollution every mile. (2008) Gallagher, Muehlegger, and E. J. Three significant categories can be used to classify EVs: BEVs are battery-powered, HEVs are plug-in EVs with a large battery and a small engine, and PHEVs are plug-in EVs with a small battery and an engine. Sharma and Shalender (2020). BEVs are the only emission-free form of electric mobility among these three. However, HEVs are regarded as the most useful due to their easy transition between a petrol engine and an electric motor. Kurani, K. S., and Turrentine (2007).

Due to the COVID-19 pandemic, overall automotive sales in 2020 decreased dramatically for passenger and commercial vehicles. However, sales of electric vehicles stayed the same in India. The post-lockdown sales of pure and hybrid electric vehicles are a crucial factor driving the electric car market in India.

It is also projected that the government's regulations on greenhouse gas (GHG) emissions, such as the Bharat Stage (BS) VI emission standards imposed by India's Ministry of Road Transport and Highways (MoRTH), will considerably aid the market's rise. EVs can help reduce air pollution and improve energy efficiency, significantly contributing to environmental sustainability and development Dhar, Pathak & Shukla (2018). This is one of the reasons for consumer's growing interest in electric vehicles, as they not only meet a person's transport requirements but also decrease the carbon footprint and noise pollution Park, Hong & Le (2021). The Indian government has announced several

initiatives to encourage people to buy electric vehicles, like FAME (Faster adoption and manufacturing of hybrid and electric vehicles), which is aimed at improving electric mobility in India; under this, the National Capital Territory of Delhi (NCT of Delhi) provides tax incentives to give an edge to hybrid and electric vehicles over the conventional petrol and diesel vehicles, PMP (Phase manufacturing program) is another important initiative to promote the development of electric vehicles by considering the manufacturing industry's condition in the country.

Marketers should research the consumer market based on its current and potential for future adoption. Many researchers in the past have examined consumers' buying intentions. Some studies investigated whether factors such as attitude, perceived utility, perceived ease of use, and perceived danger, with the moderation of financial incentives policies, impacted the intention to adopt EVs. Some focused on how lifestyle influenced the adoption of electric vehicles Jaiswal et al. (2021).

Past studies have researched EV customers' purchase profiles. Customers from the first three customer groups- innovators, early adopters, and the early majority from the technology adoption cycle- were highlighted in various studies. It was found that personal innovativeness and environmental concern impacted the purchase intention of electric vehicles X.He, W. Zhan, and Y. Hu (2018). Studies also described how charging infrastructure influenced consumer intentions; charging infrastructures in both public and domestic domains are insufficient, so governments should focus more on

this to remedy Wang S. et al. (2018). The most extensive study was done by Shanyong et al.. To explore the consumer adoption intention of electric vehicles, researchers employed an expanded version of the theory of planned behavior that takes into account attitude, subjective standards, perceived behavioral control, and moral norms. The researchers also argue that it is vital to correctly identify early adopters to determine to what extent their decision-making process differs from late adoption intention groups Gärling and Thøgersen, (2001).

Literature Review:

Environmental Concern

The 21st century's technological developments cause the environment's daily improvement. People today are working to protect the environment because they know its adverse effects. Understanding and being aware of environmental issues is called environmental concern. According to a study by Schuitema et al. (2013), customers' concern for the environment influences their adoption of environmentally friendly products. This is a crucial factor in determining whether an individual will change their behavior from what they are currently doing to something more environmentally friendly, according to Daziano and Bolduc (2013). Environmental concern, however, only indirectly affects a particular behavior that is environmentally favorable, according to Ajzen and Fishbein (1980). The relationship between social-cognitive perceptions, attitude, and intention and how these relate to the mediation of attitude towards BEV and the moderating of socio-demographic variables (Jaiswal et al. (2022).

EV adoption intention and environmental concerns are positively correlated; research by Shalender and Naman (2020), their study indicated that manufacturers, sellers, or retailers should embrace an environment-centric approach for the promotion of electric vehicles as this can encourage the customer's environmental concerns, and reinforce their intention to adopt electric vehicles. This is one of the reasons for consumer's growing interest in electric vehicles, as they not only meet a person's transport requirements but also decrease the carbon footprint and noise pollution Park, Hong & Le (2021).

Sajjad et al. (2020) have shown that environmental quality urges individuals to buy EVs and replace their petrol and diesel vehicles; people must be made aware of the consequences of driving petrol and diesel vehicles and how they affect the environment.

Perceived usefulness

Prior research has examined the impact of perceived usefulness on customers' adoption intentions, and they found that its impacts could and should be altered by external variables and structures. Perceived usefulness significantly and positively impacts behavior intention, and sometimes, it affects behavior through attitude (Chen et al. (2015). Under TAM (technology acceptance model), perceived usefulness positively affects Behavioral intention significantly, and external variables will work through perceived usefulness Cheng et al. (2013). In the context of green or environmentally friendly products, consumption can have substantial environmental benefits compared to conventional alternatives (Maniatis, 2016).

Adoption intention has been demonstrated to be positively influenced by performance expectancy and conducive situations (Jain et al.(2022).

Electric vehicles are a sustainable form of transportation and have the potential not just to transform but also reform the traditional transport system. The article by Chen (2016) described the idea of "green perceived usefulness," which refers to consumers' perceptions of how much using new products will improve their life's environmental performance. It also mentioned that TAM consists of two factors that influence the intentions of technical innovations: perceived usefulness and perceived ease of use, but it does not account for the social influence on the adoption of new technologies. Chen (2016). EVs help reduce harmful CO2 emissions and control gasoline fuel consumption.

Perceived ease of use

The degree to which things may be learned or utilized is expressed as their perceived ease of use. The term "degree to which a person believes that using a particular system would be free of effort" describes perceived ease of use. This aligns with the meaning of "ease," which is "freedom from difficulty or great effort." This means people prefer to use relatively easier products Davis (1989). Unlike perceived usefulness, which affects behavior intention very strongly, sometimes perceived ease of use has a relatively insignificant impact on behavior intention Chen (2016). Some focused on how lifestyle influenced the adoption of electric vehicles Jaiswal et al. (2021).

According to other research, perceived ease of use strongly and significantly affects attitude and

behavior intention (Kaplan et al. (2017). Additionally, according to researchers, perceived usability might influence how useful something is seen favorably. As a result, new technology offers can only be viewed as helpful if they are simple to use and appropriate for client consumption. 2019 Cheng et al. Perceived utility and perceived ease of use are the two components of TAM that influence the intentions of technological breakthroughs. However, it does not take into account how new technologies will be influenced by social factors (Chen, 2016).

Compatibility

Under innovation diffusion theory, Roger (2003) "The degree to which a new idea is viewed as being consistent with the needs, past experiences, and values of potential adopters shows its compatibility. An innovation's adoption rate is positively correlated with how well-suited it is, as judged by other social system members". People are more inclined to accept technologies that are compatible with them, such as mobile banking, according to prior research by Makanyeza (2017). With regards to the task-technology fit theory Goodhue and Thompson (1995), the existence of a fit between tasks and technologies can help to make people feel comfortable and thus encourage them to use the technology that they were not used to before, on the other hand, we, people tend to reject any new technological development if they feel that it doesn't fit with the tasks that they have to perform it leads to misfit-induced stress. In this regard, it is prudent to think that consumers who believe electric vehicles can help them meet their daily transport needs and match their lifestyles will have a greater

tendency to adopt electric vehicles. If not, they are more likely to choose the traditional petrol and diesel vehicle. According to the study (Bhat et al.(2022) customers' intentions to embrace electric vehicles are positively impacted by environmental passion, technological enthusiasm, social image, social influence, perceived benefits, performance expectations, and facilitating factors. So, compatibility can play an important role in ascertaining the consumer adoption intention of electric vehicles. In this paper, I am assessing whether the lifestyle of the consumers is compatible with electric vehicle adoption and whether the consumers are inclined to adjust their lifestyles to make them more compatible with driving electric vehicles.

Adopter categories as a means for understanding innovativeness

The desire to discover something new and different is referred to as "innovativeness" by Hirschman (1980). Individuals' innovativeness or novelty-seeking tendencies are expressed by their willingness to attempt or experience new things. Adopter categories are groups into which adopters are allocated based on their time of adoption Brown et al. (1976). This paper uses the five adopter categories: innovators, early adopters, early majority, late majority, and laggards.

Moral Norms

The moral norms are a part of TPB theory (theory of planned behavior); they are one of the four determinants of this theory. Moral norms are defined as a responsibility that an individual feels for performing a certain kind of action Ajzen and Fishbein(1980). The study(Sahoo et al. (2022) provides directions that there is a need for

subsidies and incentives. One of the key ideas in the psychology of consumer behaviour is the moral norm. The foundation from which the idea of a moral standard has emerged is the standard Activation Model proposed by Schwartz in 1977. The NAM states that two conditions must be fulfilled for an individual's norm to be activated. First, the person must realize that the behavior has a positive or a negative consequence related to society. This realization is the awareness of consequences that a person has, in essence, the consequences and outcomes that their behavior will result in. Secondly, the person must feel that they have a responsibility, i.e., Ascription of responsibility to contribute positively concerning the issue in consideration. Additionally, some experts have asserted that prospective buyers who value their social responsibility and are inwardly driven are more likely to adopt EVs than those who do not feel any responsibility; other researchers have observed that congruence between the value system of individuals and EVs is expected to result in adoption behavior Shalender and Naman (2020). Research by Lane and Potter (2007) highlighted the role of personal values in consumer buying behavior and found that people with strong moral and value systems are likely to embrace electric vehicles.

Objectives

1. To examine the relationship between environmental concern and consumer adoption intention of electric vehicles: This objective aims to investigate how consumers' level of environmental concern influences their intention to adopt electric vehicles.

2. To assess the role of perceived usefulness, perceived ease of use, compatibility, and personal innovativeness in shaping consumer adoption intention of electric vehicles.
3. To assess the role of moral norms in shaping consumer adoption intention of electric vehicles.

Hypothesis

Hypothesis: 1

H0: There is no significant positive association between environmental concern and the adoption intention of EVs

Hypothesis: 2

H0: There is no significant positive association between moral norms and the adoption intention of EVs

Hypothesis: 3

H0: There is no significant positive association between perceived usefulness and adoption intention of EVs

Hypothesis: 4

H0: There is no significant positive association between perceived ease of use and adoption intention of EVs

Hypothesis: 5

H0: There is no significant positive association between compatibility and adoption intention of EVs

Hypothesis: 6

H0: There is no significant positive association between personal innovativeness and the adoption intention of EVs.

Research Methodology:

The type of research is qualitative and descriptive. The study used an internet-based survey questionnaire to test the hypothesis. A total number of 152 relevant responses were received. Respondents were of

different age groups who had experience with EV driving.

Sampling: Convenience sampling is done. The multiple regression model is used to describe and analyse the responses. The model comprised items reflecting each of the proposed constructs, namely, perceived usefulness, perceived ease of use, compatibility, personal innovativeness, environmental concern, and moral norms, which comprised an Ascription of responsibility and awareness of consequences and questions related to whether the respondent will adopt EV or not.

The questions in the last subsection were in the form of a Likert scale questionnaire ranging from 1 to 5.

The online data collection tool, i.e., Google Forms, was used, and the questionnaire was distributed using social networking. To examine the theoretical model, a regression analysis was done. Cronbach's alpha test - before proceeding with the regression analysis, Cronbach's alpha test was done. The internal consistency or reliability of a group of survey items is assessed using Cronbach's alpha statistic. It is to determine whether the group of items reliably assesses the same traits.

Data Analysis

Table: 1 Cronbach's alpha

Variables	Cronbach's Alpha Value
PU	0.833488372
PEU	0.496779542
C	0.67678729
PI	0.530856477
EC	0.84608201
AC	0.723413663
AR	0.796807218

Table 1 gives the Cronbach values of perceived usefulness (PU), perceived ease of use (PEU), Compatibility, Personal innovativeness (PI), Environmental concern (EC), Awareness of consequences (AR), Ascription of responsibility (AR), and personal norms (PN). The values have to lie between 0 and 1. Values near 1 mean greater internal consistency in the set of survey items.

Table: 2 Test of Normality for the data

Test of Normality						
	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	Df	Sig.	Statistic	df	Sig.
PU	0.147	52	0.007	0.901	52	0
PEU	0.106	52	.200*	0.951	52	0.031
CM	0.164	52	0.001	0.944	52	0.016
PI	0.119	52	0.063	0.962	52	0.099
EC	0.177	52	0	0.898	52	0
AC	0.192	52	0	0.871	52	0
AR	0.196	52	0	0.904	52	0
PM	0.216	52	0	0.883	52	0
ADOP	0.222	52	0	0.826	52	0

*. This is a lower bound of the true significance.

Test of normality – This test was conducted with the support of SPSS. The Shapiro-Wilk test effectively measures how well the sample data fits a normal distribution, or "goodness-of-fit." The statistic will accept a value in the range of 0 and 1, where 1 represents the ideal match. If the Shapiro-Wilk test's sig. Value is larger than 0.05, and the confidence level for the test is set at 95%; the data is considered to be normally distributed; if it is less than 0.05, however, it is said to have considerably deviated from a normal distribution.

Regression analysis

Since our data is not normally distributed, we have to use ordinal regression.

Table:3 Regression Model

Model	-2Log	Chi-Square	df	Sig.
	Likelihood			
Intercept Only	120.041			
Final	91.531	28.511	8	0

Link function: Logit.

Model Fitting Information

Model fitting tells us how well a model fits the data. The final value is less than 0.05 so the model fits the data very well.

Table: 4 Goodness for Fit test

Goodness-of-Fit			
	Chi-Square	Df	Sig.
Pearson	139.22	145	0.62
Deviance	91.531	145	1

Link Function: Logit.

The discrepancy between the present model and the complete model is evaluated using the Pearson goodness-of-fit test. It determines whether the predicted probabilities deviate from the observed probabilities. The final value is greater than 0.05 i.e., .0.620 so the model fits the data very well.

Table 5: Parameter Estimates

	Estimates	Standard Error	Wald	df	Sig.	95%	95%
						Confidence	Confidence
						Lower Bound	Upper Bound
Threshold							
[ADOP=1.00]	1.003	2.397	0.175	1	0.676	-3.696	5.702
[ADOP= 3.00]	4.973	2.427	4.198	1	0.04	0.216	9.731
[ADOP =4.00]	7.58	2.57	8.701	1	0.003	2.543	12.616
Location PU	0.052	0.326	0.025	1	0.873	-0.587	0.691
PEU	-0.08	0.495	0.026	1	0.871	-1.051	0.891
CM	-0.049	0.443	0.012	1	0.911	-0.918	0.891
PI	-0.342	0.514	0.444	1	0.505	-1.349	0.664
EC	1.692	0.381	1.416	1	0.023	0.831	0.948
AC	0.729	0.653	1.246	1	0.026	-0.551	2.01
AR	-0.286	0.391	0.234	1	0.629	-1.444	0.872
PM	2.194	0.546	16.16	1	0	1.124	3.264

Link Function: Logit.

For this data, when adjusting for the remaining independent variables, ordinal regression coefficients are understood as the estimated or expected change in the probabilities of being in a higher category (as opposed to a lower category) on the dependent variable (35). For a positive estimate or coefficient, there is a predicted rise in the likelihood that the independent variable will fall at a higher level on the dependent variable for every unit increase on the independent variable. For a negative estimate or coefficient, there is a predicted drop in the probability of being at a higher level on the dependent variable for every unit increase on the independent variable.

- The perceived usefulness (PU), environmental concern (EC), and Moral norms (PM) are positive indicators of the adoption intention of electric vehicles (ADOP); this means for every one unit increase in the adoption intention of EVs (ADOP), there is a predicted increase of 0.052 (in PU), 1.692 (in EC) and 2.194 (in PM) in the odds of being at a higher level on adoption intention of EV (ADOP). Only environmental concern (EC) and moral norms (PM) show significance from these independent variables. Null Hypotheses 1 and 2 are rejected.

- The perceived ease of usefulness (PEU), compatibility (CM), and personal innovativeness (PI) are negative indicators of the adoption intention of electric vehicles (ADOP). This means the negative coefficient -0.08(in PEU), -0.049(in CM), -0.342(in PI) indicate that for every one unit increase in PEU, CM, and PI, there is a predicted decrease of 0.08 (in PEU), 0.049 (in CM) and 0.342 (in PI) in the odds of being on a higher level of

adoption intention of the electric vehicle. Hypothesis 4, Hypothesis 5, and Hypothesis 6 are accepted.

The data analysis revealed that Environmental concern (EC), Perceived usefulness (PU), and moral norms (MN) are positive indicators of the adoption intention of electric vehicles (ADOP).

The results of only environmental concern and moral norms are statistically significant.

Discussions and Conclusions:

The study shows that the null hypothesis for environmental concern hypothesis 1 is rejected, and it can be said that for this data, environmental concerns were a significant factor in determining consumer intentions to use electric automobiles. This suggests that because consumers are concerned about the environment, manufacturers and dealers must promote electric vehicles in an environmentally friendly manner. Companies and government agencies can encourage consumers to purchase electric vehicles by launching an environmental-focused advertising campaign. Similarly, the null hypothesis for moral norms Hypothesis 2 is rejected, and it can be said that for this data, moral norms have a positive relationship with consumer adoption of electric vehicles. Moral norms include ascribing responsibility and awareness of the consequences of using petrol and diesel vehicles. In this data, most of the respondents were aware that they have a moral obligation to use EVs and thereby aid in the efforts of protecting the environment, so even though for this data, moral norms are positively significant, governments must continue to sensitize people about the harmful effects of using petrol and diesel

vehicles as using these can lead to air pollution. Hypothesis 3 for perceived usefulness is accepted as the significant value is more than 0.05. However, its estimated values in parameter estimates are positive, indicating that it is a positive indicator but not strong or significant enough to influence consumer adoption of electric vehicles. Perceived usefulness is defined here as "the extent to which a person thinks that utilizing a certain system would improve his or her ability to perform at work." This data shows that though it is a positive indicator, the respondents don't consider it significant enough to influence their adoption intention of electric vehicles. It was also revealed that perceived ease of use (PEU), compatibility (CM), and personal innovativeness (PI) are negative indicators of the adoption intention of electric vehicles. This shows that hypothesis 4 for perceived ease of use is accepted and that for this data, PEU is not playing a very significant role in shaping the adoption intention of electric vehicles. Perceived ease of use is "the extent to which a person thinks using a certain system would be easy." Data from the respondents revealed that this variable does not influence their adoption intention. There is no positive association between compatibility and adoption intention of electric vehicles. Similarly, there is no significant positive association between personal innovativeness and the adoption intention of electric vehicles.

Planners and Legislators may find the study's findings helpful in increasing the rate at which electric vehicles are adopted in the real world.

The sample size taken is small and collected from Indian respondents.

Also, only six relevant factors are taken to analyze the adoption intention of EVs. Future studies can be based on large samples and related to other countries. Finally, many other relevant factors can be taken to analyze consumer's intention to embrace electric vehicles.

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Blockchain Role in Enhancing Financial Risk Management-A Correlation Analysis in Banking Companies

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Abstract

There is a strong connection between the total risk and the financial risk that an organization faces. When there is a financial risk involved, it may be very disruptive to both individual enterprises and the economy as a whole. In this study, blockchain technology and big data are used as important technologies to get a better understanding of financial risk assessments and associated regulatory research. According to the findings of this research, the best way to analyze financial risk is to combine theory with model. An analysis of the elements that are responsible for the risk is performed to arrive at the risk value. Experiments imply that the financial risk associated with combining blockchain technology and big data has been lowered by between 10 and 15 percent as a consequence of these efforts. In the quest for efficient financial risk management, this form of risk reduction may often prove to be extremely beneficial in achieving one's goals. In the not-too-distant future, a large number of financial transactions will be processed using a technology called block chain.

Keywords: Blockchain, Financial risk management, transactions.

Introduction

Users of Blockchain are given the ability to make decentralized improvements to the network. There is no need for a third party, such as a bank, to monitor the activities that take place on blockchain networks. Blockchains may be used to store information, and the technology behind distributed ledgers makes it possible for that information to be more readily transferred (Mishra & Kaushik, 2023). It is possible to utilize it to have one-on-one conversations with other people who are using the network. All of the transactions that take place on the blockchain network are safe and anonymous. The solid security features offered by blockchain technology make it desirable to a wide variety of various sorts of enterprises. The process of data reconciliation is time-consuming and resource-intensive since in the modern business world, each organization is responsible for its

accounting obligations (Ning, 2021). The use of blockchain technology might provide a solution to this problem by enabling the simultaneous recording of several sorts of information in real-time inside a distributed ledger, such as transactional data, contractual terms, and other data. This suggests that evaluations of adherence to legal requirements will be carried out in an automated manner. It is anticipated that the actions of the organization will have a much higher effect. The experience of the consumer might perhaps be enhanced, which would increase the safety of identification and data transactions. The concept of a distributed ledger, which records every transaction and maintains the chronology and correctness of the data stored therein over a secure and unbreakable worldwide network, is the cornerstone around which blockchain was built.

This technology may assist in maintaining harmony in the middle of the current digital revolution by mediating conflicts that arise between technology, user data, and privacy concerns. The need to protect one's privacy should be emphasized more in relation to data management. When accounting records between counterparties are correct and up to date, the auditing process is facilitated by increased openness and effectiveness. It is possible that the time and effort spent by auditors on reviewing a large volume of mundane transactions will be redirected toward the resolution of more complex and contentious issues. As a consequence, the need for accountants and auditors has not been eliminated as a consequence of the automation of processes (Liu, 2021). Both blockchain and artificial intelligence are incredibly unique technologies that have an astonishingly wide range of potential applications. On the other hand, artificial intelligence is a highly centralized service that is dependent on safe data that cannot be accessed or duplicated in any way. Their collaboration brings about a number of advantages, most notably in the form of monetary assistance. With the help of smart contracts, which are made possible by blockchain technology, all parties involved in a transaction can form legally enforceable agreement financial in nature and it will be executed when all conditions are met. This eliminates the necessity for keeping the record in order-to-cash, record-to-report, and procure-to-pay processes (Boakye, 2022). Blockchain technology enables continuous statements between those groups who were engaged in the transmission of the information. In the same way, traditional

contracts do, contracts that are smart ensure that the terms are followed in actual time and deprived of any room for interpretation on a blockchain (Ashima, 2021). This removes the need for a third party and increases the level of accountability for all parties involved in a way that traditional contracts cannot. By having a decentralized network of computers perform the intermediate responsibilities through the use of the internet, the distributed ledger system removes the necessity of having to rely on the services of a trusted third party. A public distributed ledger keeps a record of all transactions and sends them out over the network to every node. This system is more secure than the current centralized ledger system because each node in the network has a true copy of the ledger. It can also validate asset ownership and make transactions transparent (Mosteanu 2020).

Cloud-based software with analytics that are customized for specific uses such as receivables of payment, payables of payment, administration of the contract, preparation of reports, and other financial accounting operations, has revolutionized these processes. Receivables of Cash and electronic payment transfers are the types of payments that are considered to have the highest level of reliability. However, a single wire transfer cannot be used to transmit both the money and the time at the same time (Duchenne, 2018). These issues are resolved by payment systems that are based on blockchain technology, which also helps to boost customer trust. The ability of financial institutions to execute instantaneous transfers of money to one another has been made feasible by technological advancements,

which have led to a reduction in transaction costs and an acceleration in settlement times. The use of this technology makes it easier to monitor financial transactions and gives the possibility of automating previously manual processes. Banks and other types of financial organizations can utilize smart contracts to keep an eye on clients' transactions involving money and other items.

Review of Literature

Within the expansive field of technology used in blockchain for rendering services related to finance and its architecture, there are a select few tools and techniques that particularly stand out. It has been discovered over time that the tools and procedures used in the applications of blockchain for providing services are very identical (Mishra & Kaushik, 2023). These strategies and tools can swiftly adapt to rapidly shifting financial situations since Blockchain principles underpin their operation. The following open-source software tools—Parity, Geth, Solc, MTYHX, Truffle, Infura, Metamask, and others—are featured here. With the help of these innovative and cutting-edge solutions, blockchain technology will continue to enhance financial services and linked industries (Zheng, 2022).

Since the beginning of this decade, the financial and insurance sectors have been pondering the potential benefits brought about by blockchain technology. One way to think of a use of blockchain is as a digital ledger that is not centralized and keeps a record of all completed transactions that are monetary. This journal is printed, and copies of it are kept, at several different libraries and archives. The time and date of each transaction are written down and stored in a distinct block

that is created by each ledger copy. All transactions about money may be accurately documented in this manner (Paul, 2022). Because there are several copies of the ledger, blockchain is nearly indestructible and very secure. This makes it extremely difficult, if not impossible, for hackers to modify or fabricate any part of the record. Businesses are now able to more readily and confidently place their faith in one another because of blockchain technology. As a direct consequence of this, deterministic smart contracts may be written and used in immutable systems to simplify business procedures, increase productivity, and build confidence. It protects sensitive information at every step of the software development life cycle, making it the most advanced solution available for selective data sharing inside corporate networks (Gupta, 2019).

When compared to the issue of physical securities, the process of digital securities may be said to be both quicker and more efficient. Issuers of digital financial solutions can customize these solutions so that they meet the requirements of individual investors. Examples of this include fractional ownership of real objects, tokenized micro-economies, and asset transfers that are secure, scalable, and quick (Chen 2019). These elements provide several advantages, including enhanced stakeholder incentive alignment, increased efficiency in corporate operations, and governance structures that are both more visible and responsible. There is growing demand for specialized markets, venture capital, private equity, and real estate funds to modernize their methods of liability risk management, build more nimble decision-making frameworks, and

cope with the complexities of ever-evolving rules. Blockchain technology, which functions as a distributed ledger, can completely transform stakeholder and asset management. The fact that digital money was the first sort of data to be stored on blockchains gives financial applications the potential to usher in a period of profound change across the sector.

An insurance company may make use of smart contracts to speed up the process of filing claims. An instantaneous evaluation of a client's claim will be performed by the programs that are pre-installed in the Blockchain. Payment to the customer will be provided according to the conditions of the smart contract if the contract is found to be legally binding (Bulut 2022). To avoid scam and laundering, the majority of banks and other companies that offer financial services now require their customers to go through some form of identity verification procedure. When a block is generated for each operation and which will be added to the chain, this results in the creation of a digital ledger. Because blockchain ledgers provide several advantages over more traditional digital ledgers, there is a growing possibility that they may be used in the financial industry. Now, with the use of blockchain technology, we can establish our very own decentralized digital ledgers. As a result, there is no need to rely on a centralized organisation to process or preserve information on transactions. When adopting Blockchain, there is a potential reduction in the risk of transaction data being hacked since there is no centralized repository for holding transaction data that uses its distinct security mechanism (Dewey 2018).

Applications based on the blockchain might potentially make banking more accessible and less expensive. The fact that blockchain technology offers a high level of security is only one of the numerous benefits that contribute to the technology's growing popularity in the financial sector. Encryption is applied for reasons of safety to the distributed ledger that records blockchain transactions. Because of this, the information was unavailable to anybody who was not aware of the hidden code (Vijai 2019). The banking industry currently provides a wide variety of possibilities within the realm of fintech. As a result, it may be challenging for those who supply financial services to hone in on the solution that will prove to be the most successful. The answers to some of the furthestmost thoughtful issues now confronting the monetary services segment may be realised via the use of blockchain technology. The administration of financial services is still performed in the traditional, centralized, and convoluted manner around the globe. Transparency has been reduced as a result of the majority of financial data being maintained in centralized systems and having to pass through several intermediaries. In addition, the protection of the data can only be compromised through intermediaries and database security (Kherbouche, 2022).

However, even the most secure systems are susceptible to being hacked and having their data stolen. Lack of transparency generally results in complicated security issues since discrepancies are not brought to anyone's attention until it is discovered that a data breach or other system problem has occurred. When compared to the issue of

physical securities, the process of digital securities may be said to be both quicker and more efficient. Issuers of digital financial solutions can customise these solutions so that they meet the requirements of individual investors. Examples of this include fractional ownership of real objects, tokenized micro-economies, and asset transfers that are secure, scalable, and quick. These elements provide several advantages, including enhanced stakeholder incentive alignment, increased efficiency in corporate operations, and governance structures that are both more visible and responsible (Han 2022). There is growing demand for specialized markets, venture capital, private equity, and real estate funds to modernize their methods of liability risk management, build decision-making frameworks that are more nimble, and cope with the complexities of ever-evolving rules. Blockchain technology, which functions as a distributed ledger, can completely transform stakeholder and asset management. The fact that digital money was the first sort of data to be stored on blockchains gives financial applications the potential to usher in a period of profound change across the sector.

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Methodology

Traditional trade finance methods have, for a very long time, been a source of annoyance for businesses. This is due to the lengthy procedures involved, which may sometimes cause delays in operations and make it difficult to manage liquidity. The use of blockchain technology may simplify the processes involved in international business transactions and company operations. It makes it easier to conduct secure corporate transactions across international borders. Use cases that need an immutable record, such as monitoring things in real-time as they are exchanged between multiple parties across the supply chain, are a good fit for blockchain because of its properties.

Research Assumptions

H1: There is no major association between the application of blockchain technology and enhanced safer clearing and settlements

H2: There is no major association between the application of

blockchain technology and real-time tracking of financial transactions for better management

H3: There is no major association towards the application of blockchain technology and the creating of cost-effective tools for efficient credit reporting

Data Analysis

The major part of the research analysis covers the percentage rate analysis, correlation analysis and chi-square test analysis.

Percentage rate analysis

Table 1:Blockchain supports in Fraud prevention

Fraud prevention	Frequency	in %
Strongly Disagree	12	8.3
Disagree	14	9.7
Neutral	9	6.3
Agree	53	36.8
Strongly Agree	56	38.9
Total	144	100

Source: Compiled by Authors

Table 1 shows that 38.9% of the respondents strongly agreed with the statement that blockchain technology supports in preventing fraud in financial transactions and thereby reducing financial risk and approximately 36.8 %of the respondents agreed to it. Hence, it can be stated that blockchain supports in fraud prevention. Furthermore, 6.3% of the respondents were unbiased and remaining were conflicting to the statement

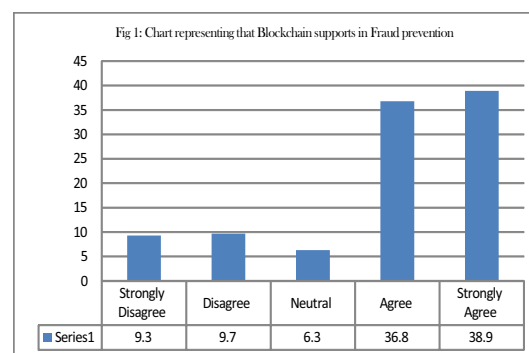


Table 2: Efficacy in Handling Transactions

Efficacy in handling transactions	Frequency	in %
Strongly Disagree	15	10.4
Disagree	13	9
Neutral	11	7.6
Agree	50	34.7
Strongly Agree	55	38.2
Total	144	100

Source: Compiled by Authors

Table 2 states that 38.2% of the respondents have strongly agreed to the statement that blockchain enable in creating efficacy in financial transactions, also 34.7% of the respondents have agreed to the statement. However, 7.6% were unbiased and remaining were conflicting to the statement

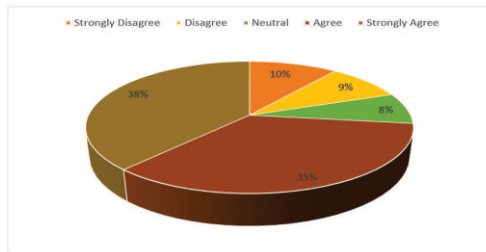


Fig 2: Chart representing the Efficacy in handling transactions

Correlation analysis

The second part of the analysis is involved in presenting the critical nature of relationship between the independent variables correlation analysis is one of the useful statistical tools to measure the overall association between the variables, in the study the researchers has considered three key independent variables viz., risk management, areas of enhancing financial performance and managing the cash and its relationship towards the dependent variable enhancing financial decision making.

Table 3: Correlation analysis

Coefficients	Safer clearing and settlements	Real-time tracking	Cost effective	Application of Blockchain tech
Safer clearing and settlements	1	0.888	0.823	0.858
Real-time tracking	0.888	1	0.858	0.868
Cost effective	0.823	0.858	1	0.823
Application of Blockchain tech	0.858	0.868	0.823	1

Source: Compiled by Authors

For the complete analysis it is noted that the coefficient of correlation analysis lies between +0.823 to +0.888 which shows that there is a higher positive correlation between the variables. On the other hand, the overall comparison between the independent variables and dependent variable shows that highest correlation lies between real-time tracking of financial transactions and application of blockchain technology with the value of +0.868, also variables safer clearing and settlement and application of blockchain technology is +0.858 and the remaining variable cost effective and application of blockchain technology is +0.823.

Chi square test analysis

The last and the major step in the data analysis is to test the hypothesis using the chi square analysis

Hypothesis 1

Null: There is no major association among the application of blockchain technology and enhanced safer clearing and settlements.

Table 4: Chi square analysis between application of blockchain technology and real time tracking of financial transactions for better management

Chi-Square Test	Value	df	P Val.
Chi-Square Data	296.812a	16	0.00
L Ratio	210.318	16	0.00
Linear-by-Linear	105.308	1	0.00

Based on the analysis it is depicted that the p value is 0.00 which is less than the significance value hence alternate hypothesis is considered hence there is a major association towards the application of blockchain technology and creating cost effective tools for efficient credit reporting.

Hypothesis 2

Null: There is no major association among the application of blockchain technology and real time tracking of financial transactions for better management

Table 5: Chi square analysis between application of blockchain technology and real time tracking of financial transactions for better management

Chi-Square Test	Value	df	P Val.
Chi-Square Data	291.110a	16	0.00
L Ratio	198.319	16	0.00
Linear-by-Linear	107.721	1	0.00

Source: Compiled by Authors

Based on the above analysis it is depicted that the p value is 0.00 which is less than the significance value hence alternate hypothesis is considered hence there is a major association among application of blockchain technology and real time tracking of financial transactions for better management

Hypothesis 3

Null: There is no major association towards the application of blockchain technology and creating cost effective tools for efficient credit reporting

Table 6: Chi square analysis between application of blockchain technology and creating cost effective tools for efficient credit reporting

Chi-Square Test	Value	df	P Val.
Chi-Square Data	298.677a	16	0.00
L Ratio	186.064	16	0.00
Linear-by-Linear	96.969	1	0.00

Source: Compiled by Authors

Based on the above analysis it is depicted that the p value is 0.00 which is less significant than the value, hence alternate hypothesis is considered hence there is application of blockchain technology and creating cost effective tools for efficient credit reporting

Therefore, the statement of hypothesis is stated as

Table 7: Final Results of Hypothesis

Hypothesis	Decision
Alternate H1: There is a major association among the application of blockchain technology and enhanced safer clearing and settlements	Accept
Alternate H2: There is a major association among the application of blockchain technology and real time tracking of financial transactions for better management	Accept
Alternate H3: There is a major association towards the application of blockchain technology and creating cost effective tools for efficient credit reporting	Accept

Source: Compiled by Authors

Conclusion

Blockchain technology is being comprised by businesses all over the world as more and more of their production facilities are networked together. The factory of the future will be made up of a massive supply chain that will include a variety of different goods, businesses, and services. This primary objective is to provide a record for digital currency such as cryptocurrencies that is incorruptible and cannot be changed in any way. Information is protected by applications based on

blockchain technology, which also enables companies to target particular audiences and ensures that artists are paid appropriately. The number of individuals who choose to conduct their financial dealings via the use of this technology is consistently growing. Payment processing is essential in today's society since the vast majority of monetary transactions now take place between bank accounts. In exchange for safer transactions and the potential to create their digital currencies, banks have embraced innovative technology and have been at the vanguard of the digital revolution. Financial organizations now can monitor all transactions in real-time thanks to the technology of blockchain. Transactions involving financial institutions will be able to be settled utilizing a public blockchain as a result of this technological innovation. It will be necessary for banking executives to fulfill several conditions before the concept can be widely accepted by the banking industry. The capacity of blockchain technology to enable the sharing of data and the provision of temporary access to assets will fundamentally transform how we navigate our environments.

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The Influence of Student Participation on Non-formal Educational Activities on their School Performance

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Abstract

Students' participation in structured non-formal education activities, organized in educational units, is an important element because it contributes to the development of their personality, and helps students to form positive skills towards learning, acquire skills, and problem-solving strategies. According to Feldman & Matjasko (2007), non-formal education activities have positive effects on students through better school performance; lower dropout rate; better psychological state, increased self-esteem, less worries about the future; reduced feeling of social isolation; and low level of delinquent behaviors. The present study aims to analyze whether the development of a program of non-formal educational activities, designed, organized, and carried out by teaching staff in close collaboration with other educational partners such as parents, and NGOs, contributes to increasing the school performance of students from primary. The value of the Pearson correlation index confirms that in the case of students who participate in non-formal activities in the formal space, the school performances, and qualifications in the subjects MEM, M, CLR, and LLR, are superior to those who do not participate in these activities.

Keywords: education, non-formal activity, school performance;

Introduction

The psychological basis of non-formal education is identified in constructivism (Taylor, 2006). The initiators of non-formal education establish the structure of social teaching and its epistemological principles, which represent conditions for learning by participating and encouraging the community. From the constructivist perspective, learning takes place through such interactions between participants, students, learners and teachers, instructors, facilitators, and animators. Participants construct knowledge about their world by interacting with their environment (Ornstein & Levine, 2006).

Cognitive learning theory implies that different learning processes can

be explained by analyzing mental processes. By engaging effective cognitive processes, learning is easier, and new information can be stored in memory for a long time. On the other hand, inefficient cognitive processes lead to learning disabilities, which can be observed at any time during an individual's life. In human-environment interactions, human beliefs, ideas, and cognitive skills are influenced by external factors, such as parental support, stressful environments, or warm climates. In peer interaction, a person's cognitive process will affect their behavior; In addition, performing this behavior can change their way of thinking. Actions affect and change the environment. For effective and positive learning to occur, an individual must possess positive

personal characteristics, exhibit appropriate behaviors, and remain in a supportive environment.

The major sociological principles of non-formal education include multi-sectoral activities, close community relations, and economic development at either the individual or societal level.

The interrelationship at the level of non-formal educational activities contributes to improving the social well-being of the community of which we are a part. Thus, active participation through the involvement of community members is impetuously necessary for the achievement and success of these activities. Individual involvement in the planning and management of every aspect of the program of non-formal educational activities creates a sense of ownership among participants and increases the relevance of these activities to their needs. The participation of individuals in non-formal educational activities allows the integration of education in the procedural and social structures, in which they are engaged in daily activities (Riezen, 1996).

Nonformal educational activities are directly influenced by the formation of students' social competence. Their social experiences, as well as the motivational, cognitive, behavioral, and social value components of social competence, can influence the successful implementation of the proposed non-formal activities.

Students' social relationships following participation in non-formal educational activities are extended into relationships dependent on reciprocity, those relationships in which the participants rely more and more on each other. These actions

emphasize similarity in attitudes, needs, and values, relying on social interactions that involve an exchange of information or goods, not just on the possibility of two individuals interacting (Kelley & Thibaut, 1978).

In social psychology, we note a distinction between two forms of social relations (Clark & Mills, 1979): common relations, which describe affiliations with friends, colleagues, and family members, and exchange relations, which include all the others. In a joint relationship, the student's behavior is oriented toward the well-being of the partner.

In an exchange relationship, the learner's behavior is guided by the reciprocity of the benefits received or anticipated. Participants have no obligation to each other than to ensure their partner's well-being, which results from their social interactions. Thus social exchange means social interaction.

The term reciprocity is not used in describing social relations, although it represents a social interaction that involves giving and returning or repaying what one of the interlocutors has received.

According to Younis (1980), reciprocity has two forms:

- symmetrical reciprocity (situations in which two students make the same contribution to a social exchange or collegial relationship);

- complementary reciprocity (situations in which the contributions of the two students are not equivalent, but are compensatory or complementary);

Berndt (1977) argues that the underlying structure of students' collegiate friendships is always recognized as reciprocity, and his

notions of reciprocity involved in friendship change as a function of interest, matching of emotional and psychological states, and reciprocity or collective concern (Selman, 1980).

Social relationships are characterized by the quality of interactions between people within a society. People with active social relationships tend to be more satisfied and happy with their lives. This positive role of social relationships on personal well-being can be explained by the benefits it brings. First, social relationships are a key component in affirming an individual's sense of self, satisfying the basic human need for belonging, and are a source of positive affirmation (Deci & Ryan, 2002).

The student's level of well-being increases with the number of people he can trust, with whom he can discuss problems or matters important to him. On the other hand, this level of well-being decreases in the presence of adults or strangers (Taylor et al., 2001).

The presence of social relationships has a positive impact on a child's mental and physical health, contributing to their overall well-being, while the absence of social relationships increases their susceptibility to suffering.

As in many relationships, friendship between students depends a lot on the opportunities encountered, it is determined by social values and the decision to establish a certain bond of friendship. This indicates that friendship is often related to positive interpersonal relationships that are important and meaningful to the child.

The management of the non-formal education process is the responsibility of the facilitator or the

resource person who designs and organizes these activities, effectively using the available resources. At the same time, this process involves the implementation of a monitoring and evaluation system that examines the effectiveness of the non-formal learning process and regularly reviews the results to prioritize improvement actions.

In the school institution, the facilitator of non-formal activities is the teacher. It is his responsibility to motivate and inspire both the students and the local community in an effective partnership.

According to the report of the Institute of Education Sciences on "The valorization of non-formal learning experiences in building key skills" (Căpi ă, 2011), the diversity of non-formal educational activities proposed by teachers depends on a multitude of factors, among which we mention:

- students' motivation and their ability to make choices that positively influence their personal development within the school;

- the ability of teachers and teachers to propose stimulating problems in which the situation is real (not a fictional context), with effective consequences in the life contexts that the students experience;

- The ability of teaching staff to analyze the training needs of students, identify their centers of interest, and to stimulate cooperative learning;

- The school's ability to build educational partnerships with operators from the local community or other institutions providing non-formal education;

- The openness of the collective of teachers and the managerial team to educational alternatives, the degree

of receptivity of the school institution as a whole to the new education.

The teaching staff, as manager of non-formal activities, has the responsibility to create and implement a strategic plan, which identifies appropriate priorities and objectives for improving student learning. It ensures the management, financing, organization, and administration of the non-formal framework in the school institution, monitors, evaluates, and reviews the effects of non-formal activities, and takes necessary measures to improve them.

Forms of organization of non-formal activities

As forms of organization of non-formal education activities, we distinguish visits, excursions, thematic celebrations, contests, cultural and artistic activities, partnerships, etc.

Cristea & Constantinescu (1998) identified two main "pedagogical circuits", through which non-formal behaviors and influences support and complement the didactic-educational approach, carried out in the classroom:

a) The didactic circuit outside the classroom: art shows organized by the school, competitions, and other activities;

b) Didactic circuits located outside the school institution, including two types of activities:

- extracurricular, extracurricular activities, especially during free time: trips, visits, clubs, school camps, watching shows and exhibitions, using modern training resources (video library, media library, computers, etc.);

- Extracurricular, extracurricular

activities, institutionally organized, in the socio-professional environment of the individual, to ensure improvement, recycling, permanent education, etc.

Starting from the criterion of the place where non-formal education activities are carried out and the institution that manages them, we can classify them into:

- non-formal education activities carried out in educational institutions, but outside the classroom and the lesson;

- non-formal education activities carried out outside educational institutions, but under their influence;

- non-formal education activities carried out in educational institutions, by other institutions with educational functions;

- non-formal education activities carried out outside educational institutions, by other institutions with educational functions.

Non-formal education activities carried out outside the educational unit, but with the approval of the school staff, can be short-term, for example: trips, hikes, expeditions, or long-term, such as educational or sports camps (Lazăr & Cărășel, 2007).

Depending on the targeted target group and its size, non-formal education activities are:

- activities with the whole class of students;

- activities carried out by groups of students;

- individualized activities.

The intended purpose of non-formal education activities sub-groups them into activities with a predominantly informative

character and activities with a predominantly formative character.

The main aspects highlighted in non-formal education are its voluntary character on the one hand, but also the fact that it is based more on practice than on theory. Although everything is done in an organized way, the person in question voluntarily chooses to get involved, without expecting financial rewards or rewards specific to formal education in return: the grades. Also, no punishments are applied, such as marking absences, lowering the grade for behavior, and others.

The option of students to participate in non-formal educational activities proposed by the school was debated based on the variables that influence students' choice to participate in non-formal educational activities in schools or other educational institutions. Starting from the premise of student-centered education, the first variable will be the student's interest in the proposed topic. Many students associate non-formal activities with exercise, seeing it primarily as a form of relaxation and then as a way to improve physical fitness. While students' interests must be respected, in some cases they should be advised to choose activities not only based on their immediate satisfaction but also on their readiness for long-term success.

Another variable to consider when choosing non-formal activities in a school is the educational conditions of the school. Therefore, the non-formal education provided by the school is significantly affected by the size and level of the school organization, human, educational, and financial resources, and the quality of the education and

teaching process (Stearnes & Glennie, 2010). In their research, Feldman and Matjasko (2007) determined that the following areas of non-formal activity are more common in schools: sports activities, elective courses, performing arts, environmental protection, and interdisciplinary activities.

The third important aspect is the influence of informal education on the development of student's personality. There are different opinions between the belief that non-formal education is extremely effective in achieving real and complete learning and the lack of a rigorous methodology in the implementation of activities. On the other hand, research has shown (D. Okamoto, D. Herda, C. Hartzog, 2013) that among students with good school performance, the proportion of non-formal activities is higher. The impact of non-formal education is beneficial for all the above indicators, contributing to the optimization of school performance, increasing the participation of students, or NGOs in school organizations, and reducing deviant behaviors inside or outside school.

In addition to the factors that affect students' choice to participate in nonformal educational activities, given their level of professional training, teachers can enhance their experience of psychological education. In the face of abundant educational resources, students can participate more responsibly if the proposed activities are limited to a few options. Therefore, it is necessary to formulate a plan for continuous professional training of teachers in the field of non-formal education to increase the quality of this form of education, with a significant impact on the

development of students' personalities (A. Bradea, 2012).

Another study that captures the level of student performance according to their participation in extracurricular activities, concludes the following: (J. S. Eccles & B. L. Barber, 1999):

Participation in all types of non-formal education activities correlates with an increase in school results;

Participation in sports, administrative-school activities, and school clubs registers a higher probability that students will enroll in college by the age of 21;

participation in prosocial activities correlates with a lower delinquency rate among participating students.

Feldman & Matjasko (2005) mention the positive effect of non-formal education activities on self-esteem among students who take part in them. Receiving appreciation from others improved the teenagers' perception of their abilities, which increased their level of commitment to the respective activity.

Starting from the statement of the American pedagogue Bruner (1970), that any child, at any stage of development, can be taught successfully, in an appropriate intellectual form, any topic, if methods and procedures appropriate to the respective stage of development are used, if the matter is presented in a simpler form, so that the child can progress more easily and more thoroughly towards a full mastery of knowledge, we appreciate that non-formal education activities represent a major opportunity to transmit knowledge.

Research Methodology

The participants of this study are

the 2nd and 3rd-grade students from 2 educational institutions in the municipality of Arad, between the ages of 7-11, and they were selected using class samples. From the total number of the sample of subjects (N=196), the control group includes 96 students (48.97%), and the experimental group 102 students (52.03%).

The design and organization of non-formal activities involved:

10 organizational meetings between teachers for primary education, parents, and representatives of educational partners;

Meetings and organizational discussions between the teacher for primary education and the students of the class he leads (organization of activities in working groups, monitoring of the fulfillment of responsibilities, preparation for face-to-face activities between classes);

13 non-formal educational activities carried out in the formal space.

Hypothesis

The frequency of non-formal activities in the formal space has a moderating effect on the increase in school performance of students.

Analysis and interpretation of results

To verify the hypothesis, we made a correlation between the students' participation in the program of non-formal activities organized and carried out in the formal space and the school performance (experimental sample), and the recording of the differences between the school performance of the students who did not participate in the organization and carrying out of the non-formal activities (sample of

control). The disciplines that were chosen, and which are conclusive in the evaluation of the student's performances for the 2nd grade, are CLR (Communication in Romanian) and MEM (Mathematics and environmental exploration), and for the 3rd-grade LLR (Language and Romanian literature) and M (Mathematics).

The value of the Pearson correlation index ($r=0.324$; $p<0.01$) confirms that in the case of students who participate in non-formal activities in the formal space, school performance, grades in CLR and LLR subjects are superior to those who do not participate in these activities.

Correlations			
		Non-formal activities	MEM
Students participation at the non-formal activities	Pearson Correlation	1	.324*
	Sig. (2-tailed)		0
	N	97	97
MEM	Pearson Correlation	.324**	1
	Sig. (2-tailed)	0	
	N	97	97

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

Table No. 1. Pearson correlation between students' participation in the non-formal activities program and grades in the mathematics and environmental exploration discipline

The situation is similar in the case of the Mathematics discipline for students in the 3rd grade, where the value of the Pearson coefficient is $r=0.303$; $p<0.01$.

Correlations			
		Non-formal activities	Mathematics
Students participation at the non-formal activities	Pearson Correlation	1	.303*
	Sig. (2-tailed)		0
	N	99	99
Mathematics	Pearson Correlation	.303**	1
	Sig. (2-tailed)	0	
	N	99	99

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

Table No. 2. Pearson correlation between students' participation in the program of non-formal activities and grades in Mathematics

The value of the Pearson correlation index ($r=0.321$, $p<0.01$) is higher in the CLR discipline, which certifies the fact that the school performance of the experimental sample acquires ascending values through their participation in the program of non-formal activities organized and carried out in the formal space:

Correlations			
		Non-formal activities	CLR
Students participation at the non-formal activities	Pearson Correlation	1	.321*
	Sig. (2-tailed)		0
	N	99	99
CLR	Pearson Correlation	.321**	1
	Sig. (2-tailed)	0	
	N	99	99

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

Table No. 3. Pearson correlation between students' participation in the non-formal activities program and grades in the Communication in Romanian Language discipline

The same situation is highlighted in the case of the LLR discipline for students of the 3rd grade, where the Pearson coefficient is $r=0.326$; $p<0.01$.

Correlations			
		Non-formal activities	LLR
Students' participation at the non-formal activities	Pearson Correlation	1	.326**
	Sig. (2-tailed)		0
	N	99	99
LLR	Pearson Correlation	.326**	1
	Sig. (2-tailed)	0	
	N	99	99

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

Table No. 4. Pearson's correlation between students' participation in the non-formal activities program and grades in the Romanian Language and Literature discipline

The statistical test for non-parametric data for independent samples is significant for the disciplines MEM, Mathematics, CRL, and RLL, their results being presented in the table below:

Group Statistics					
	Program activit. nonformale	N	Mean	Std. Deviation	Std. Error Mean
MEM	CTRL	46	2.1211	0.6599	0.05387
	EXP	51	3.6709	0.58722	0.06145
Mathematics	CTRL	48	2.3133	0.78034	0.06552
	EXP	51	3.7864	0.56724	0.08247
CRL	CTRL	46	1.2777	0.69645	0.07523
	EXP	51	3.9888	0.5039	0.09186
RLL	CTRL	48	2.1236	0.47442	0.06554
	EXP	51	4.3762	0.42681	0.08772

Conclusions

In statistics, Levene's test is used to assess the equality of variance of a variable calculated for two or more groups. Some common statistical procedures assume equal changes in populations drawn from different samples. Levene's test evaluates this hypothesis. Tests the null hypothesis that the population variances are equal. If the resulting p-value of Levene's test is less than the 0.5 significance level, then the obtained difference in sample variance is unlikely to be based on random sampling from populations of equal variance. Therefore, the null hypothesis of equal variances is rejected and it is concluded that there is a difference between the population variances.

		Levenes's		t-test for Equality of Means							
		Test for									
		Equality of									
		Variances									
		F	Sig.	t	df	(2-tailed)	Sig.	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
										Lower	Upper
MEM	Equal variances assumed	0.783	0.397	-3.53	184	0	0	-0.2149	-0.06862	-0.01534	-0.605
	Equal variances not assumed			-4.612	46.412	0	0	-0.2149	-0.66534	-0.01156	-0.653
Mathematics	Equal variances assumed	2.165	0.273	-3.84	184	0	0	-0.2199	-0.21704	-0.0987	-34069
	Equal variances not assumed			-4.931	19.894	0	0	-0.2199	-0.21704	-0.08779	-0.405
CRL	Equal variances assumed	1.48	0.62	-3.62	184	0	0	-0.4689	-0.13079	-0.21567	-0.735
	Equal variances not assumed			-5.79	32.585	0	0	-0.4689	-0.12417	-0.23955	-0.755
RLL	Equal variances assumed	0.605	0.415	-3.78	184	0	0	-0.2199	-0.13901	-0.35088	-0.124
	Equal variances not assumed			-4.24	21.25	0	0	-0.2199	-0.12779	-0.31294	-0.125

The t-index for independent samples is found to be significant in the case of the four disciplines (MEM: $t = -3.529$ $p < 0.01$; Mathematics: $t = -3.837$ $p < 0.01$; CRL: $t = -3.623$ $p < 0.01$; RLL: $t = -3.783$ $p < 0.01$). Thus, the significant influence of the program of non-formal activities on the school performance of the students is found.

Following the analysis and interpretation of the data, it was found that the participation of students in the program of non-formal activities has a significant impact on the school performance of students in the conclusive subjects in the assessment of performance: CRL (Communication in the Romanian language) and MEM (Mathematics and environmental exploration), and for the class III RLL (Romanian language and literature) and M (Mathematics).

The value of the Pearson correlation index confirms that in the case of students who participate in non-formal activities in the formal space, the school performances, and qualifications in the subjects MEM, M, CRL, and RLL, are superior to those who do not participate in these activities.

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Strategic Integration of Multimedia in Outdoor Education: Nurturing pupils for future Leadership Roles

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Abstract

This research delves into the strategic integration of multimedia within outdoor education settings as a means to nurture pupils for forthcoming leadership roles. In today's rapidly evolving landscape, cultivating leadership skills among youth has become paramount. The study examines the pivotal role of multimedia tools and their intentional incorporation into outdoor education programs to empower pupils with the essential skills and competencies necessary for future leadership responsibilities. Employing a mixed-methods approach, this investigation explores various outdoor education environments where multimedia resources are strategically integrated. Through qualitative observations, interviews, and quantitative assessments, the research evaluates the impact of multimedia usage on pupils' leadership development. Additionally, it assesses how multimedia applications enhance critical thinking, communication, teamwork, and problem-solving skills, essential facets for effective leadership. Findings from this study underscore the significance of deliberate multimedia integration in outdoor education for nurturing pupils' leadership potential. The analysis not only highlights the strengths and benefits of multimedia tools but also identifies potential challenges and best practices for their optimal utilization in shaping future leaders. Ultimately, this research contributes empirical insights that inform primary school educators on the strategic integration of multimedia in outdoor education, from Arad County, Romania, elucidating its role in preparing pupils for the complexities of leadership roles in tomorrow's society.

Keywords: multimedia, outdoor education, primary school, leadership, competences.

Introduction

The evolving landscape of education necessitates a paradigm shift in preparing today's youth for the challenges of tomorrow. In this context, the strategic integration of multimedia within outdoor education emerges as a pivotal avenue for nurturing pupils to assume future leadership roles. As society advances and becomes increasingly interconnected, the demand for adept leaders equipped with multifaceted skills intensifies, propelling the need to explore innovative educational approaches that foster leadership capabilities from an early age. Drawing upon

established theories of educational psychology, leadership development, and multimedia learning, this investigation aims to elucidate the synergistic relationship between multimedia integration and the cultivation of leadership skills among pupils.

The theoretical foundation of this study is anchored in the understanding that effective leadership encompasses a spectrum of competencies, including critical thinking, communication, collaboration, adaptability, and problem-solving. Moreover, contemporary pedagogical theories emphasize the significance of

experiential and immersive learning environments, advocating for diverse approaches that cater to individual learning styles and preferences. By examining the theoretical framework underpinning multimedia integration in outdoor education and its implications for leadership development, this research endeavors to contribute valuable insights to educational practice and policy. It seeks to bridge the gap between theoretical perspectives and practical applications, shedding light on the transformative potential of multimedia-infused outdoor education in nurturing pupils for the multifaceted demands of future leadership roles. (Beames & Brown, 2016; Enoksen & Lynch, 2018; Graham, 1997; Sibthorp, 2003)

The Basics of multimedia in the education future

In contemporary educational settings, the utilization of multimedia has garnered significant attention and recognition for its transformative impact on learning experiences. Richard E. Mayer, a prominent figure in educational psychology, posited that multimedia, encompassing a combination of visual, auditory, and interactive elements, holds immense potential to enhance cognition and comprehension. Mayer's Cognitive Theory of Multimedia Learning emphasizes that the integration of various media formats aids in reducing cognitive load, facilitating better retention, and fostering deeper understanding among learners. (Mayer, 2002) Furthermore, scholars such as Allan Collins and Richard Halverson have emphasized the concept of "multiliteracies," emphasizing the need for students to develop competencies in navigating and critically engaging with diverse

forms of media. The contemporary educational landscape, as articulated by these scholars, increasingly acknowledges the role of multimedia in catering to diverse learning styles, promoting active engagement, and expanding the horizons of educational possibilities by capitalizing on the affordances of digital technologies. This recognition underscores the imperative for educators to embrace and strategically employ multimedia tools in curricular designs, acknowledging their potential to enrich learning environments and empower learners in this digital age. (Collins & Halverson, (2018)

The use of multimedia in schools has been associated with the development of leadership competencies among students, as suggested by various scholars and researchers in the field of education. Richard E. Mayer, a prominent educational psychologist, emphasized in his Cognitive Theory of Multimedia Learning that multimedia presentations, when designed effectively, can facilitate better comprehension, problem-solving, and critical thinking skills among learners. While Mayer primarily focused on cognitive processes, his research indirectly supports the idea that multimedia can contribute to the development of leadership competencies by enhancing students' ability to process information, make informed decisions, and effectively communicate their ideas. (Moreno & Mayer, 1999)

Additionally, scholars like Linda Darling-Hammond, in their work on effective teaching and learning practices, highlight the importance of providing students with diverse and interactive learning experiences. Multimedia, when integrated into

the curriculum, allows for various modes of expression and engagement, encouraging students to collaborate, think creatively, and take initiative in their learning. This approach aligns with the development of leadership competencies such as communication, collaboration, adaptability, and innovative thinking, as students navigate and interact with multimedia materials in diverse ways. (Darling-Hammond, 1994)

Moreover, researchers such as James P. Comer have suggested that educational experiences that promote a sense of autonomy, critical thinking, and decision-making contribute to the development of leadership skills in young individuals. The use of multimedia tools, allowing students to explore and engage with content at their own pace and style, can foster self-directed learning and decision-making abilities, essential components of effective leadership. (Comer, 1999)

While specific research directly linking multimedia use in schools to the development of leadership competencies may be limited, researchers in this area, have indirectly suggested that the varied and interactive nature of multimedia learning environments can contribute to fostering skills and qualities associated with effective leadership among students.

The empowerment of pupils for leadership through outdoor education

Outdoor education in the present decade continues to evolve and gain recognition as a vital component of holistic learning experiences for students worldwide. Over the past decade, there has been an increased emphasis on the value of outdoor

education in fostering not only academic growth but also social, emotional, and physical development among learners. Schools and educational institutions are incorporating outdoor education programs, recognizing the myriad benefits they offer, including enhanced problem-solving skills, increased resilience, improved teamwork and collaboration, heightened environmental awareness, and boosted overall well-being. This decade has seen a resurgence in appreciating the outdoors as a rich learning environment, providing opportunities for hands-on, experiential learning that complements traditional classroom instruction. Moreover, technological advancements have facilitated the integration of multimedia and digital tools within outdoor education, enhancing learning experiences by blending nature's lessons with interactive and immersive learning resources. The current decade underscores a renewed commitment to outdoor education, acknowledging its profound impact on nurturing well-rounded individuals equipped with essential skills to thrive in an ever-changing world. (Anwer & Torkos, 2023)

Outdoor education offers a unique and experiential approach to developing leadership skills in pupils. Here are some ways in which outdoor education can contribute to the development of leadership skills:

- team building activities
- problem-solving in real-life scenarios
- decision-making under pressure
- effective communication
- resilience and adaptability
- role allocation and leadership rotation

- goal setting and planning
- self-awareness and reflection
- environmental stewardship
- crisis management skills

By combining two or more of these elements in outdoor education programs, schools can create a holistic approach to leadership development that goes beyond traditional classroom methods.



Fig. 1. Main pillars of leadership skill development through outdoor educational activities

Outdoor activities often involve team-based challenges, such as rock climbing, ropes courses, or group hiking. These activities require collaboration, communication, and the ability to work together toward a common goal. Outdoor environments provide real-world challenges that require creative problem-solving. Whether it's navigating through rough terrain or setting up a campsite, students must apply critical thinking skills to overcome obstacles. Outdoor situations often involve unexpected circumstances, like changes in weather or unexpected obstacles. Pupils learn to make quick and effective decisions, considering the well-being of the group and adapting plans accordingly. In outdoor settings, clear and concise communication is essential for

safety and success. Students develop communication skills by giving and receiving instructions, providing feedback, and ensuring everyone in the group is on the same page. Facing the uncertainties of the outdoors helps pupils build resilience. They learn to adapt to changing conditions, cope with discomfort, and persevere through challenges, fostering a mindset of resilience that is crucial for leadership. Outdoor activities often require different roles, such as a navigator, team leader, or equipment manager. Rotating these roles allows students to experience leadership from various perspectives and understand the importance of different leadership styles.

Planning and executing outdoor adventures require goal setting, time management, and strategic planning. Pupils learn to set achievable objectives, break them into smaller tasks, and allocate resources effectively. Engaging in outdoor education fosters a sense of responsibility towards the environment. Leadership includes a commitment to the well-being of the community and the environment, promoting a broader understanding of leadership beyond personal gain. Exposure to the outdoors introduces students to potential risks. Reflection, feedback, autonomy, real situations, self-support, and agency are often highlighted in literature to support diverse learning processes. Soft skills, such as decision-making, judgment, and group relations in the field, are also commonly assessed. Learning to manage emergencies, whether they are small-scale incidents or larger crises, helps develop leadership qualities like composure, quick thinking, and decisive action. Inductive learning

and problem-based learning are all well-accepted ways to facilitate learning. (Beames & Brown, 2016; Graham, 1997; Vikene et al, 2019)

)Mixed method approach

By incorporating multimedia instruments and strategies, outdoor education can leverage technology to enhance engagement, deepen understanding, and create a more interactive and dynamic learning environment. Integrating multimedia instruments and strategies into outdoor educational activities can enhance the learning experience and engage participants dynamically.

Some ways in which teachers can approach mixed-method teaching are presented as follows:

- digital mapping and navigation
- educational apps and augmented reality
- photography and video documentation
- field data collection
- virtual reality (VR) experiences
- Digital Storytelling and bibliotherapy
- interactive QR codes
- Geocaching with digital clues. (Lai et al, 2013; Dughi & Bold, 2022)



Fig no. 2. Ways in which multimedia tools and strategies can be inserted into outdoor activities

Students can learn how to read digital maps, use GPS coordinates,

and navigate through outdoor environments. This technology adds a modern dimension to traditional map and compass activities. Exploring educational apps or augmented reality (AR) tools that provide information about the natural surroundings can enhance the educational process. These apps can offer interactive features, wildlife identification, or historical information related to the outdoor location. Equipping participants with cameras or smartphones to capture images and videos of the outdoor experience, not only encourages creativity but also allows for the documentation of observations, discoveries, and reflections during the activity. Students can collect environmental data, record observations, or conduct surveys using tablets or smartphones. This data can be later analyzed in the classroom, providing a link between outdoor experiences and data analysis skills. Encouraging students to create digital stories or even parts of bibliotherapy, using or not multimedia elements such as images, videos, and sound recordings, allows them to share their experiences, reflections, and insights in a creative and personalized way, about the need for and the use of mobile technologies in outdoor education on public lands and in wilderness areas. Not lastly, by combining geocaching with digital clues or challenges, participants can follow coordinates to find physical caches while receiving multimedia clues or information related to the location through a mobile app. (Bolliger & Shepherd, 2017; Brown & Mbat, 2015; Dymment et al, 2011; Koole, 2009; Dughi & Cotrău, 2014)

Research methodology and results of the empirical study

The research was conducted in Arad County, Romania, with over 47 primary school teachers who participated willingly, responded, and discussed the focus group themes proposed throughout 5 meetings.

Objectives of the study

The objectives of the present research were as follows:

- to find out the real situation regarding the use and integration of outdoor activities in primary schools from Arad County;
- to make a list of the potential advantages and disadvantages of outdoor learning in primary school;
- to search the impact of multimedia strategies during outdoor education activities;
- to recognize the leadership qualities that are developed by outdoor education
- to have discussions about specific strategies and activities that effectively promoted leadership qualities among pupils during outdoor learning sessions;
- To identify a set of opportunities for collaboration and knowledge sharing among colleagues.

Participants have emphasized the positive impact of outdoor activities on students' holistic development, including improved physical health, enhanced creativity, and increased motivation to learn. Also, they have shared success stories or examples of how outdoor learning has positively influenced their pupils.

Regarding the leadership roles, they have recognized the potential for developing leadership skills in students through outdoor activities. Discussions have been centered on specific strategies and activities that

effectively promoted leadership qualities among pupils during outdoor learning sessions.

Participants have expressed a desire for additional training and also resources to better integrate multimedia tools into their outdoor lesson plans. A proportion of 87% of participant teachers requested additional guidance on fostering leadership roles among students and managing group dynamics during outdoor activities.

Teachers have identified a set of opportunities for collaboration and knowledge sharing among colleagues to enhance the effectiveness of multimedia integration and leadership development strategies. The focus group discussions led to the formation of 2 networks of sharing best practices among participants.

Also, participant primary school teachers have discussed the importance of institutional support and policies that encourage the integration of multimedia tools in outdoor learning. Participants have expressed the need for administrative backing and resources to successfully implement and sustain these initiatives. Three of the institutional support and policies were listed as follows:

1. Technology integration;
2. Outdoor learning initiatives and funding;
3. Teacher leadership programs.

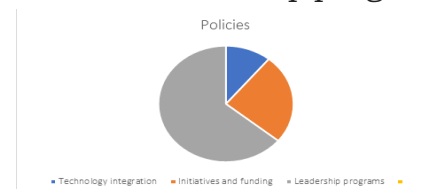


Fig. 3. Policies listed by focus group participants

These policies can help create a supportive environment for teachers

to confidently integrate multimedia tools into outdoor learning while fostering the development of leadership skills among pupils. Additionally, they provide a framework for schools to prioritize and allocate resources to ensure the successful implementation of these initiatives.

At this point, there were several discussions about the need to establish clear guidelines and policies on the integration of multimedia tools in the curriculum, specifying the types of tools that can be used and the appropriate ways to incorporate them into outdoor learning activities. Also, providing training and professional development opportunities for teachers to enhance their digital literacy skills and effectively integrate multimedia resources into their teaching practices were discussed. The first three of the multimedia tools listed by participants were:

- a) Digital storytelling tools
- b) Educational apps that come for free
- c) Navigating tools.

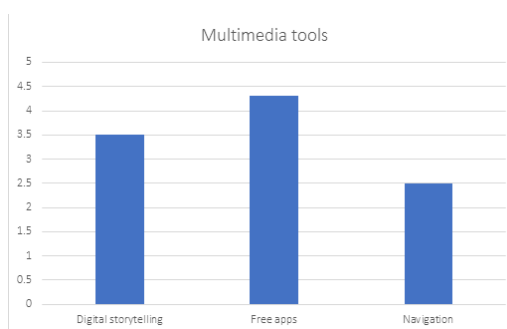


Fig. 4. Most needed multimedia tools listed by focus group participants

Regarding initiatives and funding, there is a great need to develop institutional support for outdoor learning initiatives by allocating resources, both financial and logistical, to create outdoor learning

spaces and provide necessary equipment. Implementing policies that encourage schools to dedicate a portion of their budget to the development and maintenance of outdoor learning environments, and fostering a commitment to the integration of outdoor activities into the curriculum was also mentioned by participants.

Establishing policies that explicitly recognize and promote the development of leadership roles for students in outdoor learning settings was important to mention in the 5 focus group meetings, as well as allocating resources to support pupil leadership programs, including training for primary school teachers on how to facilitate leadership development, and create structures within the school that allow students to take on responsibilities and leadership roles during outdoor activities. (Collins, 2023)

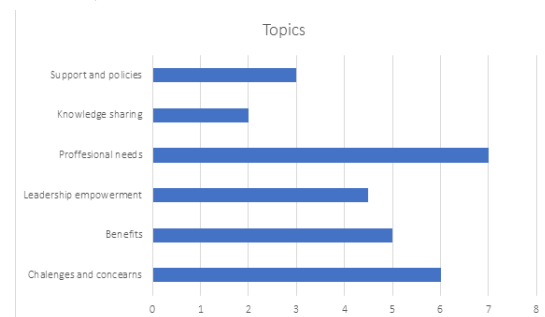


Fig. 5. Most discussed topics during focus group meetings

Conclusions

The research on the strategic integration of multimedia in outdoor education reveals promising insights into the potential for nurturing pupils for future leadership roles. The findings underscore the importance of leveraging multimedia tools to enhance the outdoor learning experience, fostering not only academic development but also the

cultivation of essential leadership skills among students. The integration of multimedia in outdoor education positively influences student engagement and learning outcomes. The diverse range of multimedia tools used, including interactive whiteboards, educational software, and digital storytelling platforms, contributes to a richer and more dynamic learning environment. The research highlights the role of outdoor education in promoting holistic development. Decisions on the inclusion or exclusion of digital technology in outdoor education should be intentional, systematic, and evidence-based. The use of mobile technologies can pose barriers to learners' and educators' presence, their social interactions, and their experience of place. (Hills et al, 2023) Multimedia tools facilitate a multidimensional approach to learning, addressing cognitive, emotional, and social aspects. As a result, pupils are better equipped for future leadership roles that demand a well-rounded skill set. Outdoor education, enhanced by multimedia integration, serves as a powerful platform for experiential learning and leadership development. Students actively participate in collaborative activities, problem-solving tasks, and decision-making scenarios, fostering the cultivation of leadership qualities such as teamwork, communication, and adaptability. While the research demonstrates the benefits of multimedia integration in outdoor education, it also identifies challenges. These include issues related to access to technology, concerns about screen time, and the need for ongoing teacher professional development. Addressing these challenges is

crucial for ensuring equitable opportunities and maximizing the benefits of multimedia tools. (Torkos & Roman, 2019 b; van Kraalingen et al, 2022)

Further discussions

Further discussions should explore strategies for sustainable implementation of multimedia-enhanced outdoor education. This involves considerations of financial investment, teacher training, and ongoing support to ensure the long-term success of such initiatives. Examining ways to involve parents and the community in supporting multimedia-integrated outdoor education can strengthen the overall impact. Engaging stakeholders can contribute to a more comprehensive approach to leadership development beyond the school environment. Future research should delve into effective assessment methods and metrics for evaluating the impact of multimedia-enhanced outdoor education on leadership development. Understanding how to measure the success of these programs will provide valuable insights for educators and policymakers. No matter which is the main educational purpose of outdoor learning, it is important to be used every week, to achieve the preselected educational purposes. Considering the diverse cultural and contextual factors that may influence the effectiveness of multimedia integration in outdoor education is essential. Exploring how these factors shape leadership development will help tailor strategies to specific educational settings. (Clichici, 2022; Rad et al, 2022; Torkos & Roman, 2019 a)

In conclusion, the strategic integration of multimedia in outdoor education presents a promising avenue for nurturing pupils for

future leadership roles. Continued research and discussions are crucial to refine implementation strategies, address challenges, and ensure that this innovative approach contributes meaningfully to the holistic development of students.

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Approaching the Subject of Substance use in a peer-to-peer Education Project

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Abstract

Background. Substance use is on the political agenda in Romania now more than ever. A new national plan regarding the prevention of consumption among teenagers has been drawn up. Training them in prevention programs is not easy, especially for those teenagers who are difficult to educate, coming from environments where dialogue is not encouraged. There is evidence that participatory education, in the form of peer education, can be a very effective way of preventing substance use among young people (Perry, 1989; Jarvis, 1993). *Purpose:* The purpose of this study was to probe the perceptions of some teenagers participating in peer education prevention programs about the effectiveness of this education model.

Methods: 20 peer educators and first-year students in Psychology and Social Work were trained by anti-drug specialists to prevent substance abuse. The activities carried out within the framework of a program called From Peer to Peer in the Prevention of Substance Use, took place in informal environments (headquarters of some associations, youth clubs, in nature). 4 focus groups of 10 teenage participants were held. After analyzing the answers, the results were integrated into a questionnaire applied to several 400 teenagers.

Results: The overwhelming majority of participants (98%) considered this type of intervention to be attractive, and interesting; the participants were relatively easy to co-opt, although they initially expressed their reservations regarding the trainers' potential to surprise them with new information or approaches. Their assessments concern the naturalness of the meetings that took place in the form of discussions, the informal character, the lack of pressure exerted by the status, the freedom of expression, the fact of being understood and looked at with respect, and the psychological closeness. However, they highlighted some conditions, risks, and limitations related to the efficiency of the development of these programs known by peer educators.

Conclusions: The group discussions and those obtained through the questionnaire confirm previous research (Diao et al., 2020; Nawi et al., 2021; Dodd et al., 2022).

Keywords: peer education, teenagers, substance use, prevention, empowering.

Theoretical Background

A series of social problems exert extraordinary pressure on young people (Hart, 2009; Bottrell, 2007; Nawi et al., 2021). A lot of policies and measures implemented by professionals are being sought and elaborated, however, a problem such as that of substance use, remains current. Peer-to-peer education has become a very effective strategy for promoting healthy behaviour among young

people in recent years (Topping, 2022; Walters, 2020). The transformative power of young people is a natural phenomenon because it is exercised in natural spaces, through free discussions, from peer to peer. Shiner (1999) finds considerable ambiguity around the concept of peer education and to clarify the method, he distinguishes between peer development and peer delivery. Another lack of clarity concerns the theoretical basis of the peer

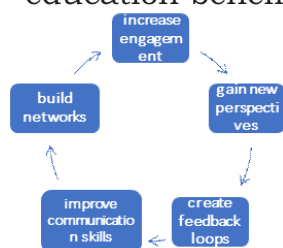
education method, which does not seem to have its roots in a specific school of thought (Turner & Shepherd, 1999). Peer-to-peer education is an intervention that is growing in popularity, perhaps due to the ease with which teenagers speak, take over, and reveal themselves to peer groups (Dodd et al., 2022). However, a series of theories substantiate the importance and logic of this type of education. Carrying out a brief history of peer-to-peer education in the field of health, the cited authors identify actions of this kind in ancient history, including Aristotle's writings; he then finds that in the 1800s teachers created a monitoring network by training monitors who teach the younger children what they were learning. This method has been applied in health projects with high efficiency in reducing the incidence of smoking among young people (Morgan and Eiser, 1990; Abernathy and Bertrand, 1992) and in the field of substance abuse (Rhodes, 1994; Klee and Reid, 1995). The method was widely used in the field of HIV prevention. In recent years, peer education has been used in communities (schools, informal networks, humanitarian associations, youth centers, clubs, etc.). Peer-to-peer education is achieved by using one or more methods such as formal tutoring, group discussions, tutoring in unstructured environments, counselling, one-on-one discussions, camps, theatre, workshops, and exhibitions (Turner & Shepherd, 1999). In a review-type analysis regarding the arguments for the implementation of peer education, the above-mentioned authors mention the following considerations:

- Peer education is more effective (Peers et al., 1993);
- Peers are more credible than professionals (Clements and Buczkiewicz, 1993) because they already use as a method the exchange of information or suggestions/advice (Jarvis, 1993);
- Peer educators act as positive role models (Perry and Sieving, 1993);
- It is beneficial, especially in situations where there is no formal education in a certain field (Hea, 1993);
- The effectiveness is very high among children who are difficult to educate through classical, formal methods (King, 1993);
- Colleagues constantly reinforce what is learned through permanent contact (Kelly et al., 1991).

Degreed (2016) believes that peer educators are a very important resource for social workers/specialists, also successful educational institutions use this resource having a much greater impact on learning by up to 13%, says McLeod (2012). Many universities delegate to a final-year student responsibilities regarding the coordination, information, and support of lower-year students. Associations and organizations for youth have this asset, that is, they constantly work with groups of peers, managing to successfully address the most difficult problems such as addictions, mental health problems, behavioural disorders, etc. Young people learn from each other, share common experiences, and empower each other, thus becoming an extraordinary form of support.

Constantly working with peer educators indicates some great advantages such as: increasing communication skills and commitment which gives new perspectives and building relationships. The feedback in the loop that is built between educators and the "educable" stimulates reasoning skills and the learning process and empowerment, two important conditions for any change process.

Figure no.1 . Peer-to-peer education benefits.



Source: Instructional design Peer Learning/Shared Learning - Instructional Design Australia

Description of the project: From peer to peer in the prevention of substance use

Adolescence is the stage of age when habits and lifestyles are consolidated, and also during this period, peer groups exert a particularly great influence on how teenagers represent their lives. The peer educators were trained during a weekend, respectively 6 hours each during the three days. The first team of peer educators was composed of 20 students in the psychology and social assistance study programs, the first year of study. The trainer, a specialist in drug prevention, organized the training to transmit basic information regarding the types of substances, the impact on health, information about the psychological mechanisms involved in addiction; the development of communication skills was followed by learning

interactive games and exercises. After providing the basic information, the 20 peer educators grouped into teams of two and built their prevention program, following their own strategy. They organized prevention activities with groups of 20 teenagers, going to select future peer educators from among them.

The three-day program implies:

1. Practical activities with role-playing games, getting to know each other, practical activities Game of addiction, Circle of control.
2. Sending the body of information: Drugs - a problem that concerns us all; From occasional use to addiction
3. Practical ways to prevent consumption, counter-indications, and Practical activities. Strategy and implementation role-playing game

The peer-to-peer program in the prevention of substance use is based on the social influence model, which postulates that within the relationships between them, individuals influence each other in all dimensions of their lives, intellectual, emotional, and behavioural. Taking principles from the fields of social psychology, education, developmental psychology, and behavioural epidemiology (Hansen, 1988), the programs based on this theory seem to have the greatest success. Therefore, starting from the hypothesis that the consumption of substances is undoubtedly a public health problem, we understand the considerable efforts that are being made in the direction of the development of effective prevention programs. It is considered that the most effective interventions target teenagers at the beginning of this

age stage and have in mind the development of the skills of resistance to temptations and bad behaviours.

Within the peer-to-peer program in the prevention of substance use, the educators aimed for the interventions to take place over two days and to alternate self-knowledge, introspection exercises with the provision of information regarding the following:

1. Who am I? What desires do I have? Who do I want to become?

2. What are the mechanisms of addiction? What are the pitfalls of the certainty that we can control consumption?

3. Discovery of coping strategies

The provision of this information alternated with exercises and thematic games such as Role-playing about practicing self-control, Role-playing - the skills to refuse

Some of the educators were accompanied by former users who managed to get out of the state of addiction and others who did not succeed and are still in the process of giving up drugs. The impact of these meetings was significant and the interest of the participants was obvious. The content of the program aimed at achieving the three fundamental dimensions: the cognitive dimension (acquiring information), the affective dimension (motivation, empowerment), and the behavioural dimension (changes/concrete steps towards change). In shaping the prevention program, the educators had the freedom to construct the interventions according to their own vision. In establishing the objectives of the program, they started from the following premises:

Willingness to try a substance is linked to the specifics of a particular period of development, namely, the beginning of adolescence when the peer group has a dominant role in shaping their choices;

Exactly during this period, parents do not know how to manage the tendency of children to become independent, often a break occurs in the parent-child relationship; The child frequently rebels against the authority of the parent or teachers, so they can lose control;

At this age, the influence of a powerful person can convince both in the sense of participating in risky behaviours and refusing to participate in risky behaviour; it is essential, therefore, to have in the group, their entourage, and people with positive influence.

The willingness to use substances is related to the need for acceptance and belonging; therefore, it is necessary to empower and create contexts in which to find and identify.

The program outlined by the educators focused on identifying the type of pressure exerted by the group and training resistance. Participants are helped to discern between the different types of peer pressure, namely friendly pressure, silent pressure, threats or tricks, and lies (exercises taken from the SMART project, Hansen, 1988). The program run by peer educators was based on the social influence model that focuses on strategies for identifying and resisting social pressures to use drugs. The social influence model is recognized as one of the most impactful strategies to prevent the onset of tobacco, alcohol, and drug use.

Peer-to-peer education theories

The effectiveness of peer education has been confirmed in a lot of research; for example, there is much greater responsiveness to peer-led HIV prevention programs (Kelly, 1995, Valdeserri et al., 1989). Tudiver et al., (1992) found that a session led by a gay man is more successful in promoting involvement in protected sexual acts than those led by professionals, hence the huge credibility and trust of the peer group.

At the base of the theories that are the basis of peer education is the learning theory proposed by Bandura (1977) which claims that in the learning process, the individual observes, analyses the behavior of peers, and adopts similar behaviors when connecting to their peers and depending of the modelled behaviour attributes; therefore, modelling is a very important component of learning within which individuals are influenced and strengthen and consolidate their behaviors. The relevance of the theory in the context of peer education consists in ensuring credibility, empowerment, modelling, and reinforcement, say Turner & Shepherd (1999).

For the innovation theory (Rogers and Shoemaker, 1971), peer educators are the agents of change, the leaders who will disseminate the innovation in the fields closer to them so that it will eventually be adopted by the majority. Adapting the theory of differentiated association proposed by Sutherland and Cressy (1960) according to which association with others constitutes learning opportunities, we deduce that young people can easily teach each other habits that promote health (Morgan and Eiser, 1990). This theory verifies four of the assertions listed above, namely that

the peer group is a very valuable source of information, that they are credible, and that they exercise this role of information and advice in a natural and natural manner especially when on a certain segment there is no information or no education. Especially in the issue of drug use, the theory has great applicability, as a large body of scientific works shows that the consumption behaviors of young people begin or take place in the peer group. The subculture theory (Cohen, 1955, Miller, 1958) postulates that belonging to a certain group/subculture is defining for the formation of a vision of life in general and some protective or risky behaviors. The theory indirectly supports the role of peer education by emphasizing the role that the group has in shaping behavior. Turner & Shepherd (1999) summarize the benefits that each theory brings, namely, credibility and empowerment, acceptability and reinforcement, and cost efficiency.

Objectives

- Evaluating the Perception of Teenagers Regarding Peer Education Interventions
- Identifying the benefits of peer education in behavioral, cognitive, and affective terms

Methods

The current study aims to capture the perception of some teenagers about the prevention activities carried out by peer educators. The work is mixed research that uses the focus group as a qualitative research method and the questionnaire as a quantitative method.

Participants

40 of the participants in the prevention activities, teenagers, 9th

and 10th-grade high school students were included in 4 focus groups. The results were subjected to a thematic analysis and the main items that appeared were included in the content of the questionnaire applied to the 400 adolescent participants. at the consumption prevention programs supported and coordinated by 20 peer educators trained by anti-drug specialists.

Results

The results indicate increased receptivity of the participants to this model of education between equals, which they evaluate as natural, efficient, and credible.

Trust in the trainers, the conviction that they are interested in their problems because they do this activity voluntarily, relevant because many of them have experienced consumption, relaxed and free, they agree to the training in informal spaces, they have acquired important information about the addiction algorithm, which always works at kind, etc. Only 4 participants out of the 400 declared themselves less confident in peer education, preferring the trainers to be experienced teachers or specialists. The results obtained from the focus groups were grouped into three categories of data, namely the cognitive, affective, and behavioural dimensions. Of the 400 participants, 42 expressed their interest in training as peer educators.

The participants made positive evaluations of this type of education, identifying a lot of benefits or advantages. They appreciated that the educators brought new information in a format different from the one in the classroom; this way of discussing this topic caught the attention of most of them. I think that the educators were well

prepared but also willing to let themselves be guided by their (participants') interests.

They shared experiences with us, we spoke freely without a precise agenda, it didn't seem like we were participating in any prevention activity.

There are many challenges between us that adults do not understand and for which they cannot offer pertinent solutions. Sometimes it's classified as weird if you withdraw from a group just because you don't approve of them consuming. How do I remain in the group but faithful to my beliefs? Well, I received some excellent solutions from educators only 4 years older. Peer-to-peer education is how the education of the future should look.

Thematic analysis of the focus groups

Some outputs following the thematic analysis of the focus groups highlight the following:

From the thematic analysis of the focus groups, the following directions were highlighted:

High receptivity or students' preference for non-formal learning activities

The importance given to the real interest expressed by the educator for the assigned subject and the participants themselves

The need to be connected to the educator and to perceive him as authentic and credible, to be treated as an equal

Increased willingness to integrate or reconsider information related to consumption risks

Recognition of authority when it is associated with competence, tolerant, empathetic, and assertive attitude

Initially, the participants cataloged the topic of the discussion with humour, cataloguing it as an "expired" topic, boring, too often addressed. Indeed, in recent months, schools in Romania have been co-opted in extensive prevention activities aimed at both students and teachers to document the problem of consumption, to learn some work techniques, and to develop some communication skills with the students. In the FG, the participants declared that the prevention activities led by specialists from different fields, although well documented, did not have the expected effect, being organized in large groups.

Strictly speaking, consumption has deep causes; these activities cannot have too great an impact on teenage students who have already started to consume.... there is a need for interventions in small groups, some that allow a deeper dialogue with each participant.

The discussions revealed a strongly expressed need to have another type of contact with teachers, with trainers, and educators, in general. Many of their appreciations follow some stereotypes that they take from each other.

For example, the following reply was repeated within the 4 FGs> those who do prevention are paid for it, and the psychologist is paid, so they don't care about us, they just do their job.

Also, I think either that adults don't understand them, or that adults consume themselves, so in both situations, they are not the best suited to prevent.

Things have changed, and parents and teachers do not understand this. They would like us to live exactly like in their times. Or those times no longer exist.

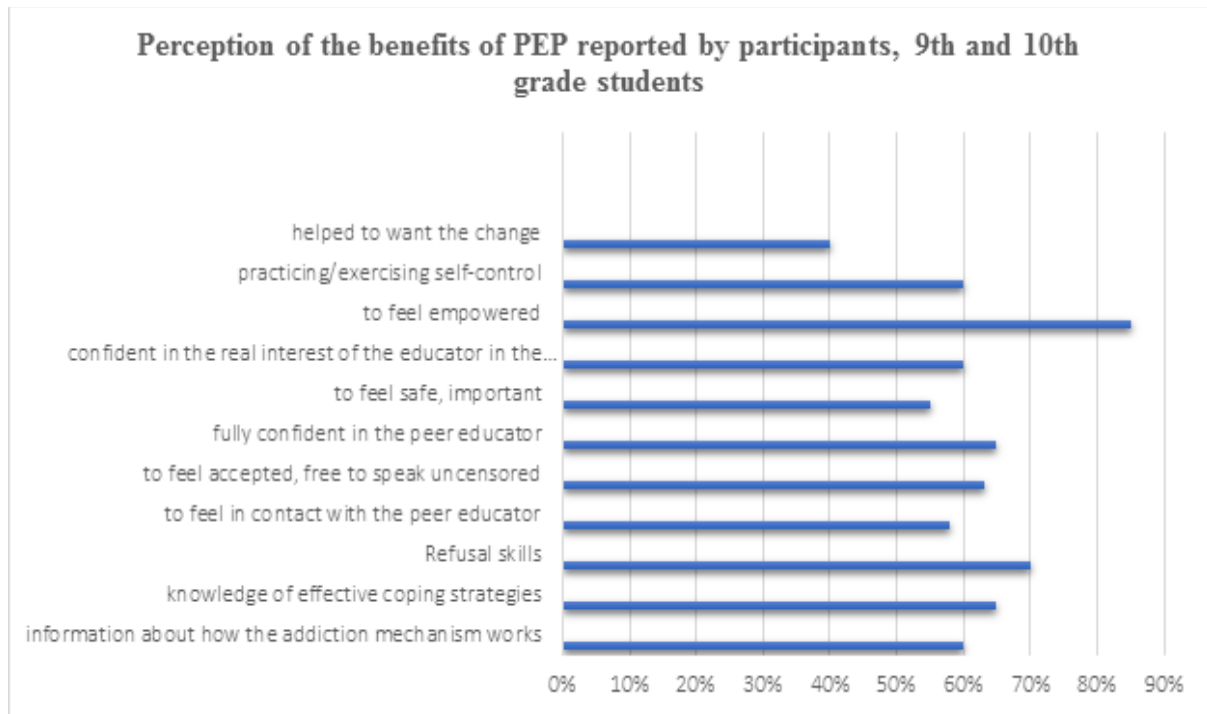
Favorable feedback was given by the participants with reference to the pressure identification exercises carried out by colleagues. They were asked to find the reasons behind the challenges to engage in consumption behaviors and to label these pressures to then learn practices for rejecting these offers.

In the table below, we have grouped the categories of benefits of the program run by peer educators reported by the participants.

Benefits category	Reported benefits
The cognitive dimension	<ul style="list-style-type: none"> Information about how the addiction mechanism works Understanding denial and false control Knowledge of effective coping strategies Refusal skills
The affective dimension	<ul style="list-style-type: none"> to feel in contact with the peer educator to feel accepted, free to speak uncensored fully confident in the peer educator to feel safe, important confident in the real interest of the educator in the program he runs to feel empowered
The behavioral dimension	<ul style="list-style-type: none"> practicing/exercising self-control helped to want the change encouraged to take the first steps towards change

The emphasis fell on the comfort and benefits resulting from the safe built environment which resulted to a large extent from the closeness of age and the sharing of a common reality. Some participants felt inspired by these activities, stating that it would be necessary to organize them constantly in the form of support groups. The self-control game and their training in identifying and evaluating the intentions of the peer group, the fact that they were listened to without haste and with real interest were perceived as empowerment.

The 13 items were included in a questionnaire applied to the 400 students participating in the peer education program to prevent substance use. Of these, only 24 participated in peer-led activities.



One can observe the evaluations of the participants and the very high agreement regarding the feeling of empowerment, interest and for the skills to refuse, and for the practice of self-control exercises. Understanding the mechanisms of addiction and identifying coping strategies and alternatives to consumption were two topics that caught their attention and invited them to reflect.

Other benefits

- I know the reality that we cannot talk about with a teacher
 - they are not far apart in age, we use the same language and the same symbols
 - they are not accusers, they understand our reactions, our lives
 - does not position itself from a position of superiority
 - they trust us, they treat us as potential equal educators
- the manner in which the information is delivered is much more attractive and interesting

Consumption among the groups of participants was either a new topic, or a well-known one, or a tabu topic. In other words, some of the participants never experienced consumption, others occasionally, others, the fewest, admitted that quite often, very light drugs.

The consistency of the discussions, the real involvement of the teenagers, and the evaluations they made regarding this education model suggest the success of the program. The educators' inclusive and holistic approach to the issue of consumption had positive feedback and emphasized the need for the participants to freely discuss life issues that concern them. Stimulating long-term positive behaviours, especially in the field of health and substance use, could be possible through constant involvement in such activities. Youth suggested the organization of support groups for subjects who already consume and need support in regaining control.

Discussions

Peer-to-peer education is perceived as a natural learning environment in which the participants do not perceive the pressure determined by the rigors of the institutionalized framework, in which the distance between the educator and the educated is considerably smaller, and the information is assimilated spontaneously and diffusely in an informal and attractive. The increased receptivity of young people to the peer-to-peer education model leads us to reconsider this particularly useful tool in providing information on choosing a healthy lifestyle and raising awareness of the dangers of substance use. This education model allows the distribution of information to a wider segment of the population than prevention programs supported by specialists would do.

The participants perceived the educators' messages as credible even though the same messages were provided by teachers or other specialists. At least, they said, they reflected on the truth of this information, especially related to the seriousness of the addiction. Although the promotion of effective education specific to the early efforts to prevent substance abuse was considered totally ineffective, these participants emphasized the importance of the environment created by the open and informal dialogue.

In many cases, taking over the task of prevention by teachers or authority figures could be counterproductive, suggesting programs based on discussions guided by peers.

The peer-to-peer program in the prevention of drug use was implemented with enthusiasm and genuine interest of educators for its

success. The main objective was not limited to information, but aimed at capturing teenagers in authentic discussions and sending a clear message, namely that substance use can destroy lives, slowly but surely. The active participation of teenagers and the positive assessments made show that this type of education is one they approve of and peer educators are perceived as real agents of change.

Conclusions

The significant increase in the global adolescent population (Siddiqui, Kataria, Watson, Chandra-Mouli, 2020) and the emphasis on social problems such as drug use, are two very important reasons to find out if peer education is received with receptivity by teenagers and if it allows the promotion of a healthy life. Indeed, this type of education is increasingly widespread (McKeganey, 2000). Teenagers are receptive to this type of education, but they signalled their need to be in constant contact with this information and this type of support provided by educators close to their age. It results from the discussions with the teenagers that they recognize the experience of the educators; in this sense, it is recommended to support self-development and to strengthen the capacity of educators to motivate participants towards change and supporting a healthy lifestyle. The result is also confirmed by Nurmala et al., (2021) and Tang et al., (2022). Educators understood that there are different categories of teenagers who will respond differently to prevention programs; teenagers who are not oriented towards achievement and at high risk of consuming would rather respond to interventions led by people/personalities of their age or older whom they admire, or who are role models for them.

The study supports the fact that peer-to-peer education has a high potential to produce the desired changes, therefore such structures can be developed at the level of educational organizations, which would have many benefits not only on the participants of these sessions but also on educators and with indirect benefits on the vision that young people develop about themselves and about life. The example of the situation in England, where peer-to-peer interventions were taking place in over 62% of schools in 2009, can be taken up early when there is certainty that it is effective (Houlston, Smith, Jessel, 2009).

We conclude that the popularity of these interventions is determined by the natural framework in which peers naturally influence each other, and the authority of educators is recognized and not imposed or suggested. Another argument consists in the fact that, in general, teenagers look admiringly and take the model of their older colleagues, from whom they ask for help, rather than adults.

The study reinforces the results provided by Diao et al. (2020) regarding the potential of peer education to improve the quality of life through emotional growth and the diversification of social life.

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Risk and Return Trade off: A Study of Indian Pharmaceutical Sector's Stocks

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Abstract

The Pharmaceutical sector experienced major shifts and obstacles as a result of the COVID-19 pandemic. In the post-pandemic era, the industry's continued significance and prominence can be attributed to a multitude of factors. The market prices of Pharma equities have risen substantially as a result of the expansion of the Pharmaceutical industry, which has also garnered the interest of numerous investors. Policies and efforts taken by the government include increasing foreign direct investment, research and development, and a focus on healthcare infrastructure has led to the tremendous growth of Pharmaceutical businesses in India. In order to make well-informed investment decisions, investors, financial analysts, and decision-makers rely heavily on the risk and return characteristics of businesses. The utilisation of risk and return profiles enables stakeholders and investors to assess the long-term financial performance of a company. 17 Pharmaceutical companies out of 20 Pharmaceutical companies in India's Indexed Nifty Pharma Index are included in the sample. The daily returns of a subset of companies were evaluated for the years 2013 to 2023. The retrieved data was used to compute the daily average return, standard deviation, variance, and beta for each selected company, in addition to the Nifty Pharma Index. The correlation coefficient was also computed for each individual stock and the NSE Nifty Pharma Index. Utilising the Sharpe ratio, Treynor, Jensen Alpha, and M square formulas, the most volatile stocks were determined in the Pharmaceutical sector.

Keywords: Risk, Return, Pharmaceutical Companies, Nifty Pharma Index, Risk Adjusted Ratios

Introduction

In the era of increasing Liberalisation, Privatisation, and globalisation in developing countries, stock markets play a crucial role as indicators of the country's economic performance. The stock market is a venue where the trading of financial securities occurs. The primary reason for this phenomenon is the significant level of volatility, where prices experience rapid fluctuations within short time intervals. These price movements are primarily influenced by the

interplay between the demand and supply of stocks at any particular moment. Buyers and sellers engage in trading various financial securities in the stock market to achieve their investment goals. Investing in the stock market entails accepting the inherent uncertainties of the future, since investors must be willing to suffer the associated risks in order to potentially achieve desired profits. Hence, investments in the stock market encompass both risk and profits. The investors have expressed a concern over the stock

market in order to achieve bigger returns. In the current context, researchers are also placing significant emphasis on the stock market through the use of effective methodologies. This, in turn, can be beneficial for investors in their market analysis.

The stock market is an intricate and ever-changing financial structure that is impacted by various sectors which collectively determine its performance. The sectors encompassed are banking, FMCG (Fast-Moving Consumer Goods), Pharmaceuticals, automobiles, and financial services, among others. Pharmaceutical businesses hold significant way over market Indexes and investor emotions as a crucial industry on the stock exchanges. Investors frequently track Pharmaceutical companies as a component of their investment strategy, taking into account the sector's defensive attributes, potential for growth, and susceptibility to global and domestic influences. As per the India Brand Equity Foundation, the Pharmaceutical sector in India, in terms of volume, ranks as the fourteenth largest globally, while in terms of value, it is the third largest. Presently, the Pharmaceutical industry accounts for approximately 1.72% of the nation's gross domestic product. The industry has grown tremendously over the last four decades. The Indian Pharmaceutical industry is expected to grow to US\$100 billion, while the medical device market is expected to grow to US\$25 billion by 2025. Due to their low price and high quality, Indian medicines are preferred worldwide, making them the "Pharmacy of the world." Based on a recent analysis by EY FICCI, the Indian Pharmaceutical market is projected to reach a value of US\$130 billion by

the end of 2030. This growth is attributed to the increasing agreement on the need to offer new and innovative medications to patients. So, looking for a better return with low risk, this study aims to learn more about investment in Pharmaceutical companies. Risk and return are significant factors in the decision-making process of the majority of individual investors. Each investor seeks to mitigate risk and optimise returns. Typically, risk and return are closely linked. To attain larger profits, an investor must understand that they can only do so by accepting a proportional increase in risk. Risk and return are mutually reinforcing; as one rises, the other does too. Investment decisions necessitate a balance between risk and return, which is regarded as crucial in the process of making investment decisions. In the current economic climate, it is wise for a logical investor to examine the actual interest rate on an investment, considering that inflation is increasing. Investors seek high returns but despise risk. This requires the optimisation of both risk and reward. Share offers investment alternatives based on the risk and return expectations of the investor.

Literature review:

Pharmaceuticals, housing-related industries, and fast-moving consumer goods (FMCG) are characterised by low risk, whereas banking, power, construction, and the oil and gas sectors are the riskiest. The sectors have been identified with the help of beta values. If the beta value is greater than 1, it is classified as a risky sector, while if the beta value is less than 1, it is determined to be a less risky sector for investment. Investors can use the beta ratio

most effectively when making short-term decisions requiring price volatility consideration. If an investor has the habit of frequent buying and selling over a short period, beta serves as a reliable indicator of risk. Nevertheless, when used as a sole indicator of risk for a long-term investor, beta exhibits numerous shortcomings. An in-depth analysis of a company's core factors will provide a more accurate assessment of the potential long-term risk. Stocks may not be a suitable investment for risk-averse individuals, but for those willing to take risks, the potential rewards may be significant in the near term rather than the long term. (Karthika, D. P., & Karthikeyan, P. 2011). An analysis of the risk-return characteristics of specific IT firms, considering factors such as absolute return, abnormal return, necessary rate of return based on the CAPM model, return volatility, systematic risk, and risk-adjusted return. The results indicated that Tata Elxsi, Infibeam Avenues, and NIIT technologies have provided the highest rate of return to investors during the study period. The authors evaluated the possible investment prospects and analysed the risk-return profile of specific Indian IT companies listed on the NSE IT Index. The study period revealed that the returns of Infibeam Avenues, Tata Elxsi, and Mindtree exhibited significant volatility, indicating a higher level of risk associated with these companies (Bantwa & Ansari, 2018). The study aimed to calculate the returns and risks associated with different stocks in the Pharmaceutical industry listed on the National Stock Exchange (NSE) in India. The findings show Sun Pharmaceutical Industries Ltd. is generating a remarkable yield. However, the

market risk associated with the company's shares is greater, and the returns volatility is also higher than the market. Regardless, Divi's Laboratories Ltd. offers a remarkable dividend yield, and the market opportunity is below average, with lower volatility compared to the whole market (Patel & Verma, 2018). The research highlighted the existence of a strong correlation between risk and return. The importance of analysing risk and return can be observed in various areas of life, including corporate sectors, banking sectors, and the automobile sector. The study emphasised the significance of investors assessing different investment options based on numerous risk and return indicators, such as beta, standard deviation, variance, and covariance (Makkar, N. et al., 2020). Significant positive correlation exists between risk and returns at both the individual security and portfolio levels. This was determined using the Single Index Markowitz model during a fifteen-year period from 2008 to 2022. The authors suggested that, with the goal of constructing an optimal portfolio, an individual investor should engage in a careful evaluation of the trade-off between risk and return, taking into account future projections. However, the level of risk associated with these stocks ranges from moderate to high, depending on the investor's risk tolerance. Therefore, investors can select these stocks for investing purposes. Therefore, it is advisable for the investor to diversify their portfolio in order to mitigate long-term systematic risk and get insights into the risk-return dynamics of different securities (Supraja, N. B. N., 2023). Portfolio management assists investors in

making informed decisions among various investment options without the need for subsequent trading of shares. A portfolio management strategy must clearly outline its objectives, such as maximising returns, achieving optimal returns, capital appreciation, and ensuring safety. These objectives should be included in the selection of scripts for the portfolio. This service maximises profits for clients by carefully selecting and consistently adjusting their investment portfolio, either by moving funds from one scheme to another or by switching between different plans within the same scheme. The combination of higher portfolio returns and lower risk is consistently appealing to investors. The analysis of specific scripts across several sectors was conducted to examine metrics such as average return, standard deviation, and correlation across scripts, weights, portfolio risk, and portfolio return (Sreehari et al., 2017). The risk and return of 30 most prominent equities listed on the Bombay Stock Exchange (BSE) were assessed using statistical tools such as standard deviation, correlation, and the CAPM model. The companies were ranked based on their beta value. Businesses such as NTPC Ltd. and SBI are characterised by low volatility, indicating that they have a low degree of risk. On the other hand, Pharmaceutical businesses like Sun Pharmaceutical Industries and Cipla Ltd. have a moderate amount of risk, while Dr. Reddy's Laboratories Ltd. has a substantial amount of risk (Kulal et al., 2018). Amidst economic globalisation, particularly in the aftermath of the recent international financial crisis, the stock market has encountered unparalleled volatility. The heightened volatility contributes to

the unpredictability and peril of the stock market, impeding its regular functioning. In order to mitigate this ambiguity, it is crucial to precisely quantify the volatility of stock Index returns. It is closely linked to market volatility and influences the investment decisions of both businesses and people. The precision of portfolio selection, the efficiency of risk management, and the rationality of asset pricing significantly impact the accuracy of measuring the volatility in the rate of return. Financial market volatility mostly manifests as a divergence between the anticipated future values of assets. Volatility, often known as possibility, refers to the level of uncertainty regarding the future price of an asset. This uncertainty is typically quantified by either the variance or the standard deviation (Bhowmik & Wang, 2020). Risk and rewards associated with investments in the Indian Pharmaceutical business was calculated by choosing a set of stocks from the Pharmaceutical sector that are listed on the Bombay Stock Exchange (BSE). Beta, Alpha, and returns are computed for each individual stock over a 5-year time frame. Based on the analysis and interpretation of the calculated values, it can be inferred that investors should consistently analyse the market in order to select the optimal combination for constructing their investment portfolio. The greater the risk, the greater the potential for gain is thumb rule of investment. The author proposed that Indian Pharmaceutical businesses are anticipated to experience growth, and their shares were advised for investment (Shetty & Devaraj, 2017). Constructing an optimal portfolio is a challenging endeavour. The primary emphasis in creating

an optimal portfolio lies in risk management rather than enhancing returns. Sharpe's Single Index Model plays quite significant role in determining funds for the creation of portfolio. A selection of nine stocks from the BSE Sensex Index representing the banking, Pharmaceutical, and FMCG sectors were evaluated based on their excess return-to-beta ratio. The maximum value was used to establish the threshold. The allocation of funds to be invested in the securities should be determined based on the predetermined threshold (Balaji & Edward, 2023). Financial condition of Pharmaceutical companies and the entire Pharmaceutical industry by utilising the Altman Z-score both prior to and throughout the COVID period was determined. A detailed analysis of the relationship between the Pharmaceutical industry's stock return and market return was performed. Additionally, it examined the influence of the overall Z-score and its ratios on stock returns through panel data modelling. The outcome revealed a bolstered financial condition in the Pharmaceutical sector as a result of enhanced investor trust and higher beta in Pharmaceutical stocks in comparison to market fluctuations during the COVID era (Singh & Chakraborty, 2023). A significant correlation lies between the prediction and the individual stock prices of financial sector companies on the National Stock Exchange 50 (NIFTY 50). It is necessary to analyse the risk and return associated with company stocks in addition to making predictions. Accurately forecasting the stock market Index is crucial for achieving financial gains since individuals aspire to accumulate increasing amounts of wealth. Choosing stocks from various firms is a crucial step when

seeking a profitable investment (Jain et al., 2018). The financial performance of certain Pharmaceutical businesses over a 10-year period in terms of return, risk, and growth and comparison was done with their performance to Nifty Pharma Index. After doing an analysis, it was determined that Aurbindo Pharma, a Pharmaceutical company, provided the highest return. Additionally, it was found that Aurbindo Pharma also had the largest volatility of returns, indicating a higher level of risk. Aurbindo Pharma, Lupin Ltd., Torrent Pharmaceutical, and Cadila Healthcare have exhibited superior performance compared to the market Index, whereas Cipla, Sun Pharmaceutical, Glenmark, Dr. Reddy's Laboratories, Divi's Laboratories, and GlaxoSmithKline have had below-average performance (Raval, 2021). Companies from the FMCG and Pharmaceutical sectors over a period of four years, specifically from 2010 to 2015 were calculated. The Sharpe Index Model was used to evaluate the performance of mutual funds and portfolio strategies. The objective of this study was to assess the performance of the portfolio with the goal of identifying the most effective combination of assets to invest in the two sectors mentioned. The process involves evaluating the selected assets according to their excess return-to-beta ratio and determining the cut-off point (C_i) to identify the ideal combination of assets. The consideration of risk and return plays a crucial role in making any financial decision. The Sharpe Index model served as a valuable tool for investors to make informed decisions and select their portfolio selections (Satyaprasad, 2018).

Objectives of Study

- To study the relationship between selected Pharma stock returns with Nifty Pharma Index return
- To analyze the performance of Nifty Pharma Index and selected Pharmaceutical companies with risk adjusted ratios.

Research Methodology

A sample of NIFTY Pharma companies has been taken from the NSE website. To examine the performance of Pharma stocks, adjusted closing prices and the Nifty Pharma Index have been taken into consideration from 2013 to 2023, respectively. Secondary Data has been used which has been fetched from NSE website. Karl Pearson's coefficient of correlation is used to find out the degree of relationship between the individual Pharma companies and the Nifty Pharma Index. The nifty Pharma Index comprises 20 companies, but for the purpose of analysis, 17 companies have been selected due to data availability for the other three companies.

Table 1: Performance of Pharmaceutical Companies

S. No.	Company Name	Annual Stock Returns	Annualized Variance	Beta	Correlation
1	Abbott India Ltd.	26%	0.064878	0.333414	0.256
2	Aurobindo Pharma Ltd	22%	0.150796	1.221237	0.616
3	Biocon Ltd.	15%	0.105749	0.76678	0.462
4	Cipla Ltd.	10%	0.068881	0.884148	0.659
5	Divi'S Laboratorie Ltd.	18%	0.09866	0.882661	0.55
6	Dr. Reddy'S Laboratorie Ltd.	11%	0.072251	0.910358	0.663
7	GlaxoSmith Kline Pharmaceu icals Ltd.	4%	0.053129	0.323299	0.275

8	Glenmark Pharmaceut icals Ltd.	4%	0.123183	0.991425	0.553
9	Granules India Ltd.	30%	0.186406	0.898119	0.407
10	Ipca Laboratories Ltd.	14%	0.101014	0.499233	0.307
11	Lupin Ltd.	7%	0.086191	1.004005	0.669
12	Natco Pharma Ltd.	20%	0.132016	0.656194	0.353
13	Pfizer Ltd.	11%	0.071406	0.334903	0.246
14	Sanofi India Ltd.	12%	0.05386	0.254703	0.215
15	Sun Pharmaceut ical Inds. Ltd.	11%	0.088837	1.216713	0.799
16	Torrent Pharmaceut icals Ltd.	23%	0.08388	0.601475	0.407
17	Zydus Lifesciences Ltd.	12%	0.0952448	0.868253	0.551

Source: Authors' Own

Correlation is used to find the relationship between security returns and Nifty Pharma returns. The highest correlation exists between Nifty Pharma Index returns and Sun Pharmaceutical Inds. Ltd., followed by Lupin Ltd. and Dr. Reddy Laboratories Ltd.

Performance Measures of Stocks through Risk Adjusted Ratios

The objective of this study is to assess the risk-adjusted performance of specific equities in comparison to the Nifty benchmark Index. This will be done by analyzing three important metrics: Sharpe ratio, Treynor ratio, and Jensen's alpha. The analysis examines past price data and pertinent financial parameters of the selected stocks and the Nifty Index to evaluate their comparative performance while accounting for risk. Investors frequently use the ratios as risk-

adjusted performance metrics to evaluate the returns from an investment in relation to its level of risk. The objective of this study is to assess individual stocks in relation to the Nifty benchmark Index using three specific measures. The purpose is to find stocks that have the potential to either outperform or underperform in terms of returns adjusted for risk. Assessing companies' ratios is a significant tool for investors and portfolio managers to make well-informed investment choices. These performance criteria would aid in evaluating the risk-adjusted returns of organizations, reflecting their past ability to compensate investors for the level of risk undertaken.

1. **Sharpe Ratio:** The Sharpe Ratio is a commonly employed metric for evaluating investment returns in relation to the level of risk involved. It is named after its originator, William F. Sharpe. Investors use this metric to evaluate the profitability of an investment in relation to the level of risk involved, taking into account the extra risk assumed to get such profitability. The Sharpe Ratio can be calculated using the following formula:

$$\text{Sharpe Ratio} = (\text{Rp} - \text{Rf}) / \text{op}$$

- Rp is the average return of the investment or portfolio.
- Rf is the risk-free rate of return, often approximated using the yield on government bonds.
- op is the standard deviation of the investment or portfolio's return, representing its risk.

The expression "Rp - Rf" represents the difference between the risk premium (Rp) and the risk-free rate (Rf)

Table 2: Sharpe Ratio

Name of Company	Ratio	Rank
Abbott India Ltd.	11.463	1
Torrent Pharmaceuticals Ltd.	8.4806	2
Granules India Ltd.	8.3327	3
Aurobindo Pharma Ltd.	6.0756	4
Natco Pharma Ltd.	5.5018	5

Source: Author's Own

The Sharpe Ratio measures the additional return achieved per unit of risk, demonstrating the amount of return generated by an investment for each unit of risk undertaken. A positive Sharpe ratio indicates that the investment or portfolio is producing returns that exceed the risk-free rate, taking into account the level of risk involved. A greater Sharpe ratio signifies superior risk-adjusted performance. A Sharpe ratio of 1 or above is generally regarded as favourable, indicating that the investment is producing positive returns that exceed the risk-free rate in relation to its level of volatility. The ranking of companies (Table 2) on the basis of the Sharpe ratio concludes that Abbott India Ltd. (Sharpe ratio = 11.4623) is the best performer, followed by Torrent Pharmaceuticals Ltd. (Sharpe ratio = 8.4806) and Granules India Ltd. (Sharpe ratio = 8.3327). GlaxoSmithKline Pharmaceuticals Ltd. attained lowest ranking as per Sharpe ratio Index.

2. **Treynor Ratio** The Treynor Ratio, similar to the Sharpe Ratio, is a metric that investors use to assess the performance of an investment or portfolio while taking into account the level of risk involved. The Treynor Ratio is named after its originator, Jack L. Treynor. It

specifically concentrates on systematic or market risk and is computed using the subsequent formula:

$$\text{Treynor Ratio} = \frac{R_p - R_f}{\beta_p}$$

R_p is the average return of the investment or portfolio.

R_f is the risk-free rate of return, often approximated using the yield on government bonds.

β_p is the beta of the investment or portfolio, representing its sensitivity to market movements.

Table 3: Treynor Ratio Ranking

Name of Company	Ratio	Rank
Abbott India Ltd.	0.492	1
Torrent Pharmaceuticals Ltd.	0.325	2
Granules India Ltd.	0.226	3
Natco Pharma Ltd.	0.211	4
Ipca Laboratories Ltd.	0.174	5

Source: Author's Own

The Treynor Ratio evaluates the additional return obtained for each unit of systematic risk (beta), serving as a metric to gauge the investment's success compared to the market. A positive Treynor Ratio indicates that the investment or portfolio is producing returns that exceed the risk-free rate, taking into account the systematic risk. A higher Treynor Ratio indicates better performance when adjusting for risk. Investors can evaluate and select investments by considering their exposure to systematic risk using the Treynor Ratio, which aids in making informed investment decisions. The appropriate Treynor Ratio is subjective and depends on the investor's objectives, risk profile, and investment technique. The Treynor Ratio is a useful metric for investors who are primarily focused on assessing market risk. A Treynor Ratio of 1 or higher is commonly

considered favourable as it signifies that the investment is generating returns above the risk-free rate relative to its volatility.

The Treynor ratio was used to rank the firms as shown in Table No. 3, and the results show that Abbott India Ltd. (Treynor Ratio: 0.492), Torrent Pharmaceuticals Ltd. (Treynor Ratio: 0.325), and Granules India Ltd. (Treynor Ratio: 0.226) have taken the top three positions. Since Treynor ratio is an extension of Sharpe ratio the lowest rank as per this ratio is also GlaxoSmithKline Pharmaceuticals Ltd.

3. Jensen's Alpha: Jensen's Alpha, often referred to as the Jensen Performance Index or Jensen's Measure, is a performance metric that takes into account the level of risk associated with an investment or portfolio. It evaluates the additional return that the investment or portfolio generates in comparison to its anticipated return, which is based on its systematic risk (Beta). Michael C. Jensen was its developer. Jensen's Alpha is frequently employed within the framework of the Capital Asset Pricing Model (CAPM).

$$\text{Formula: } R_p - [R_f + \beta_p \times (R_m - R_f)]$$

- R_p is the actual or realized average return of the investment or portfolio.
- R_f is the risk-free rate of return, typically approximated using the yield on government bonds.
- β_p is the beta of the investment or portfolio, representing its sensitivity to market movements.
- R_m is the average return of the overall market.

Table 4: Jensen's Alpha Ranking

Name of Company	Ratio	Rank
Granules India Ltd.	0.227	1
Abbott India Ltd.	0.1841	2
Torrent Pharmaceuticals Ltd.	0.155	3
Aurobindo Pharma Ltd.	0.1497	4
Natco Pharma Ltd.	0.126	5

Source: Author's Own

Jensen's Alpha evaluates the relative performance of an investment or portfolio by comparing its actual return to its projected return. A positive Jensen's Alpha implies that the investment or portfolio has exceeded its projected return, whereas a negative value indicates a shortfall in performance. The firms listed in Table No. 4 were ranked using Jensen's alpha. The top three positions in the Pharma sector have been obtained by Granules India Ltd. (Jensen's Alpha: 0.227), Abbott India Ltd. (0.184), and Torrent Pharmaceuticals Ltd. (0.155), respectively. Last three ranks are obtained by Lupin Ltd., GlaxoSmithKline Pharmaceuticals Ltd. and Glenmark Pharmaceuticals Ltd.

The Sharpe Ratio, Jensen's Alpha, and Treynor Ratio are often employed metrics in finance for evaluating the performance of investments or portfolios, taking into account their level of risk. Jensen's Alpha assesses the additional returns generated by a fund manager by comparing the actual return with the projected return derived from systematic risk. The Sharpe Ratio quantifies the success of an investment by taking into account the volatility of returns, resulting in a ratio that compares the additional return generated to

the overall level of risk. It is especially beneficial for evaluating the efficiency with which an investment delivers returns relative to the overall level of risk. Conversely, the Treynor Ratio concentrates on systematic risk by utilising beta as a metric and evaluating the effectiveness of returns relative to the amount of systematic risk. Essentially, Jensen's Alpha focuses on the additional return achieved beyond what is expected based on systematic risk, whereas the Sharpe Ratio takes into account the overall risk, and the Treynor Ratio specifically assesses the effectiveness of generating returns compared to systematic risk. Every statistic provides a distinct viewpoint on performance that takes into account risk, addresses various areas of investment assessment, and offers significant insights for investors and portfolio managers.

All the best companies are listed in Table 6, which an investor can select from to optimise his portfolio. In conclusion, Abbott India Ltd., Torrent Pharmaceuticals Ltd., and Granules India Ltd. emerge as the top performers in the financial market based on their impressive Sharpe Ratio, Treynor Ratio, and Jensen's Alpha. These companies have exhibited their capacity to produce exceptional risk-adjusted profits, surpassing their competitors. The Sharpe Ratio measures the effectiveness of generating returns compared to the level of risk, whereas the Treynor Ratio focuses on the ability to exceed the market for each unit of systematic risk. In addition, their positive Jensen's Alpha demonstrates their constant ability to generate returns above the market, highlighting their skilled leadership and successful strategy.

Investors may consider these companies as potential candidates for inclusion in their investment portfolios.

4. M square: M-squared is a risk-adjusted performance metric, close to the Sharpe ratio. It is utilised to assess the performance of a portfolio or an investment manager in comparison to a benchmark Index.

The formula for M-squared is:

$$M2 = (R_p - R_f) \times \sigma_m / \sigma_p - (R_m - R_f)$$

where:

R_p is the portfolio's return,

R_m is the benchmark return,

σ_m is the standard deviation of the market's return, representing its risk.

σ_p is the standard deviation of the portfolio's return, representing its risk.

Table 5: M- Square Ratio rankings

Name of Company	Ratio	Rank
Abbott India Ltd.	21.64%	1
Torrent Pharmaceuticals Ltd.	17.96%	2
Granules India Ltd.	17.78%	3
Aurobindo Pharma Ltd.	14.99%	4
Divi'S Laboratories Ltd.	14.02%	5

Source: Author's Own

M-square values assists investors in comprehending the extent to which the portfolio manager has enhanced value compared to the market portfolio. However, both methods are used to analyse various investment opportunities by considering both the returns and the associated amount of risk. As per the results top three positions have been acquired by Abbott India Ltd., Torrent Pharmaceuticals Ltd. and Granules India Ltd.

Table 6: The Best 5 Performing Companies

Rank	Sharpe Ratio Ranking	Treynor Ratio Ranking	Jensen's Alpha Ranking
1	Abbott India Ltd.	Abbott India Ltd.	Granules India Ltd.
2	Torrent Pharmaceuticals Ltd.	Torrent Pharmaceuticals Ltd.	Abbott India Ltd.
3	Granules India Ltd.	Granules India Ltd.	Torrent Pharmaceuticals Ltd.
4	Aurobindo Pharma Ltd.	Natco Pharma Ltd.	Aurobindo Pharma Ltd.
5	Natco Pharma Ltd.	Ipca Laboratories Ltd.	Natco Pharma Ltd.

Table 7: The Worst 5 Performing Companies

Rank	Sharpe Ratio Ranking	Treynor Ratio Ranking	Jensen's Alpha Ranking	M- Square Ratio rankings
1	Dr. Reddy'S Laboratories Ltd.	Sun Pharmaceutical Inds. Ltd.	Dr. Reddy'S Laboratories Ltd.	Sun Pharmaceutical Inds. Ltd.
1	Dr. Reddy'S Laboratories Ltd.	Sun Pharmaceutical Inds. Ltd.	Dr. Reddy'S Laboratories Ltd.	Sun Pharmaceutical Inds. Ltd.
2	Cipla Ltd.	Cipla Ltd.	Cipla Ltd.	Cipla Ltd.
3	Glenmark Pharmaceuticals Ltd.	Granules India Ltd.	Lupin Ltd.	Lupin Ltd.
4	Lupin Ltd.	Natco Pharma Ltd.	GlaxoSmith Kline Pharmaceuticals Ltd.	Glenmark Pharmaceuticals Ltd.
5	GlaxoSmith Kline Pharmaceuticals Ltd.	Ipca Laboratories Ltd.	Glenmark Pharmaceuticals Ltd.	GlaxoSmithKline Pharmaceuticals Ltd.

Conclusion

The study aimed to examine the correlation between the returns of Pharmaceutical companies and the Nifty Pharma Index from

January 2013 to November 2023. Results obtained from the correlation analysis reveal that Nifty Pharma returns have a positive correlation with all Pharma companies. Out of which, Sun Pharmaceutical Inds. Ltd. has the highest degree of correlation (0.799), followed by Lupin Ltd. and Dr. Reddy's Laboratories Ltd. On the other hand, Abbott India Ltd., Torrent Pharmaceuticals Ltd., and Granules India Ltd. are the leading performers, demonstrating exceptional risk-adjusted returns with high Sharpe ratios, Treynor ratios, positive Jensen's alpha, and the highest M square values. These companies have exhibited successful tactics in producing surplus profits while effectively mitigating risk, rendering them appealing investment choices. While companies like Cipla Ltd., Dr. Reddy, Glenmark Pharmaceuticals Ltd., GlaxoSmithKline Pharmaceuticals Ltd., and Sun Pharmaceutical Inds. Ltd. were identified as the poorest performers, with diminished risk-adjusted returns, lower Sharpe ratios, Treynor ratios, negative Jensen's alpha, and low scores in M Square. It is to be noted that the Sharpe ratio and M square both use alpha, i.e., total risk (systematic and unsystematic risk), while Treynor and Jensen alpha only cater to beta, i.e., systematic risk. Treynor and Jensen Alpha shall be used when there is no unsystematic risk in the portfolio and the portfolio is well diversified. Amidst the volatility of the present market, it is crucial for an investor to carefully choose an ideal portfolio to avoid risk and maximize returns from the available assets. Regular portfolio evaluation is advisable to maximise profits, given the

inherent volatility of the market and economy.

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Book Name: Effective Training Systems, Strategies, and Practices

Anusandhan-NDIM's Journal of Business and Management Research

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<https://qtanalytics.in/journals/index.php/ANUSANDHAN><https://doi.org/10.56411/anusandhan.2024.v6i1.63>**Reviewed by: Dr. Priyanka Arora,**

Asst. Professor, Centre for Management Studies,

Gitarattan International Business School

Author: P. Nick Blanchard and James W. Thacker**Publisher: Sage Publications**

"Effective Training Systems, Strategies, and Practices" by P. Nick Blanchard and James W. Thacker stands out as an exceptionally well-crafted guide for designing and implementing impactful training programs. The authors, seasoned experts in the field, offer a comprehensive overview of training methodologies, making it an invaluable resource for creating meaningful learning experiences.

The book starts by establishing a strong foundation, covering essential training principles, historical evolution, and factors influencing effective learning. Blanchard and Thacker's meticulous approach ensures accessibility for readers new to the subject, making the content suitable for a broad audience.

A notable strength lies in the book's practical orientation. Moving beyond theory, the authors provide real-world examples and case studies to illustrate the application of different training strategies. This not only enriches understanding but also offers actionable insights applicable across diverse organizational contexts.

The text also addresses the pivotal role of technology in contemporary training programs. Blanchard and Thacker explore the integration of e-learning, virtual reality, and other cutting-edge tools, emphasizing the need to adapt training systems to the digital age. This forward-looking perspective ensures the book remains relevant and aligns with the evolving landscape of training and development.

Moreover, the book emphasizes the design and evaluation of training programs. The authors offer a step-by-step guide on needs assessment, program development, and assessment techniques, empowering readers to tailor training initiatives to their organization's specific needs. Practical checklists and templates enhance the hands-on dimension, facilitating the implementation of discussed concepts.

The authors also stress the importance of fostering a positive learning environment and ensuring the transfer of training to the workplace. This holistic approach underscores the book's commitment to imparting knowledge while guiding readers in creating training systems that yield tangible results.

In conclusion, "Effective Training Systems, Strategies, and Practices" is a comprehensive and authoritative guide that distinguishes itself in the field of training and development literature. Whether a novice or seasoned professional, the book provides valuable insights and practical tools to elevate training approaches and create lasting impact within organizations.

Submission Guidelines

Submission and Overall Format

The manuscript should have a Title Page, Abstract with Key Words, Introduction, Material and Method, Results and Discussions, Conclusions and Acknowledgment followed by references.

- Manuscript length should be between 4000-5000 words including figures and tables, typed in double – space and printed in 12 point Times New Roman font on A-4 size paper with 1.5 inch margin on all four sides. All pages should be numbered consecutively.
- The cover page should contain title of the paper, name of the author(s), official address, contact address, phone number and e-mail address.
- Papers are processed through a blind referral system by experts in the subject areas. To ensure anonymity, the writer's name, designation and other details should appear only on the first page along with the title of the paper and should not be repeated anywhere else.
- Abstract of not more than 200 words outlining the purpose and scope of the paper in a single paragraph should be submitted. The abstract should explain why the reader should consider these results important. Key words are to be mentioned at the end of the abstract.
- Number (in Roman Letters) and caption all exhibits, charts and tables. The number of tables and figures should be kept to essentials, recommended number is 2- 3. Sources of the data should be given below each table.

Content Guidelines

- Use British spellings (rather than American): universal “z” in 'ize' and 'ization' words.
- Use 'twentieth century', '1980'. Spell out numbers from one to nine, 10 and above to remain in figures. However, for exact measurements use only figures (3km, nine per cent not %). Use thousands and millions (e.g., not lakhs and crores) Use single quotes throughout. Double quotes only to be used within single quotes. Spellings of words in quotations should not be changed.
- Quotations of 45 words or more should be separated from the text and indented with one space with a line space above and below.
- Notes should be numbered serially and presented at the end of the article.
- Always use internationally accepted signs and symbols for units, SI units.
- Genus and species names should be in italics.

Footnotes and References

It is the author's obligation to provide complete references with the necessary information. References should appear in the text as: “Bollen and Busse (2011) reported that.....” and the list of all the references must be placed at the end of the manuscript in the following style:

- Bollen N P B and Busse J A (2001), “ On the timings ability of mutual fund managers”, Journal of Finance, Vol.56, No.3, pp. 1075- 1094
- Festinger L(1975), “A theory of Cognitive Dissonance”, Stanford University Press, Stanford

In- text citations (as per APA, 6TH edition):

(Kessler, 2003, p.50); (Joreskog & Sorborn, 2007, pp. 50 – 66); (Basu, Banarji & Chatterjee, 2007)[first instance]; Basu et al. (2007)[Second instance onwards]; ('Study finds',2007); (Anonymous, 1998); (Gogel, 1990, 2006, in press); (Gogel, 1996; Miller, 1999)

Footnotes to tables should be indicated by superscript lower–case letters (or asterisks for significance values and other statistical data) and included beneath the table body.

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